LYON COUNTY BOARD OF COUNTY COMMISSIONERS
THURSDAY, FEBRUARY 03, 2022
9:00 AM
LYON COUNTY ADMINISTRATIVE COMPLEX
27 S. MAIN STREET
YERINGTON, NV 89447

Join Zoom Meeting:
https://us02web.zoom.us/j/81524047862?pwd=MWc1U0NpdHdNaTg0K0FTenlIcjNNdz09
Meeting ID: 815 2404 7862 / Passcode: 161718
Mobile: 1-408-638-0968 / 1-346-248-7799

County Commission meetings are open to the public and members of the public may attend in person and the meetings are also virtual and the public may attend via Virtual Zoom.

Public Comment: Lyon County allows the following alternatives for public comment. If you are attending the virtual Zoom meeting, public comment may be provided by raising your hand and requesting to provide public comment. This can occur in several ways, including by dialing *9 from your phone to raise your hand and request to speak for public comment. To unmute yourself, dial *6. You can also provide public comment for this meeting by sending us an email at elopez@lyon-county.org, the day prior to the posted meeting date. Be sure to type, PUBLIC COMMENT, in the subject line.

Written public comments may also be mailed to the Lyon County Manager's Office at 27 S. Main Street, Yerington, Nevada 89447, but all public comments must be received prior to the date of the meeting if the comments are to be included in the supplemental materials. Any written public comment received the day of the Board meeting will be compiled and added as supplemental materials to the County's website and distributed to the Board of Commissioners within 24 hours after the meeting. Members of the Public may attend the meeting in person.

AGENDA

(Action will be taken on all items unless otherwise noted)
(No action will be taken on any item until it is properly agendized).

To avoid meeting disruptions, please place cell phones and beepers in the silent mode or turn them off during the meeting.

The Board reserves the right to take items in a different order to accomplish business in the most efficient manner. Items may be combined for consideration and items may be pulled or removed from the agenda at anytime.

Restrictions on comments by the general public: Any such restrictions must be reasonable and may restrict the time, place and manner of the comments, but may not restrict comments based upon viewpoint.

BOARD OF COMMISSIONERS CONVENING AS OTHER BOARDS - *Members of the Board of County Commissioners also serve as the Liquor Board, Central Lyon Vector Control District Board, Mason Valley Mosquito Abatement District Board, Walker River Weed Control District Board, Willowcreek General Improvement District Board, the Silver Springs General Improvement District Board, and during this meeting may convene as any of those boards as indicated on this or a separately posted agenda.*

NOTE: THIS MEETING MAY BREAK BETWEEN 11:30 - 1:30 FOR LUNCH

1. Roll Call

2. Invocation given by Mitch Forster of the Mason Valley Southern Baptist

3. Pledge of Allegiance

4. Public Participation (no action will be taken on any item until it is properly agendized) - *It is anticipated that public participation will be held at this time, though it may be returned to at any time during the agenda. Citizens wishing to speak during public participation are asked to state their name for the record and will be limited to 3 minutes. The Board will conduct public comment after discussion of each agenda action item, but before the Board takes any action. Afterwards, please print your name at the Clerk's desk.*

5. For Possible Action: Review and adoption of agenda

6. Time Certain

6.a. Time Certain at 10:00 A.M: For Possible Action: Presentation, discussion and direction to the County Manager to assist the City of Fernley with negotiations, litigation in regards to the Bureau of Reclamations plans to line the TCID Canal with concrete. (Requested by Commissioner Jacobson)
- Truckee Canal Extraordinary Maintenance Project Presentation

7. Presentation of awards and/or recognition of accomplishments

7.a. For Presentation Only: Present Deputy Taylor Schairer with a Lyon County Sheriff's Office Life Saving Award.

7.b. For Presentation Only: To recognize Greg Smith for his positive attitude and willingness to serve as the Acting Wastewater Superintendent during the Utilities Department time of need (David Bruketta).
-Employee Spotlight, Greg Smith

7.c. For Presentation Only: To recognize Lyon County Human Services staff John Davis, and Yerington

Senior Center volunteer Richard Ralston for their exemplary service to the seniors of the Yerington Senior Center.

8. Commissioners/County Manager reports

8.a. For Presentation and Report: Provide the Board of Commissioners with an update on the Public Lands Bill. (Requested by Commissioner Gray)

9. Elected Official's reports

10. Appointed Official's reports

11. Advisory Board reports

CONSENT AGENDA (Action Will be Taken on All Items) - *All matters listed under the consent agenda are considered routine, and may be acted upon by the Board of County Commissioners with one action, and without an extensive hearing. Any member of the Board or any citizen may request that an item be taken from the consent agenda, discussed, and acted upon separately during this meeting.*

12. For Possible Action: Approve County Commission Minutes

12.a. For Possible Action: Approve the January 20, 2022 minutes.

13. Grants

13.a. For Possible Action: Accept a collection development grant award from the Nevada State Library, Archives and Public Records in the amount of $5,543, to purchase Ebooks for the library collection between the dates of December 15, 2021-June 30, 2022.
- Collection Development 2022 Grant in Aid Award Lyon County

13.b. For Possible Action: Accept grant award amendment from Aging and Disability Services Division (ADSD), State of Nevada, for FY2021 CARES funding for outdoor equipment to extend the grant award term to September 30, 2022.
-FY21 CARES Funding Grant Award Amendment ADSD

13.c. For Possible Action: Accept grant award from the Nevada Department of Public Safety, Office of Traffic Safety in the amount of $2,735, with a County Match of $684, to obtain child passenger safety certification for identified staff, conduct vehicle child restraint system education, inspections, and installations at locations throughout Lyon County.
-FY22 OTS Grant Agreement

14. Other Consent Items

14.a. For Possible Acton: Approve Detention Facility Inspection Report submitted by Comm. Hockaday.
- Jail Inspection Report of December 2021
- Staff Report (Sheriff Frank Hunewill)

14.b. For Possible Action: Review and accept claims and financial reports.
- Cash Report 1-15-22

- Claims Report 1-1-22 to 1-15-22

14.c. For Possible Action: Review and accept travel claims.
- Travel Report 1-1-22 to 1-15-22

****END OF CONSENT AGENDA****

REGULAR AGENDA - *(Action will be taken on all items unless otherwise noted)*

15. Board Appointments

15.a. For Possible Action: Appoint a member to the Smith Valley Advisory Board, with a term expiring December 31, 2023.
- Roger Rodarte, Application
- Michael Palmer, Application

16. County Manager

16.a. For Possible Action: Approve a resolution adopting policies for naming county facilities, parks, cemeteries, open space and drainages. (Requested by Commissioner Jacobson)
- Res. Policies for Naming County Facilities, Parks, Cemeteries, Open Space and Drainages

16.b. For Presentation & Report: Update the Board of Commissioners on the status of purchasing/building a Community Center in Mound House. (Requested by Commissioner Gray)

16.c. For Possible Action: Presentation, discussion and direction to the County Manager on the location, supporting road network, and funding for a second bridge in the Dayton area. (Requested by Commissioner Gray)
Carson River Bridge - Prime Agreement Exhibits.pdf
CARSON RIVER BRIDGE FEAS STUDY cond pdf.pdf
Vidler Proposal Final - Stantec 05.31.2018.pdf
Carson River Bridge - Prelim Eng_Fee Estimate.pdf

16.d. For Possible Action: To discuss and provide direction to the County Manager in regards to developing a Bill Draft Resolution (BDR) for the 2023 Legislature, which may include: discussion on possible topics for a BDR; direction to staff to research and come back with information related to a possible BDR; and input from the public on possible topics for a BDR. The Board may direct staff to prepare a resolution and bring back to the Board for further consideration. (Requested by Commissioner Henderson)

17. District Attorney

17.a. For Possible Action: (A) Execution of "Subdivision Settlement Participation Forms" and releases pursuant to the One Nevada Agreement on Allocation of Opioid Recoveries ("One Nevada Agreement") previously agreed upon for participation in settlements with (1) the State of Nevada and opioids distributor defendants AmerisourceBergen Drug Corporation, Cardinal Health, and McKesson as listed in Exhibit C to the One Nevada Agreement, and (2) the State of Nevada and opioid manufacturer defendant Janssen/Johnson & Johnson as listed in Exhibit C to the One Nevada Agreement; and (B) Execution of an "Amendment No. 1 to One Nevada Agreement on Allocation of Opioid Recoveries" regarding a reduction in attorney's fees to the One Nevada Agreement for purposes of these two settlements only.

- Participation Form and Release for Janssen-J&J Agreement (Final)
- Participation Form and Release for Distributor Agreement (Final)
- Amendment to One Nevada Agreement (Final)

18. Other

18.a. For Possible Action: Propose Ordinance amending Lyon County Code Title 5, Chapter 5.01.02, by prohibiting the licensing of a cannabis consumption lounge as a business; Title 7, Chapter 2, by prohibiting the consumption of cannabis and cannabis products in a public place; and providing for the severability, constitutionality and effective date thereof; and other matters properly relating thereto
- Draft Ordinance Prohibiting Cannabis Consumption Lounges in Lyon County

19. Agenda Requests

20. Commissioner Comments

21. Closed Session pursuant to NRS 241.015(3)(b)(2) - *To receive information from the District Attorney or counsel regarding potential or existing litigation involving a matter over which the Board has supervision, control, jurisdiction or advisory power, and to deliberate toward a decision on the matter, and pursuant to NRS 288.220, to receive a report on the status of ongoing labor negotiations; and direct staff accordingly.*

22. Public Participation (no action will be taken on any item until it is properly agendized) - *It is anticipated that public participation will be held at this time, though it may be returned to at any time during the agenda. Citizens wishing to speak during public participation are asked to state their name for the record and will be limited to 3 minutes. The Board will conduct public comment after discussion of each agenda action item, but before the Board takes any action.*

23. Adjourn

This agenda has been posted in accordance with the open meeting law at the Lyon County Administrative Complex.

Lyon County recognizes the needs and civil rights of all persons regardless of age, race, color, religion, sex, handicap, family status, or national origin. In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternate means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible agency or USDA's TARGET Center at (202) 720-2600 (voice and T) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found on-line at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) Mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410; Fax: (202) 690-7442; or Email: program.intake@usda.gov

T.D.D. services available through 463-2301 or 463-6620 or 911 (emergency services) notice to persons with disabilities: members of the public who are disabled and require special assistance or accommodations at the meeting are requested to notify the Commissioners'/Manager's office in writing at 27 S. Main Street, Yerington, NV 89447, or by calling (775) 463-6531 at least 24 hours in advance

Lyon County is an equal opportunity provider.

Agenda and Backup Material is Available at www.lyon-county.org

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
6.a

Subject:
Time Certain at 10:00 A.M: For Possible Action: Presentation, discussion and direction to the County Manager to assist the City of Fernley with negotiations, litigation in regards to the Bureau of Reclamations plans to line the TCID Canal with concrete. (Requested by Commissioner Jacobson)

Summary:
Commissioner Jacobson requested this agenda item at the January 20, 2022 BOCC meeting. He requested a report from the City of Fernley on the status of litigation or negotiations and seeks input as to what the County can do to assist.

Financial Department Comments:
Any additional costs associated with this in the current fiscal year would need to be funded from a contingency budget transfer.

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Move to direct the County Manager to assist the City of Fernley with negotiations and litigation in regards to the Bureau of Reclamation's plans to line the TCID Canal with concrete

ATTACHMENTS

- - Truckee Canal Extraordinary Maintenance Project Presentation

Truckee Canal Extraordinary Maintenance Project Litigation Update

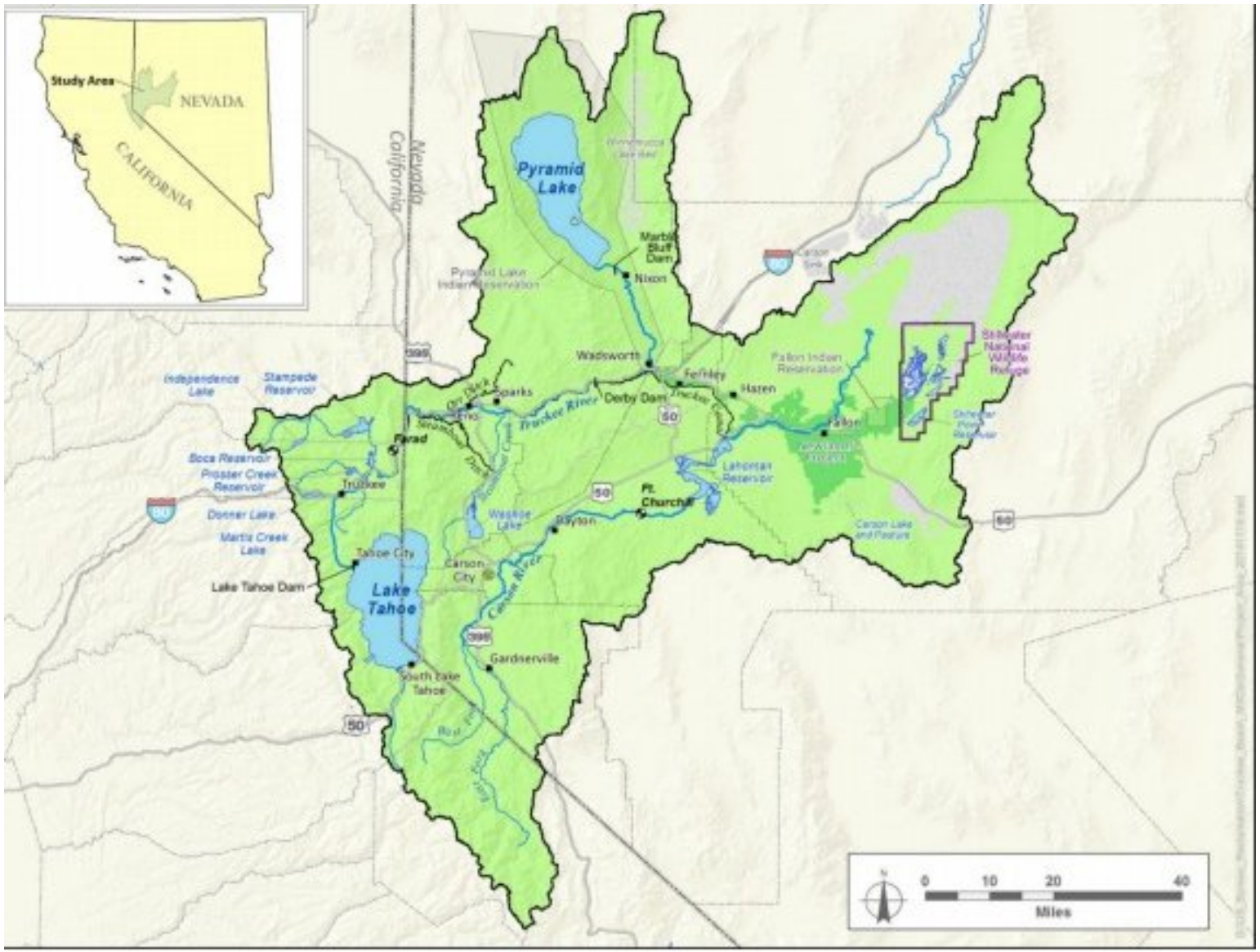
Presented By:

David H. Rigdon, Esq.
Special City Attorney
Daphne Hooper, City Manager

February 3, 2022

n

Overview of the Truckee and Carson Rivers



Truckee Canal Background

- Newlands Project was one of the first projects undertaken pursuant to Reclamation Act of 1902.
- Project completed in 1905
- Fernley founded in 1905 as direct result of canal construction.
- Project was constructed as unlined ditch for most of its length.

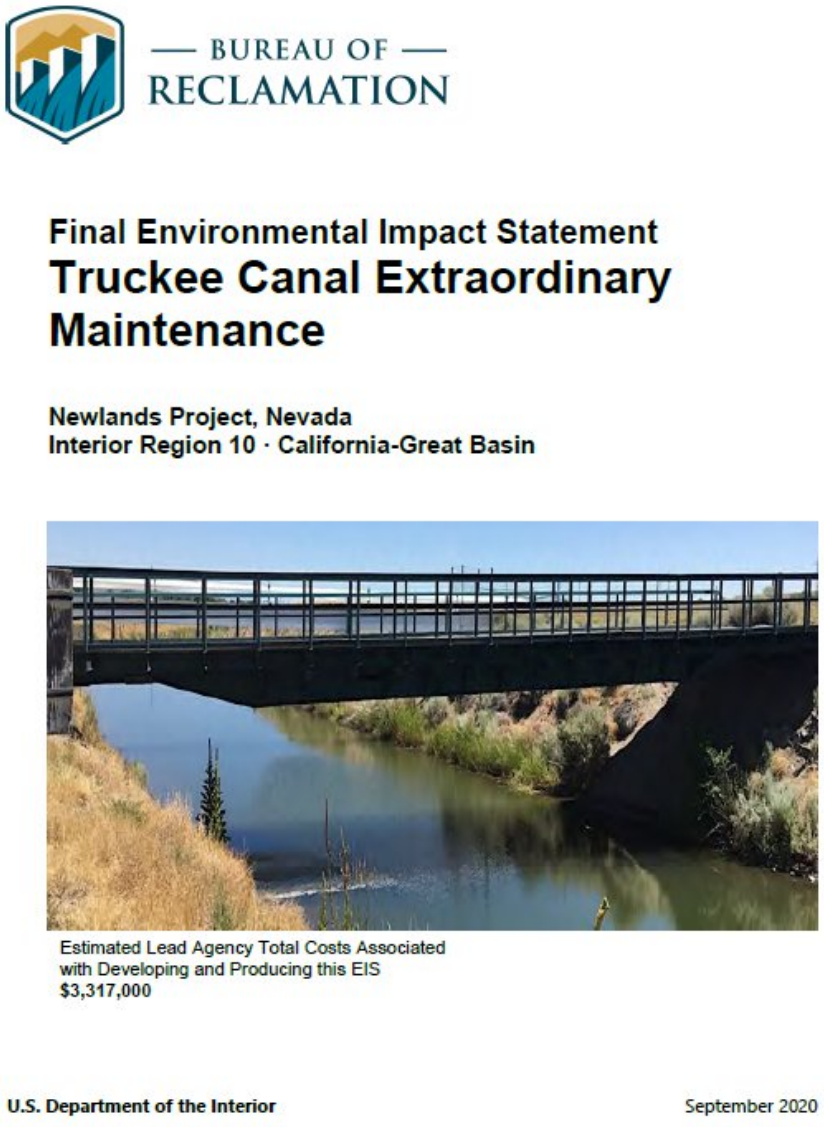
The 2008 Canal Breach

- Jan. 5, 2008 – canal breach floods Fernley
- Affected apx. 600 homes.
- Since breach canal has operated under flow restrictions (350-550cfs).
- Since 2008 Bureau of Reclamation has been studying potential fixes.
- Fernley has cooperatively participated in these studies.

TAGGART & TAGGART LTD

Development of EIS

- After preliminary studies, BOR issued a notice of intent to proceed with EIS in 2015.
- Fernley named a cooperating agency.
- Draft EIS was published on March 6, 2020.
- Final EIS published September 2020.
- ROD issued December 15, 2020.



Fernley's Issues With EIS

- During preliminary studies and EIS scoping several solutions were reviewed:
  - Lining the canal (full or partial prism, concrete or clay liner)
  - Rebuild canal walls
  - Install sheet walls (steel or vinyl) in existing banks
  - Inject concrete/bentonite into exiting banks
  - Leave flow restrictions in place
- Draft EIS only analyzed full prism concrete liner options (only difference was length of canal to be lined).
- Process issues / lack of scientific analysis
- No mitigation for loss of groundwater recharge

The Fundamental Problem – Loss of Recharge

- The Town of Fernley was established the same year the canal began operation (1905).
- Fernley has historically relied exclusively on groundwater to serve its municipal customers.
- Natural PY of basin is estimated at just 600 afa.
- Canal recharge estimated to provide 12,000 – 18,000 afa of recharge to basin.
- Fernley holds apx. 9,000 afa of groundwater permits for municipal system. With domestic wells, agricultural, and commercial, total commitments in basin = 12,000 afa.
- Loss of recharge = basin out of balance.

Legal Issues

Two primary litigation questions

- Was Bureau's Record of Decision supported by substantial evidence?
  - EIS must consider reasonable alternatives. (40 CFR § 1500.1)
  - EIS must take "hard look" at environmental consequences of project. (*Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1166 (9th Cir. 2003))
  - EIS must consider and analyze mitigation measures to lessen or resolve impacts. (40 CFR § 1502.14(e))
- Does Fernley have a right to continued recharge from Truckee Canal?

Judicial Review – EIS Sufficiency

- Brought under federal Administrative Procedures Act.
- Authorizes challenge in federal court of any final agency action.
  - Issuance of ROD is considered a final action.
- Review limited to administrative record.
- Standard of Review
  - Arbitrary & Capricious
  - Was decision supported by substantial evidence.
- Fernley's complaint alleges both APA and NEPA violations.

Declaratory Relief Complaint

- Brought as regular complaint under Federal Rules of Procedure.
- Review not limited to administrative record.
- State law controls water issues.
  - Section 8 of 1902 Reclamation Act.
  - Fernley alleges BOR acted outside its scope and authority when it unilaterally decided Fernley has no right to continued recharge.

Legal Basis of Right to Continued Recharge

- Fernley has raised several legal theories in support of its right to continued seepage including:
  - Implied dedication doctrine
  - Equitable estoppel
  - Detrimental reliance
  - NV v US (BOR not “owner” of water diverted into canal)
  - Subsequent appropriation
  - Abandonment

Litigation Status

- Fernley filed complaint against BOR on March 10, 2021.
- Pyramid Lake Paiute Tribe and local water users granted intervention status.
- BOR filed MTD on May 28, 2021. Fully briefed on July 30, 2021.
- Hearing on MTD held on December 8, 2021.
- Judge issued order granting dismissal on December 13, 2021.
  - Order issued with prejudice and without leave to amend.
  - Judge stated that Fernley is a purely economic actor asserting purely economic interests and therefore has no standing to bring claim of environmental harm under NEPA.

Litigation Status (Cont.)

- Fernley has filed a motion to amend the order to without prejudice and with leave to amend.
  - A proposed amended complaint was drafted and attached to the motion.
- On January 19, 2022, Fernley Council voted to authorize appeal to 9th Circuit if motion to amend is denied.

Questions???

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
7.a

Subject:
For Presentation Only: Present Deputy Taylor Schairer with a Lyon County Sheriff's Office Life Saving Award.

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

-

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
7.b

Subject:
For Presentation Only: To recognize Greg Smith for his positive attitude and willingness to serve as the Acting Wastewater Superintendent during the Utilities Department time of need (David Bruketta).

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

- -Employee Spotlight, Greg Smith

January 2022

Employee Spotlight

Greg Smith

Year of Service – 1.5

Position – Wastewater Systems Technician

Accomplishments –

- Serving as Acting Wastewater Superintendent

Ken Gray
Chair – Lyon County Commissioners

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
7.c

Subject:
For Presentation Only: To recognize Lyon County Human Services staff John Davis, and Yerington Senior Center volunteer Richard Ralston for their exemplary service to the seniors of the Yerington Senior Center.

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

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Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
8.a

Subject:
For Presentation and Report: Provide the Board of Commissioners with an update on the Public Lands Bill. (Requested by Commissioner Gray)

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

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Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
12.a

Subject:
For Possible Action: Approve the January 20, 2022 minutes.

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

-

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
13.a

Subject:
For Possible Action: Accept a collection development grant award from the Nevada State Library, Archives and Public Records in the amount of $5,543, to purchase Ebooks for the library collection between the dates of December 15, 2021-June 30, 2022.

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Move to accept a collection development grant award from the Nevada State Library, Archives and Public Records in the amount of $5,543.00.

ATTACHMENTS
- - Collection Development 2022 Grant in Aid Award Lyon County

Nevada State Library, Archives & Public Records
100 North Stewart Street
Carson City, NV 89701-4285

NOTIFICATION OF STATE COLLECTION DEVELOPMENT GRANT-IN-AID AWARD

APPLICANT: Lyon County Library

PROJECT TITLE: State Collection Development Project PROJECT NO: State FY2022

PROJECT DATES: December 15, 2021 through June 30, 2022

FISCAL AGENT (IF DIFFERENT FROM LIBRARY) _____

Applicant's request for grant-in aid funds is approved as follows:

Based on FY 2020 TOTAL LOCAL EXPENDITURES For Library Materials	FY2022 GRANT AMOUNT
$90,593	$5,543

Mike Strom, State Library and Archives Administrator — 12/23/2021 Date

Please complete and sign the application; scan and return this copy to Madisson Jacobs at madissonjacobs@admin.nv.gov

CERTIFICATION

In accepting these funds for collection development, the undersigned agrees that: 1) The funds will only be spent per the approved application or prior consent to change is granted by the State Library and 2) financial and narrative reports on the project's progress will be submitted when requested by the State Library.

Termination for Non-Appropriation. The continuation of this grant is subject to and contingent upon sufficient funds being appropriated, budgeted, and otherwise made available by the State Legislature and/or federal sources. Reservation of funds based upon budget reductions is included herein. The granting authority may reduce or terminate this grant, and the grantee waives any and all claim(s) for damages, effective immediately upon receipt of written notice (or any date specified therein) if for any reason the granting agency's funding from State and/or federal sources is not appropriated or is withdrawn, limited, or impaired.

Amy Geddes — 12/21/21

APPLICANT'S SIGNATURE DATE

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
13.b

Subject:
For Possible Action: Accept grant award amendment from Aging and Disability Services Division (ADSD), State of Nevada, for FY2021 CARES funding for outdoor equipment to extend the grant award term to September 30, 2022.

Summary:
This is a COVID award from ADSD to support the expansion of outdoor seating areas at the senior centers throughout Lyon County. The proposed amendment will extend the grant term through September 30, 2022.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Motion to accept grant award amendment from Aging and Disability Services Division (ADSD), State of Nevada, for FY2021 CARES funding for outdoor equipment to extend the grant award term to September 30, 2022.

ATTACHMENTS
- -FY21 CARES Funding Grant Award Amendment ADSD

State of Nevada
Department of Health and Human Services
Aging and Disability Services Division

Agency Ref. #: **11-001-93-2C3X-21**
Budget Account: 3266
Category: 46
GL: 8582
Job Number: 93045203

SUBAWARD AMENDMENT # 2

Program Name:	**Subrecipient's Name:**
ADSD Planning, Advocacy and Community Services (PAC) Unit Grants Management Contact Name: Lisa Torres / LTorres@adsd.nv.gov	Lyon County Contact Name: Jeff Page, County Manager / jpage@lyon-county.org
Address: 3416 Goni Road, #D-132 Carson City, NV 89706	**Address:** 27 South Main Street Yerington, NV 89447
Subaward Period: 07/01/2020 – 09/30/2022	**Amendment Effective Date:** Upon approval by all parties.

This amendment reflects a change to:

☐ Scope of Work ☒ Term ☐ Budget

Reason for Amendment: Extension of Subaward Period

Required Changes:

Current Language: Subaward Period: 07/01/2020 – 12/31/2021

Amended Language: Extended Subaward Period: 07/01/2020 – 09/30/2022

Incorporated Documents:

N/A

By signing this Amendment, the undersigned understand this amendment does not alter, in any substantial way, the non-referenced contents of the original subaward and all of its attachments.

Authorized Sub-Recipient Official's Name, Title	Signature	Date
Ken Gray, Chairman Lyon County Board of Commissioners		
Jeffrey S. Duncan, Chief II For Dena Schmidt, ADSD Administrator		01/13/2022

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
13.c

Subject:
For Possible Action: Accept grant award from the Nevada Department of Public Safety, Office of Traffic Safety in the amount of $2,735, with a County Match of $684, to obtain child passenger safety certification for identified staff, conduct vehicle child restraint system education, inspections, and installations at locations throughout Lyon County.

Summary:
The Nevada Department of Public Safety, Office of Traffic Safety (DPS-OTS) awards federal funds to organizations desiring to partner in solving Nevada traffic safety problems. Funds awarded are strictly for use in reducing deaths and serious injuries caused by motor vehicle crashes.
Lyon County Human Services will utilize grant funds to purchase child safety seats and restraints for low-income families in need, and provide education and training to parents on how to properly install, uninstall and safely secure their children in the restraint system.

Financial Department Comments:
The match will be paid from the budget in the General Indigent Fund.

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Motion to accept the grant award from the the Nevada Department of Public Safety, Office of Traffic Safety in the amount of $2,735, with a County Match of $684, to obtain child passenger safety certification for identified staff, conduct vehicle child restraint system education, inspections, and installations at locations throughout Lyon County.

ATTACHMENTS
- -FY22 OTS Grant Agreement

Document ID: TS-2022-LCHS-00136

STATE OF NEVADA
DEPARTMENT OF PUBLIC SAFETY
OFFICE OF TRAFFIC SAFETY

Project Agreement

OTS UEI # N429NLYU9KN4

Project Title:
Lyon County Human Services Child Passenger Safety Project

Applicant Agency:	**Governmental Unit:**
Lyon County Human Services	

UEI Number: UT4JJJ9N6L69	**501 (c) Attached:** ☐ Yes ☑ No

Grant Period: **From: Effective date of Authorization** **To: September 30, 2022**

PROJECT DESCRIPTION:
This project will provide funding to Lyon County Human Services in the amount of $2,735.00 to certify new child passenger safety technicians and conduct educational programs at locations in rural Northern Nevada which will result in caregivers leaning how to properly use car seats, booster seats and seat belts.

FAIN	**FY 2022**	**Award Amount:**	**CFDA #**
69A3752230000405bNVH		$2,735.00	20.616(b)

ACCEPTANCE OF CONDITIONS: It is understood and agreed by the undersigned that a grant received as a result of this agreement is subject to Public Law 114-94, Highway Safety Act of 1966, and Nevada Revised Statutes, Chapter 223.200 and all administrative regulations governing grants established by the U.S. Department of Transportation and the State of Nevada. It is expressly agreed that this project constitutes an official part of the State's Highway Safety Plan and that said Applicant Agency will meet the requirements as set forth herein, including Schedules A, B, C, and C Supplemental which are incorporated herein and made a part of this agreement. **The Applicant Agency MAY NOT proceed with this project, or any portion thereof, until funds are appropriated by the U.S. Congress and written authorization is received from the Office of Traffic Safety. It is also understood by the Applicant Agency that any funds expended prior to receipt of the written Authorization to Proceed WILL NOT be reimbursed.**

Department of Public Safety	**Authorizing Official**
Signature: Amy Davey	**Signature:**
Name: Amy Davey	**Name:** Ken Gray
Title: Administrator/Highway Safety Coordinator, NV DPS-OTS	**Title:** Chairman, Lyon County Board of Commissioners
Contact Information	**Project Director**
Program Manager: Johnean Morrison	**Signature:**
Phone: (775) 684-7479	**Name:** Jenna Dykes
E-Mail: jjmorrison@dps.state.nv.us	**Title:** Division Manager

SCHEDULE A

DESCRIPTION OF PROJECT

PURPOSE

PROBLEM STATEMENT:

Lyon County Nevada statistics show a total population of 54,122 with a 49.5 percent growth rate since year 2000. 11.5 percent of the population are children ages 9 and under, with 14.3 percent of children living below the poverty level. Lyon County Human Services is a local government agency which primarily operates from federal , state, and other grant monies. Frequent problems encountered by LCHS include:

- Inability to support requests for child restraint systems through other funded programs.

- Households are unable to provide proper child restraints due to costs, and those that have obtained child restraints often do not meet proper safety requirements because they are improperly installed or unrestrained.

- Unrestrained passengers often distract motor vehicle operators, increasing risk of motor vehicle crashes.

Lyon County occupies 2,024 square miles of northern Nevada, with more than 930 miles of public roads. Rural county residents have limited resources, forcing longer commutes outside Lyon County increasing the risk of motor vehicle crashes .

Nevada Department of Transportation showed an increase in fatalities for children ages 6 years and under over the previous four years. According to the National statistics for rural areas, child passenger restraint use declined by 4 percent in the past 3 years, rural areas continue to show the lowest restraint use. Lyon County unrestrained passenger fatalities increased from 5.8 to 9.2 percent between 2015 and 2017. National statistic show 1 in 3 child fatalities were due to lack of proper child restraint.

While local data is limited, analysis conducted by the National Highway Traffic Safety Administration indicated use of child safety seats is effective in reducing the incident rates of incapacitating injuries for the three age groups and in any crash type . The data showed children involved in rollover crashes had the highest incident rates of incapacitating injuries and the estimated incident rate of incapacitating injuries among unrestrained children in rollover incidents was almost three times that for restrained children. Unrestrained children involved in side impact crashes were eight times more likely to sustain incapacitating injuries than children restrained in child safety seats. Head injuries were the most common injuries sustained by children in motor vehicle crashes.

COUNTERMEASURES:

Lyon County Human Services will use the following “Countermeasures That Work” to enhance /correct the problem:

Chapter 2: Seat Belts and Child Restraints

3.2 Communications and Outreach Strategies for Low-Belt-Use Groups
6.1 Communication and Outreach Strategies for Older Children
6.2 Communications and Outreach Strategies for Child Restraint and Booster Seat Use
7.2 Inspection Stations

GOALS:

Lyon County Human Services' project goal is to reduce fatalities and serious injuries on Nevada's roadways . Specifically, in the area of Child Passenger Safety, Lyon County Human Services' project goal is to reduce the risk of child death and injury in traffic crashes by increasing the effectiveness of child safety seat utilization .

OBJECTIVES

MEASUREABLE STEPS / TIMELINE:

Lyon County Human Services has set the following objectives:

- To increase the number of SafeKids Worldwide certified Child Passenger Safety Technicians (CPST) by 3 in rural Northern Nevada.

- To increase the number of SafeKids Worldwide certified Child Passenger Safety Technician Proxys by 2 in rural Northern Nevada.

- To increase the number of properly installed child safety seats in motor vehicles on Nevada's roadways by educating a minimum of 73 parents/caregivers.

- Grant funds shall be expended for the purposes and budget specified herein.

TIMELINE:

Lyon County Human Services has set the following timeline:

- October – December: 1 community event
- January – March: 1 community even
- April – June: 1 community event
- July – September: 1 community event
- In addition: Certify staff as Child Passenger Safety Technicians and Technician Proxys: dates to be determined by availability of CPST courses.

SELF SUSTAINABLE:

Lyon County Human Services will continue to look for funding opportunities to enhance the safety of children throughout the community.

ACTIVITIES:

Lyon County Human Services staff will complete the following project activities:

In the spirit of the Federal Office of Management and Budget Memorandum M20-26, the Nevada Office of Traffic Safety (OTS) recognizes the need for flexibility to be provided in response to the COVID-19 pandemic; its effect on public health and the need for potential changes of activities in the FFY 2022 grant-funded projects. If the subrecipient is unable to fulfill the stated objectives and/or activities in any manner in this project, the subrecipient must contact the OTS program manager immediately and discuss alternate plans or a potential change order. All Federal and State regulations will apply.

Activity #1: SafeKids Worldwide Certification

- Obtain Child Passenger Safety Technician Certification for identified agency staff.
- Obtain Technician Proxy Certification for identified agency staff.

Activity #2: Community Events

- Conduct 4 child safety seat community events within the Northern Nevada rural area which will educate caregivers on the correct installation of child safety seats. Child safety seats will be provided to those demonstrating a need.

OTHER REQUIRED ACTIVITIES:

All sub-recipients are required to:

1. Hold a press conference or submit press release to local newspaper(s) detailing the program, funding source, goals and objectives and the probable outcome, within 30 days of receipt of Authorization to Proceed (ATP).
2. Track, account for and report all in-kind contributions pertaining to this project. Vehicle operation and maintenance, in addition to officer and supervisor salaries/benefits when not in a grant overtime mode, are examples of in-kind contributions.
3. Submit monthly progress reports detailing the status of each objective and activity by the 15th of the following month, as well as final *Annual* report summarizing the project's accomplishments/shortcomings within 30 days of end of grant. **Progress reports should include** copies of any reports, documents, press releases, and print media coverage related to the grant project.
4. Claims for reimbursement must be submitted monthly for any expenses incurred and paid during that time period. If expenses are for personnel, a Payroll Certification Report must also be completed and submitted.

All law enforcement agencies are required to also:

1. Report motor vehicle fatality data to Nevada's Fatality Analysis Reporting System (FARS) analyst at the Nevada Office of Traffic Safety, 107 Jacobsen Way, Carson City NV 89711, fax: 775-684-7486 or fars@dps.state.nv.us
   - The data gathered by the States to perform FARS analysis is also used by the States when applying for federal highway incentive grants.
   - FARS data is the only census data of all fatal traffic crashes in the U.S. and it is used for many performance measure goals accepted by the States, NHTSA and Federal Highway Administration (FHWA).

   NHTSA places the following requirements on the State Office of Traffic Safety to:

   - ✓ Provide for the collection of specific data on all reportable traffic fatalities that occur within each jurisdiction (the fifty states plus the District of Columbia, and Puerto Rico);
   - ✓ Report basic information on every motor vehicle crash with reportable fatalities within specified time frames;
   - ✓ Report all required information on each such crash within a specified time frame and;
   - ✓ Encourage the use of the FARS data by members of the traffic and motor vehicle safety community as an important resource for decision making and policy development.
   - ✓ To ensure data currency, OTS must report basic information on each crash/fatality within two weeks of the crash/fatality; and to report on basic information on each crash/fatality during a holiday period within one day of the end of that holiday period. All data must be entered using the FARS microcomputer data entry (MDE) system within 90 days following the crash/fatality.
2. Send motor vehicle crash reports per NRS 484E.110, et seq., electronically or manually to the Department of Public Safety/NCATS database, within 10 days after the investigation of the crash and as otherwise required by state law.

EVALUATION:

Lyon County Human Services' project will be evaluated by the Division Manager as follows:

- An increase in the number of SafeKids Worldwide certified Child Passenger Safety Technicians (CPST) in rural Northern Nevada. An increase of 1 in the FFY 2020 baseline of 4 (5 total) will be considered a success.

- An increase in the number of SafeKids Worldwide certified Technicians Proxys in rural Norther Nevada. An increase of 1 in the FFY 2020 baseline of 0 (1 total) will be considered a success.

- An increase in the number of properly installed child safety seats in motor vehicles on Nevada roadways. Maintenance of the FFY 2020 baseline of 74 will be considered a success.

- The monthly progress report will detail the following:

# of agency staff who obtained Child Passenger Safety Technician Certification.
# of CPST Courses held.
# of new Child Passenger Safety Technicians.
# of Community Events held.
# of Seats Inspected.
# of Seats Distributed.
# of Caregiver Classes held.
# of Educational Appointments held.

- The final progress report will include an overall evaluation of the project, achievements, barriers, and cumulative statistics.

BASELINE DATA:

Lyon County Human Services' project FFY 2020 baseline data consists of the following:

- Community Events Held: 0
- Seats Inspected: 74
- Seats Distributed: 40
- Adults Educated: 73

COORDINATING OTHER AGENCIES:

Lyon County Human Services' project will be coordinating with the following agencies:

- Northern Lyon County Fire Protection District
- Mason Valley Fire Protection District
- SafeKids Washoe County

SCHEDULE B

ITEMIZATION OF BUDGET

Agency: Lyon County Human Services

Project Title: Lyon County Human Services Child Passenger Safety Project

Fiscal Year: 2022

Category	Grant Funds	Matching Funds	Total Project Cost 100%
Personnel		$684.00	$684.00
Travel			$0.00
Contract Services			$0.00
Equipment			$0.00
Other Direct Costs	$2,735.00		$2,735.00
Indirect Costs			$0.00
Program Income			$0.00
Total Expenses	$2,735.00	$684.00	$3,419.00

BUDGET NARRATIVE:

Budget –

Other Direct Costs –

Car Seats = $2,000.00

Supplies – $400.00 Items include clip boards, pens, pool noodles, locking clips, class materials, traffic cones, event signage, forms and flyers, COVID – 19 safety supplies and other items identified as necessary to operate a Child Passenger Safety activity. Event signage and printed materials must be pre-approved by the OTS Program Manager.

SafeKids Worldwide Certifications - $335.00

Match -

Personnel - $684.00

SCHEDULE C AGREEMENT OF UNDERSTANDING AND COMPLIANCE

THIS AGREEMENT made and entered into by and between the STATE OF NEVADA by and through the Department of Public Safety, Office of Traffic Safety, hereinafter referred to as "STATE" and the Governmental unit or organization named in this agreement, hereinafter referred to as "SUB-RECIPIENT."

WHEREAS, FAST, Fixing America's Surface Transportation Act (P.L. 114-94) of December 4, 2015 provides Federal, State or Other funds through the National Highway Traffic Safety Administration (NHTSA) to the State for approved traffic safety projects, and

WHEREAS, STATE may make said funds available to various state, county, or municipal agencies or governments or political sub-divisions upon application and approvals by STATE and the United States Department of Transportation,

WHEREAS, the SUB-RECIPIENT and any awarding subcontracts must comply with the requirements listed herein, to be eligible for Federal, State or Other funds in approved traffic safety projects, and

WHEREAS, the SUB-RECIPIENT's application has been approved for Federal, State or Other funds for traffic safety projects, and is aware that this agreement is dependent upon availability of funds as appropriated by Congress or the State.

NOW THEREFORE, IN CONSIDERATION OF MUTUAL PROMISES AND OTHER GOOD AND VALUABLE CONSIDERATION, THE PARTIES AGREE AS FOLLOWS:

I. REIMBURSEMENT OF ELIGIBLE EXPENDITURES AND PROGRAM INCOME

1. It is mutually agreed and promised that upon written agreement by SUB-RECIPIENT and approval by STATE and the United States Department of Transportation, STATE shall obligate said Federal, State or Other funds to SUB-RECIPIENT's account for reimbursement of eligible expenditures as set forth in this agreement.
2. It is mutually agreed and promised that SUB-RECIPIENT shall reimburse STATE for any ineligible or unauthorized expenditure for which Federal, State or Other funds have been claimed and payment received as determined by a State or Federal audit.
3. It is mutually agreed and promised that where reimbursement is made to SUB-RECIPIENT in installments, STATE shall have the right to withhold any installments to make up reimbursement received for any ineligible or unauthorized expenditure until such time as the ineligible claim is made up or corrected by SUB-RECIPIENT.
4. It is further agreed that a clear audit trail must be established to determine costs charged against this agreement. Claims with documents to substantiate all costs will be submitted monthly for any expenses incurred and paid during the prior month.
5. SUB-RECIPIENTS are encouraged to earn income to defray program costs where appropriate. Program Income must be identified in the project agreement and when claiming reimbursements and associated expenses.
6. Definition: Program Income means gross income earned by the subrecipients that is directly generated by a supported activity or earned as a result of the Federal award during the period of performance. See 2 CFR 200.80 for a full definition of Program Income.
7. Reporting requirements and authorized uses of Program Income are found in 2 CFR 200.80, 2 CFR 1201.80 and 2 CFR 200.307.

II. PROPERTY AGREEMENT

1. Property purchased through this project which has an anticipated useful life extending beyond one year, is not consumed in use, is not attached permanently as a non-movable fixture and which costs $5,000 or more, will be recorded in the property management file of the agency in accordance with the State Administrative Manual. The STATE retains the right to inspect and to reclaim custody of any or all of the property described above if, in the opinion of the STATE, the property is not being used as intended; not being used to the capacity that it could be; or being used in a negligent manner.
2. It is mutually agreed and promised by the SUB-RECIPIENT that no property purchased through this project will be conveyed, sold, salvaged, transferred, etc. without the express written approval of the STATE.

III. RECORDS

It is mutually agreed and promised that records of the project, including substantiation for reimbursement, shall be maintained for a period of three years upon reimbursement of final claim voucher and shall be subject to audit during that period.

IV. AUDIT RESPONSIBILITY

All agencies that expend $750,000 or more in Federal awards in a Federal fiscal year must have a single or program specific audit in compliance with the Single Audit Act of 1984(Public Law 98-502). Therefore, funding from this traffic safety grant must be included when a Single Audit is performed. It is the responsibility of the SUB-RECIPIENT agency to insure an accepted copy of this audit is submitted to the STATE. If the SUB-RECIPIENT agency expended < $750,000 in federal funding for the fiscal year, a copy of their most recent financial statement will be forwarded to the STATE.

V. REPORTS

The SUB-RECIPIENT shall submit required reports on the progress of the grant, and shall submit all financial, performance, and other reports required, as a condition of the grant, to the STATE within 30 days after the date of the completion of this agreement. The final report will include a narrative summary of the year including the successes and shortcomings, if any, of the project.

VI. PUBLIC INFORMATION MATERIALS

It is agreed by the SUB-RECIPIENT prior to production of public information materials through this grant project that proofs, scripts or concept will be submitted for STATE approval. Public information materials includes, but not limited to, TV and radio public service announcements, billboards, pamphlets/brochures and posters, and other promotional materials.

VII. COPYRIGHTS AND PATENTS

1. Any copyrightable materials produced in the course of a project may be the property of the STATE and SUB-RECIPIENT agency; however, provisions should be made to obtain for the United States Government, the State Government and its political subdivisions, a royalty-free, nonexclusive and irrevocable license to use in any manner such copyrightable material.
2. The ownership of all rights accruing from any patentable discoveries or inventions resulting from a project should be covered in the agreement. An irrevocable, non-exclusive, nontransferable, and royalty-free license to practice each discovery or invention in the manufacture, use, and disposition, according to law, of any article or material, and in the use of any method developed as a part of the work under the agreement should be obtained for the United States Government, the State Government and its political subdivisions.

VIII. MINORITY BUSINESS ENTERPRISE CERTIFICATION

1. The SUB-RECIPIENT agrees to ensure that the recipients or contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts. Recipients and their contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any subcontracts financed in whole or in part with Federal, State or Other funds.
2. SUB-RECIPIENT will notify the Office of Traffic Safety prior to the announcement or award of any third-party contract.

IX. CERTIFICATION OF NON-DUPLICATION OF GRANT AND MATCHING FUND EXPENDITURES

The SUB-RECIPIENT hereby certifies, as a condition of receiving Federal funds under the above-numbered traffic safety project, that:

1. There are no Federally funded projects currently active or anticipated that would duplicate expenditures for the work to be carried out and reimbursable under this agreement and that
2. The non-Federal funds used to match Federal funds obligated under this project are not being used to match any other Federal funds from any source, and that
3. Any such duplication of Federal fund expenditures subsequently determined by audit will be subject to recovery by the State of Nevada and the United States Government and that
4. Any such duplication of non-Federal matching fund expenditures subsequently determined by audit will subject the Federal funds obligated under this project subject to recovery by the State of Nevada and the United States Government.

X. FEDERAL FUNDING ACCOUNTABILITY AND TRANSPARENCY ACT (FFATA)

The STATE will comply with FFATA guidance, *OMB Guidance on FFATA Subward and Executive Compensation Reporting*, August 27, 2010 (https://www.fsrs.gov/documents/OMB_Guidance_on_FFATA_Subaward_and_Executive_Compensation_Reporting_08272010.pdf) by reporting to FSRS.gov for each sub-grant awarded:

- Name of the entity receiving the award;
- Amount of the award;
- Information on the award including transaction type, funding agency, the North American Industry Classification System code or Catalog of Federal Domestic Assistance number (where applicable), program source;
- Location of the entity receiving the award and the primary location of performance under the award, including the city, State, congressional district, and country; and an award title descriptive of the purpose of each funding action;
- A unique identifier (DUNS);
- The names and total compensation of the five most highly compensated officers of the entity if:
  - (i) The entity in the preceding fiscal year received-
    - (I) 80% or more of its annual gross revenues in Federal awards;
    - (II) $25,000,000 or more in annual gross revenues from Federal awards; and
  - (ii) The public does not have access to information about the compensation of the senior executives of the entity through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934, or section 6104 of the Internal Revenue Code of 1986
- Other relevant information specified by OMB guidance.

XI. THE DRUG-FREE WORKPLACE ACT OF 1988 (41 U.S.C. 8103)

The STATE and each SUB-RECIPIENT will provide a drug-free workplace by:

a. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the SUB-RECIPIENT's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

b. Establishing a drug-free awareness program to inform employees about:
   1. The dangers of drug abuse in the workplace.
   2. The SUB-RECIPIENT's policy of maintaining a drug-free workplace.
   3. Any available drug counseling, rehabilitation, and employee assistance programs.
   4. The penalties that may be imposed upon employees for drug violations occurring in the workplace.
   5. Making it a requirement that each employee engaged in the performance of the grant be given a copy of the statement required by paragraph (a).

c. Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will -
   - Abide by the terms of the statement.
   - Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction.

d. Notifying the agency within ten days after receiving notice under subparagraph (c)(2) from an employee or otherwise receiving actual notice of such conviction.

e. Taking one of the following actions, within 30 days of receiving notice under subparagraph (c)(2), with respect to any employee who is so convicted -
   - Taking appropriate personnel action against such an employee, up to and including termination.
   - Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by Federal, State, or local health, law enforcement, or other appropriate agency.

f. Making a good faith effort to continue to maintain a drug-free workplace through implementation of all of the paragraphs above.

XII. LOBBYING

A. Certification Regarding Federal Lobbying (applies to SUB-RECIPIENT as well as STATE)

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into any cooperative agreement, and the extension, continuation, renewal, amendment, or
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all sub-award at all tiers (including sub-contracts, sub-grants, and contracts under grant, loans, and cooperative agreements) and that all SUB-RECIPIENTs shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this

transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

B. Restriction on State Lobbying (applies to SUB-RECIPIENT as well as STATE)

None of the funds under this program will be used for any activity specifically designed to urge or influence a State or local legislator to favor or oppose the adoption of any specific legislative proposal pending before any State or local legislative body. Such activities include both direct and indirect (e.g., "grassroots") lobbying activities, with one exception. This does not preclude a State official whose salary is supported with NHTSA funds from engaging in direct communications with State or local legislative officials, in accordance with customary State practice, even if such communications urge legislative officials to favor or oppose the adoption of a specific pending legislative proposal.

XIII. CERTIFICATION REGARDING DEBARMENT AND SUSPENSION (applies to SUB-RECIPIENT as well as STATE)

(i) Instructions for Primary Tier Participant Certification

1. By signing and submitting this proposal, the prospective primary tier participant is providing the certification set out below and agrees to comply with the requirements of 2 CFR parts 180 and 1200.
2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective primary tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary tier participant to furnish a certification or an explanation shall disqualify such person from participation in this transaction.
3. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default or may pursue suspension or debarment.
4. The prospective primary tier participant shall provide immediate written notice to the department or agency to which this proposal is submitted if at any time the prospective primary tier participant learns its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
5. The terms *covered transaction, civil judgment, debarment, suspension, ineligible, participant, person, principal, and voluntarily excluded*, as used in this clause, are defined in 2 CFR parts 180 and 1200. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.
6. The prospective primary tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under 48 CFR Part 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
7. The prospective primary tier participant further agrees by submitting this proposal that it will include the clause titled "Instructions for Lower Tier Participant Certification" including the "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction", provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered

transactions and in all solicitations for lower tier covered transactions and will require lower tier participants to comply with 2 CFR parts 180 and 1200.

8. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under 48 CFR Part 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any prospective lower tier participants, each participant may, but is not required to, check the System for Award Management Exclusions website (http://www.sam.gov/)
9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
10. Except for transactions authorized under paragraph 6 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR Part 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal government, the department or agency may terminate the transaction for cause or default.

(ii) ***Certification Regarding Debarment, Suspension, and Other Responsibility Matters-Primary Tier Covered Transactions***

(1) The prospective primary tier participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from particiating in covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

(2) Where the prospective primary tier participant is unable to certify to any of the Statements in this certification, such prospective participant shall attach an explanation to this proposal.

(iii) ***Instructions for Lower Tier Participant Certification***

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below and agrees to comply with the requirements of 2 CFR parts 180 and 1200.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was

erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms *covered transaction, civil judgment, debarment, suspension, ineligible, participant, person, principal, and voluntarily excluded*, as used in this clause, are defined in 2 CFR parts 180 and 1200. You may contact the person to whom this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under 48 CFR Part 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this proposal that it will include the clause titled "Instructions for Lower Tier Participant Certification" including the "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction", without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions and will require lower tier participants to comply with 2 CFR parts 180 and 1200.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under 48 CFR Part 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any prospective lower tier participants, each participant may, but is not required to, check the System for Award Management Exclusions website (http://www.sam.gov/).
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR Part 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension or debarment.

(iv) ***Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions:***

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XIV. <u>BUY AMERICA ACT</u> (applies to <u>SUB-RECIPIENT</u> as well as STATE)

The STATE and each SUB-RECIPIENT will comply with the Buy America Act requirement (23 U.S.C. 313) when purchasing items using Federal funds. Buy America requires a State, or SUB-RECIPIENT, to purchase with Federal funds only steel, iron and manufactured products produced in the United States, unless the Secretary of Transportation determines that such domestically produced items would be inconsistent with the public interest, that such materials are not reasonably available and of a satisfactory quality, or that

inclusion of domestic materials will increase the cost of the overall project contract by more than 25%. In order to use Federal funds to purchase foreign produced items, the State must submit a waiver request that provides an adequate basis and justification for approval by the Secretary of Transportation.

XV. DOMESTIC PREFERENCES FOR PROCUREMENTS

As appropriate and to the extent consistent with law, the subrecipient should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). See 2 CFR 200.322 for additional details.

XVI. PROHIBITION ON USING GRANT FUNDS TO CHECK FOR HELMET USAGE (applies to SUB-RECIPIENT as well as STATE)

The STATE and each SUB-RECIPIENT will not use 23 U.S.C. Chapter 4 grant funds for programs to check helmet usage or to create checkpoints that specifically target motorcyclists.

XVII. POLITICAL ACTIVITY (HATCH ACT) (applies to SUB-RECIPIENT as well as STATE)

The STATE and each SUB-RECIPIENT will comply with provisions of the Hatch Act (5 U.S.C. 1501-1508) which limits the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

XVIII. NONDISCRIMINATION AND EQUITABLE TREATMENT (applies to SUB-RECIPIENT as well as STATE)

The Nevada Office of Traffic Safety has established a goal of reaching Zero Fatalities on our roads as both an objective for the organization and as a framework for all grant activities. As such, the OTS commits to understanding the historic and current barriers to traffic safety as it relates to equity: the idea that, regardless of one's age, race, gender, ability, income, background, or other personal characteristics, all people can be represented in traffic safety initiatives so that achieving Zero Fatalities is possible.

Through this policy position the Office of Traffic Safety encourages all partners and stakeholders to promote safe, fair, and equitable practices with all community members - regardless of race, ethnicity, color, religion, sex, sexual orientation, gender identity, national origin, or other personal demographics.

The STATE highway safety agency and each SUB-RECIPIENT will comply with all Federal statutes and implementing regulations relating to nondiscrimination. ("Federal Non-discrimination Authorities"). These include but are not limited to:

- **Title VI of the Civil Rights Act of 1964** (42 U.S.C.2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color or national origin) and 49 CFR Part 21;
- **Title VII of the Civil Rights Act of 1964** (Prohibits employment discrimination based on race, color, religion, sex and national origin.);
- **The Uniform Relocation Assistance and Real Property Acquisition Policies** Act of 1970, (42 U.S.C. 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- **Federal-Aid Highway Act of 1973**, (23 U.S.C. 324 et seq.), and **Title IX of the Education Amendments of 1972**, as amended (20 U.S.C. 1681-1683 and 1685-1686) (prohibits discrimination on the basis of sex);

• **Section 504 of the Rehabilitation Act of 1973**, as amended (29 U.S.C. 794 et. seq.), as amended, (prohibits discrimination on the basis of disability) 49 CFR Part 27;

• **The Age Discrimination Act of 1975**, as amended (42 U.S.C. 6101 et seq.), (prohibits discrimination on the basis of age);

• **The Civil Rights Restoration Act of 1987**, (Pub. L. 100-209), (broadens scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal aid recipients, SUB-RECIPIENTs and contractors, whether such program or activities are Federally-funded or not);

• **Titles II and III of the Americans with Disabilities Act** (42 U.S.C. 12131-12189) (prohibits discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing) and 49 CFR parts 37 and 38;

• **Executive Order 12898, Federal Actions To Address Environmental Justice in Minority Population and Low-Income Populations** (prevents discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations); and

• **Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency** (guards against Title VI national origin discrimination/discrimination because of limited English proficiency (LEP) by ensuring that funding recipients take reasonable steps to ensure that LEP persons have meaningful access to programs (70 FR 74087-74100).

XIX. POLICY ON SEAT BELT USE (applies to SUB-RECIPIENT as well as STATE)

The STATE and each SUB-RECIPIENT will comply with Executive Order 13043, Increasing Seat Belt Use in the United States, dated April 16, 1997, the recipient is encouraged to adopt and enforce on-the-job seat belt use policies and programs for its employees when operating company-owned, rented, or personally-owned vehicles. The National Highway Traffic Safety Administration (NHTSA) is responsible for providing leadership and guidance in support of this Presidential initiative. For information and resources on traffic safety programs and policies for employers, please contact the Network on Employers for Traffic Safety (NETS), a public-private partnership dedicated to improving the traffic safety practices of employers and employees. You can download information on seat belt programs, costs of motor vehicle crashes to employers, and other traffic safety initiatives at www.trafficsafety.org. The NHTSA website (www.nhtsa.gov) also provides information on statistics, campaigns, and program evaluations and references.

XX. POLICY ON BANNING TEXT MESSAGING WHILE DRIVING (applies to SUB-RECIPIENT as well as STATE)

The STATE and each SUB-RECIPIENT will comply with Executive Order 13513, Federal Leadership On Reducing Text Messaging While Driving, and DOT Order 3902.10, Text Messaging While Driving, sub-recipients are encouraged to adopt and enforce workplace safety policies to decrease crashes caused by distracted driving, including policies to ban text messaging while driving company-owned or rented vehicles, Government-owned, leased or rented vehicles, or privately-owned vehicles when on official Government business or when performing any work or on behalf of the Government. Recipients are also encouraged to conduct workplace safety initiatives in a manner commensurate with the size of the business, such as establishment of new rules and programs or re-evaluation of existing programs to prohibit text messaging while driving, and education, awareness, and other outreach to employees about the safety risks associated with texting while driving.

XXI. PARTICIPATION IN TRAFFIC SAFETY TASK FORCES

At least one SUB-RECIPIENT staff member will attend, in person or by teleconference, traffic safety task force meetings, related to their funded program area, during the year in an effort to gain knowledge and provide input regarding the traffic safety topic discussed. Participation will be recorded in the progress report submitted to the STATE. Teleconference participation is the preferred method of attendance if travel would require an increase usage of funds. Funding for travel to attend the meetings in person will be prior approved by the STATE program manager.

XXII. PARTICIPATION IN GRANT AND PROGRAM DEVELOPMENT

The SUB-RECIPIENT Project Director and Fiscal Officer will attend STATE designated training on grant and/or program development during the grant period.

XXIII. FAILURE TO COMPLY In addition, the SUB-RECIPIENT agrees that if it fails or refuses to comply with these undertakings, the STATE may take any or all of the following actions:

a. Cancel, terminate, or suspend this agreement in whole or part
b. Refrain from extending any further assistance to the SUB-RECIPIENT under the program, until satisfactory assurance of future compliance has been received
c. Refer the case to the Attorney General for appropriate legal proceedings.

Federal awarding agencies, the State, and non-federal entity recipients may terminate awards or parts of an award for specific reasons, including noncompliance with the terms and conditions of a federal award and instances when the federal awarding agency determines that an award no longer effectuates the program goals or agency priorities. See 2 CFR 200.340 for additional information.

XXIV. During the performance of this agreement, the sub-recipient agrees-

a. To comply with all Federal nondiscrimination laws and regulations, as may be amended from time to time;
b. Not to participate directly or indirectly in the discrimination prohibited by any Federal non-discrimination law or regulation, as set forth in appendix B of 49 CFR part 21 and herein;
c. To permit access to its books, records, accounts, other sources of information, and its facilities as required by the State highway safety office, US DOT or NHTSA;
d. That, in the event a sub-recipient fails to comply with any nondiscrimination provisions in this agreement, the State highway safety agency will have the right to impose such agreement sanctions as it or NHTSA determine are appropriate, including but not limited to withholding payments to the sub-recipient under the agreement until the sub-recipient complies; and/or cancelling, terminating, or suspending an agreement, in whole or in part.

THIS ASSURANCE is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property, discounts, or other Federal financial assistance extended after the date hereof to the SUB-RECIPIENT by the Department of Public Safety under the U.S. Department of Transportation under the Highway Safety Programs and other participants in the Highway Safety Programs.

It is mutually agreed between the STATE and the SUB-RECIPIENT that this AGREEMENT OF UNDERSTANDING AND COMPLIANCE shall become effective upon the STATE'S AGREEMENT and issuance of Authorization to Proceed.

SEE ALSO SCHEDULE C - STATE SUPPLEMENT BELOW

Schedule C - State Supplement

Funds cannot be expended prior to receiving a written Authorization to Proceed from the Department of Public Safety -Office of Traffic Safety

1. IF THE SUB-RECIPIENT AGENCY NEEDS TO MAKE ANY REVISIONS TO THIS PROJECT AGREEMENT during the grant period, the SUB-RECIPIENT must notify OTS via a change order and obtain OTS approval. This includes changes in grant personnel, Project Director, or Fiscal Officer; address, email and phone numbers, scope of work of the project; budgetary changes, etc.
2. AS A SUB-RECIPIENT, YOUR AGENCY IS REQUIRED TO CONTRIBUTE MATCHING FUNDS TO THE APPROVED PROJECT. The SUB-RECIPIENT is required to report on or substantiate in-kind or matching contributions on each claim submitted. The Office of Traffic Safety grant program manager assigned to the project can help you with this. Documentation for the match must be available for review upon request. For more information please refer to our Grant Administration Manual located on the Nevada eGrants website: http://egrants.nv.gov; once logged in, click 'My Training Materials' tab.
3. WHEN PURCHASING EQUIPMENT (extrication, video cameras, radar units, etc.), agency should contact State Purchasing to determine the state's contracted price, if applicable: http://purchasing.state.nv.us/. For equipment purchases with a unit price of $5,000 or higher, a Property Acquisition Report must be submitted before submitting a claim for reimbursement. Agency must receive prior written approval from the Office of Traffic Safety before acquiring or disposing of equipment valued at $5,000 or more.
4. PUBLIC INFORMATION AND EDUCATIONAL (PI&E) MATERIALS/PROMOTIONAL ITEMS MUST BE APPROVED BY OTS PRIOR TO PURCHASE. All media activities require prior approval of DPS-OTS and educational material must include the phrase: "Funding provided (in whole or in part) by the Nevada Office of Traffic Safety." *This includes Public Service Announcements, any program artwork*, etc.
5. STATE AND LOCAL AGENCIES SELECTED FOR FEDERAL FUNDING ARE SUBJECT TO FEDERAL SINGLE LINE audit requirements and must submit their most recent audit report to OTS. Nonprofit organizations are required to provide OTS a copy of their most recent audited financial status report prior to issuance of an Authorization to Proceed.
6. SUB-RECIPIENTS THAT RECEIVE OTS GRANT FUNDING FOR PERSONNEL COSTS in their budgets are also required to substantiate the payroll time via an activity report, timesheet, or generally accepted payroll documentation. This is particularly applicable to SUB-RECIPIENT who receive federal funding from more than one source.
7. IN RESPONSE TO THE FEDERAL FUNDING ACCOUNTABILITY AND TRANSPARENCY ACT (FFATA), all recipients of Federal grant funding, where individual awards are $25,000 or more, are required to provide OTS with their unique DUNS number, or Unique Entity Identifier (UEI), before an Authorization to Proceed can be issued. This information must be submitted to OTS via the Application Process in Nevada eGrants.
8. SUB-RECIPIENT IS AND SHALL BE INDEPENDENT and subject only to the terms of the Agreement. Nothing contained in this Agreement shall be deemed or construed to create a partnership or joint venture, to create relationships of an employer-employee or principal-agent, or to otherwise create any liability for the State whatsoever with respect to the indebtedness, liabilities, and obligations of the SUB-RECIPIENT or any other

party. SUB-RECIPIENT shall be solely responsible for, and the State shall have no obligation with respect to: (1) withholding of income taxes, FICA or any other taxes or fees; (2) industrial insurance coverage; (3) participation in any group insurance plans available to employees of the State; (4) participation or contributions by either SUB-RECIPIENT or the State to the Public Employees Retirement system; (5) accumulation of vacation leave or sick leave; or (6) unemployment compensation coverage provided by the State.

9. INSPECTION & AUDIT
   a) Books and Records. Each party agrees to keep and maintain under general accepted accounting principles full, true and complete records, agreements, books, and documents as are necessary to fully disclose to the State or United States Government, or their authorized representatives, upon audits or reviews, sufficient information to determine compliance with all state and federal regulations and statutes.
   b) Inspection & Audit. Each party agrees that the relevant books, records (written, electronic, computer related or otherwise), including but not limited to relevant accounting procedures and practices of the party, financial statements and supporting documentation, and documentation related to the work product shall be subject, at any reasonable time, to inspection, examination, review, audit, and copying at any office or location where such records may be found, with or without notice by the Office of Traffic Safety, the Division of Internal Audits, the Legislative Counsel Bureau, State Auditor, Employment Security, the Department of Administration, Budget Division, the Nevada State Attorney General's Office or its Fraud Control Units, the State Legislative Auditor, and with regard to any federal funding, the relevant federal agency, the Comptroller General, the General Accounting Office, the Office of the Inspector General, or any of their authorized representatives.
   c) Period of Retention. All books, records, reports, and statements relevant to this Agreement must be retained a minimum three years as part of this Agreement. The retention period runs from the date of completion or termination of this Agreement. Retention time shall be extended when an audit is scheduled or in progress for a period reasonably necessary to complete an audit and/or to complete any administrative and judicial litigation which may ensue.

10. SUBRECIPIENT AGREES TO ALLOW AN OUTSIDE EVALUATOR of the Office of Traffic Safety's choosing to evaluate the funded project at OTS's expense if requested. The evaluation may be conducted in-person or conducted virtually. Subrecipient will put systems in place which allow tracking and reporting on activities and collection of required data. Subrecipient will provide access to data collected, implementation of project/program, and provide information on all functions and processes in order to have project evaluated for compliance and success. If the evaluation is conducted virtually the Subrecipient agrees to furnish digital copies of any requested records in advance of the scheduled evaluation. Future funding may depend upon the implementation of new tasks assigned to ensure efficient program operation.

11. INDEMNIFICATION Neither party waives any right or defense to indemnification that may exist in law or equity.

12. LIMITED LIABILITY The parties will not waive and intend to assert available NRS chapter 41 liability limitations in all cases. Liability of both parties shall not be subject to punitive damages.

13. INDEPENDENT PUBLIC AGENCIES The parties are associated with each other only for the purposes and to the extent set forth in this Agreement, and in respect to performance of services pursuant to this Agreement, each party is and shall be a public or non-profit agency separate and distinct from the other party and, subject only to the terms of this Agreement, shall have the sole right to supervise, manage, operate, control, and direct performance of the details incident to its duties under this Agreement. Nothing contained in this Agreement shall be deemed or construed to create a partnership or joint venture, to create relationships of an employer-employee

or principal-agent, or to otherwise create any liability for one agency whatsoever with respect to the indebtedness, liabilities, and obligations of the other agency or any other party.

14. SEVERABILITY If any provision contained in this Agreement is held to be unenforceable by a court of law or equity, this Agreement shall be construed as if such provision did not exist and the non-enforceability of such provision shall not be held to render any other provision or provisions of this Agreement unenforceable.

15. ASSIGNMENT Neither party shall assign, transfer or delegate any rights, obligations or duties under this Agreement without the prior written consent of the other party.

16. OWNERSHIP OF PROPRIETARY INFORMATION Unless otherwise provided by law any reports, histories, studies, tests, manuals, instructions, photographs, negatives, blue prints, plans, maps, data, system designs, computer code (which is intended to be consideration under this Agreement), or any other documents or drawings, prepared or in the course of preparation by either party in performance of its obligations under this Agreement shall be the joint property of both parties.

17. PUBLIC RECORDS Pursuant to NRS 239.010, information or documents may be open to public inspection and copying. The parties will have the duty to disclose unless a particular record is made confidential by law or a common law balancing of interests.

18. CONFIDENTIALITY Each party shall keep confidential all information, in whatever form, produced, prepared, observed or received by that party to the extent that such information is confidential by law or otherwise required by this Agreement.

19. PROPER AUTHORITY The parties hereto represent and warrant that the person executing this Agreement on behalf of each party has full power and authority to enter into this Agreement and that the parties are authorized by law to perform duties and obligations specified in this Agreement.

20. COMPLIANCE WITH LAW SUB-RECIPIENT shall comply with all applicable Federal laws, State laws, local jurisdiction ordinances and executive branch directives in effect or hereafter established, including, without limitation, health and safety directives issued by the Governor of Nevada and local jurisdictions.

21. GOVERNING LAW; JURISDICTION This Agreement and the rights and obligations of the parties hereto shall be governed by, and construed according to, the laws of the State of Nevada. The parties consent to the jurisdiction of the Nevada district courts for enforcement of this Agreement.

22. This Agreement may be suspended or terminated in whole or in part in any of the following situations by:
    a) The STATE when the SUB-RECIPIENT has materially failed to comply with the terms and conditions of the grant or when the STATE determines that the performance of the project is not in the best interest of the STATE;
    b) The STATE when there is reasonable cause, such as results from the Single Audit Report required by OMB (old A-133) that puts in question the SUB-RECIPIENT'S ability to administer the Agreement or pay Agreement costs before claiming reimbursement; failure to pay Agreement costs before claiming reimbursement, a criminal indictment or civil judgment; deliberate false statements in any communication to the STATE regarding the Agreement , and/or deliberate failure to follow Agreement objectives and activities without seeking a change in the AGREEMENT with the STATE.
    c) The STATE and the SUB-RECIPIENT by mutual agreement (if the STATE and the SUB-RECIPIENT cannot reach an agreement, the STATE reserves the right to unilaterally terminate the grant); or
    d) The SUB-RECIPIENT on written notice to the STATE setting forth the reasons for such action, the effective date, and, in the case of partial termination, the portion to be terminated or suspended. If the

STATE determines that the remaining portion of the grant award will not accomplish the purposes of the grant, it may choose to suspend or terminate the entire grant project.

23. This Agreement may be terminated by either party prior to the date set for above, provided that termination shall not be effective until thirty (30) calendar days after the party has served written notice upon the other party. This Agreement may be terminated by mutual consent of both parties or unilaterally by either party without cause. The parties expressly agree that this Agreement shall be terminated immediately if for any reason federal, state and/or other funding ability to satisfy this Agreement is withdrawn, limited, or impaired.

24. The STATE may terminate this Agreement, and the SUB-RECIPIENT waives any and all claim(s) for damages, effective immediately upon receipt of written notice, or any date specified therein, if for any reason the STATE'S funding from federal, state and /or other sources is not appropriated or is withdrawn, limited, or impaired.

25. In accordance with 23 CFR Part 1300 Appendix C, the accepting agency, as a representative of its political subdivision, requests the benefit of the Nevada Department of Public Safety, Office of Traffic Safety coordination of paid media and marketing to capitalize on the high visibility enforcement and education model necessary to change driver behavior. High visibility enforcement activities will include local jurisdictions and will be coordinated statewide. The Nevada Department of Public Safety, Office of Traffic Safety will coordinate paid and earned media statewide to complement the enforcement initiative outlined in this project agreement. The outreach may include the following: TV spots, radio spots, online ads, billboards, print ads, press releases, posters, flyers, and/or outreach events. By signing this agreement, the project director signifies his/her understanding of the outreach and enforcement component of the mobilization and approves the use of these techniques within his/her jurisdiction.

26. In accordance with 23 CFR Part 1300 Appendix C, the accepting agency, as a representative of its political subdivision, requests the benefit of the Nevada Department of Public Safety's Highway Patrol to aid in traffic and high visibility enforcement necessary to change driver behavior. These efforts will include local jurisdictions and will be coordinated statewide. By signing this agreement, the project director signifies his/her understanding that coordinating resources with the Nevada Highway Patrol benefits the political subdivision and approves the participation of the Nevada Highway Patrol within his/her jurisdiction.

It is mutually agreed between the STATE and the SUB-RECIPIENT agency that this SCHEDULE C - STATE SUPPLEMENT shall become effective upon the STATE'S AGREEMENT and issuance of Authorization to Proceed.

May 2021

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
14.a

Subject:
For Possible Acton: Approve Detention Facility Inspection Report submitted by Comm. Hockaday.

Summary:
NRS 211 requires the Board of Commissioners to inquire to the activities and operations of the Jail on a quarterly basis. Commissioner Hockaday has been appointed to be the BOCC representative to conduct the review. The report form is provided by the Insurance Pool.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

- - Jail Inspection Report of December 2021
- - Staff Report (Sheriff Frank Hunewill)

DETENTION FACILITY INSPECTION REPORT

Facility Name:	Lyon County Jail
Location:	911 Harvey Way, Yerington, NV
Jail Administrator:	Captain Clanton
Sheriff / Chief:	Sheriff Hunewill

Inspection Date: 12/22/21	Inspected By: David Hockaday
Year Built: 2013	Renovation Dates:

Maximum Designed Jail Capacity:	Current Jail Capacity: 184
Average Daily Jail Capacity Past 12 Months: 100	

FACILITY MANAGEMENT

Does the facility have a jail operations policy and procedure manual? ☒ Yes ☐ No

1. Is the jail operations manual reviewed and updated at least annually? ☒ Yes ☐ No
2. Have the jail operations manual been reviewed by the jail's legal counsel? (e.g. DA) ☒ Yes ☐ No
3. Does the jail operations manual contain the following policy and procedures?
   a. Medical intake ☒ Yes ☐ No
   b. Suicide prevention ☒ Yes ☐ No
   c. Mental illness ☒ Yes ☐ No
   d. Strip search ☒ Yes ☐ No
4. Is jail operation manual distributed to all staff? ☒ Yes ☐ No
5. Is regular training conducted on policy and procedures? ☒ Yes ☐ No

Staffing levels:

1. Adequate personnel to provide 24 hour supervision covering all posts? ☐ Yes ☒ No

Arrestee intake & screening procedures:

1. Are intake officers trained to recognize suicidal tendencies, mentally ill, developmentally disabled, or emotionally disturbed arrestee? ☒ Yes ☐ No
2. Are intake officers trained on medical screening for medical services? ☒ Yes ☐ No
3. Are intake officers trained to identify substance abusers, drunks and addicts? ☒ Yes ☐ No
4. Are intake officers trained on use of force & restraints? ☒ Yes ☐ No
5. Are intake officers trained on searches and strip searches? ☒ Yes ☐ No
   a. Does policy require the documentation of all strip searches, including documentation of justification? ☒ Yes ☐ No
6. Is all training adequately documented? ☒ Yes ☐ No

COMMENTS

Lyon County Sheriff's Office is still experiencing a personnel shortage. Hopefully, this will be addresses a our upcominng budget meeting..

DETENTION FACILITY INSPECTION REPORT

JAIL SECURITY

1.	Are detainees searched prior to exiting and entering the jail?	☒ Yes ☐ No
2.	Does the facility have and use audio/video system 24 hours/day?	☒ Yes ☐ No
3.	Are all locks, doors, bars, windows, and other security equipment frequently inspected?	☒ Yes ☐ No
4.	Are all unoccupied cells and rooms kept locked at all times?	☒ Yes ☐ No
5.	Is a master population record maintained?	☒ Yes ☐ No
6.	Are there policy and procedures to check for contraband in the jail environment?	☒ Yes ☐ No
7.	Are eating utensils accounted for after each meal?	☒ Yes ☐ No
8.	Is a physical head count made and recorded?	☒ Yes ☐ No
9.	Are keys not in use stored in a secure key locker?	☒ Yes ☐ No
	a. Is a record of all keys inventoried and issued maintained?	☒ Yes ☐ No
	b. Is there an extra set of emergency keys accessible to designated jail staff?	☒ Yes ☐ No
10.	Are weapons prohibited in the secure section of the jail?	☒ Yes ☐ No
	a. Are weapons secured outside of the security area?	☒ Yes ☐ No
	b. Are reserve firearms, ammunition, chemical agents, etc. stored in a secure area?	☒ Yes ☐ No

COMMENTS

SAFETY

1.	Does the facility have an automatic fire alarm and smoke detection system?	☒ Yes ☐ No
2.	Are extinguishers readily accessible to staff but not detainees?	☒ Yes ☐ No
3.	Are extinguishers examined at least once a year and tagged with dates of inspection?	☒ Yes ☐ No
4.	Are all jail personnel familiar with the operation of all types of extinguishers in the jail?	☒ Yes ☐ No
5.	Does the jail have a posted fire plan and evacuation procedures?	☒ Yes ☐ No
6.	Are fire drills and evacuation drills held quarterly and the records of such maintained?	☐ Yes ☒ No
7.	Is smoking prohibited or confined to special areas?	☒ Yes ☐ No
8.	Are noncombustible containers provided for smoking materials and other combustible refuse?	☒ Yes ☐ No
9.	Are all emergency exits known to jail personnel and exit keys immediately available?	☒ Yes ☐ No
10.	Are there two exits from each housing area or cell block?	☒ Yes ☐ No
	a. Are all means of egress kept clean and open?	☒ Yes ☐ No
11.	Does the facility have emergency lighting, power and communications capabilities?	☒ Yes ☐ No
12.	Is there a written plan for release and security of inmates from locked areas in emergencies?	☒ Yes ☐ No

COMMENTS

No change to the evacuation situation. Inmate safety and security concerns prohibit routine evacuation exercises.

DETENTION FACILITY INSPECTION REPORT

MEDICAL

1. Are medical, dental and mental health services available? ☒ Yes ☐ No
2. Are professional medical, dental or mental health services secured through agreements with local and regional providers or independent contracts? ☒ Yes ☐ No
3. Is jail staff prohibited from recommending or furnishing advice concerning medical, dental and mental health clinical judgments? ☒ Yes ☐ No
4. Do all inmates, without exception, have access to 24-hour emergency medical care?
5. Are medical services trainings provided for all staff through a qualified health authority? ☒ Yes ☐ No
6. Does medical services training include:
   a. Recognition of signs and symptoms? ☒ Yes ☐ No
   b. First Aid and Cardio-pulmonary resuscitation (CPR)? ☒ Yes ☐ No
   c. Methods of obtaining assistance? ☒ Yes ☐ No
   d. Transfer to appropriate medical facilities? ☒ Yes ☐ No

COMMENTS

HEALTH AND SANITATION

1. Do staff and other appropriate personnel conduct and document timely sanitation inspections? ☒ Yes ☐ No
2. Does the facility have adequate water supply? ☒ Yes ☐ No
3. Is drinking water accessible to all inmates? ☒ Yes ☐ No
4. Are plumbing fixtures (i.e., toilets, sinks, etc.) clean, sanitary, and properly maintained? ☒ Yes ☐ No
5. Are all floors, walls, ceilings, windows, door, etc. of the structure properly maintained, clean and free from offensive odors? ☒ Yes ☐ No
6. Is there a preventative maintenance program established? ☒ Yes ☐ No
7. Are all containers, storage areas, and surrounding premises clean and free of vermin? ☒ Yes ☐ No
8. Are there written policies and procedures for adequate disposal of liquid and solid wastes, such as chemicals, greases, oils, etc.? ☒ Yes ☐ No
9. Are cleaning supplies/facilities clean, well vented, and appropriately stored? ☒ Yes ☐ No
10. Are facility garbage, trash, and rubbish collected and removed regularly? ☒ Yes ☐ No
11. Does the facility have adequate heating and cooling?
12. Is mechanical ventilation or cooling systems clean and properly maintained? ☒ Yes ☐ No
13. Where laundry facilities are provided:
    a. Is there adequate laundry equipment to insure ample quantities of clean clothing, bed linens, and towels? ☒ Yes ☐ No
    b. Is the laundry well maintained and clean, with exterior ventilation for dryers? ☒ Yes ☐ No
14. Are beds, bedding and clothing in good repair, clean, and properly stored? ☒ Yes ☐ No

COMMENTS

DETENTION FACILITY INSPECTION REPORT

FOOD SERVICES

1. Are there policy and procedures covering safe food handling? ☒ Yes ☐ No
2. Are meals of sufficient nutritional value? ☒ Yes ☐ No
3. Are meals served at reasonable intervals? ☒ Yes ☐ No
4. Are there policy and procedures covering special dietary needs? ☒ Yes ☐ No
5. Are ranges, stoves, and ovens equipped with accurate thermostats or temperature gauges? ☒ Yes ☐ No
6. Are refrigerators and freezers equipped with accurate thermometers? ☒ Yes ☐ No

COMMENTS

INMATE RIGHTS

1. Are inmates provided with written rules and regulations concerning conduct and behavior? ☒ Yes ☐ No
   a. Does facility administrator acknowledge inmates rights to basic medical care? ☒ Yes ☐ No
   b. Does management recognizes inmate's rights of protection from personal abuse, injury and disease? ☒ Yes ☐ No
   c. Does the facility have a program to provide regular exercise for inmates? ☒ Yes ☐ No
   d. Do reading materials include applicable law library made available to inmates? ☒ Yes ☐ No
   e. Do inmates have formal means by which to voice complaints and grievances? ☒ Yes ☐ No
2. Are rules and regulations provided in English and Spanish? ☒ Yes ☐ No
3. Does the facility administrator review inmate's grievances? ☒ Yes ☐ No

COMMENTS

We must address the new Bail Reform Legislation at our next budget meeting.

Follow-up Information for Commissioner Hockaday's Jail Inspection report dated 12/21/2021.

Commissioner Hockaday conducted a Jail Inspection on December 21, 2021. One of the areas indicated on the report has to do with staffing levels. Specifically worded as follows: "Adequate personnel to provide 24 hour supervision covering all posts". This rating question is rather general and can be interpreted a number of different ways. The answer to the question was "No" I believe there is further explanation warranted in regards to this response.

1. If you are talking about supervision from a Law Enforcement prospective and having 24/7 supervision at a Sergeant level or above for the sworn and civilian staff responsible for running the jail we do not have 24/7 coverage. We are lacking supervision on some of the evening shifts.
2. The shear design of the facility does not allow 24/7 supervision of the inmates housed in the facility. There are no cameras inside the individual cells, once someone is inside the individual cell they cannot be seen unless you physically go to cell and visually see them. We conduct regular cell checks by sworn staff to ensure the safety and security of the inmates. By law we cannot have cameras in the cells. The only way to have 24/7 supervision would be to increase staffing levels to run the facility as a direct supervision facility. (We are not advocating for that).
3. At times, due to staffing levels we are required to pull the upstairs observation Control Room Operator out of the upstairs control room to help in the lower control room. These instances are sporadic and not done on a daily basis. The upstairs CRO is the person primarily responsible for indirect supervision of the inmates either visually (by looking into the pods through observation glass or through the cameras and monitoring system setup in the facility. When the CRO is required to leave the upstairs post they have the same indirect observation capabilities through the video system in the downstairs control room.

Commissioner Hockadays report is accurate in terms of the generality of the question as far as direct supervision on 24/7 basis. We do have indirect supervision available for most of the time. If we were able to keep a Control Room Operator upstairs 24/7, that was solely responsible of observation we could maintain a more consistent indirect supervision status without interruptions.

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
14.b

Subject:
For Possible Action: Review and accept claims and financial reports.

Summary:
Per NRS 244.210, the Board of Commissioners approves claims paid by the Comptroller's office.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Approve claims as presented. Any claim being refused will be presented separately.

ATTACHMENTS

- - Cash Report 1-15-22
- - Claims Report 1-1-22 to 1-15-22

CASH REPORT

January 15, 2022

LYON COUNTY	BALANCE
Governmental Funds	
General	13,549,658.46
Park Construction Tax	766,831.41
Cooperative Extension	437,766.57
Unemployment	439,940.56
Room Tax	121,550.06
County Stabilization	2,700,000.00
Aid to Domestic Violence	95.00
Vehicle Acquisition	134,206.40
Fair and Rodeo	169,265.28
Justice Court Special Assessment	981,232.40
District Court Restricted Fees	785,459.66
Juvenile Probation Special Assessment	61,032.37
Library Gift	9,895.76
Western Nevada Regional Youth Center	1,338,737.46
Mining Claim Map	14,414.07
911 Surcharge	635,787.64
Animal Control Donations	38,659.62
Road	349,365.68
R T C	14,605,182.85
Road Improvement	1,745,498.86
General Indigent	190,044.32
Medical Indigent	3,058,258.43
Senior Services	279,466.20
Senior Services Donations	112,636.36
Capital Improvements	15,600,796.29
Subtotal Governmental Funds	**58,125,781.71**
Enterprise Funds	
Dayton Water Utility	12,808,994.96
Dayton Sewer Utility	14,395,739.31
Subtotal Enterprise Funds	**27,204,734.27**
Component Unit Funds	
Mason Valley Mosquito Control District	737,126.58
Central Lyon County Vector Control District	371,358.15
Walker River Weed Control District	183,930.93
Silver Springs General Improvement District	3,624,875.52
Willowcreek General Improvement District	571,749.02
Subtotal Component Unit Funds	**5,489,040.20**
Total Lyon County	**90,819,556.18**

CUSTODIAL FUNDS	BALANCE
DNA Testing	1,248.00
Mason Valley Swimming Pool District	2,376,093.93
Silver Springs/Stagecoach Hospital	1,760,369.52
Fernley Swimming Pool District	2,426,159.96
City of Fernley	999,491.11
Mason Valley Fire Protection District	.
General Fund	150,194.81
Ambulance Fund	913,167.83
Acquisition Fund	743,628.68
Emergency Fund	15,715.50
North Lyon County Fire Protection District	195,974.85
Smith Valley Fire Protection District	
General Fund	526,278.71
Emergency Fund	343,585.83
Acquisition Fund	1,099,176.60
Stagecoach General Improvement District	9,610.78
South Lyon Hospital District	1,063,965.91
State of Nevada	447,241.77
City of Yerington	36,977.83
Fish and Game	6,285.37
Walker River Irrigation District	223,944.83
Range Improvement	380.32
Lyon County Bond	498,885.87
Coroner Estate Proceeds	3,389.96
County Trust Property & Inmate Trust	275,603.13
Social Security Payees/Public Guardianships	217,145.92
Central Lyon County Fire Protection District	
General Fund	444,998.87
Ambulance Fund	57,303.61
Carson Water Sub-Conservancy District	24,531.11
Dayton Valley Ground Water	2,411.47
Smith Valley Artesia	9,454.14
Mason Valley Artesia	54,513.73
Churchill Valley Ground Water	654.73
Truckee Carson Irrigation District	50,105.83
Fernley Ground Water	2,554.23
Lyon County School District	
General Fund	1,488,736.45
Debt Service Fund	1,154,877.06
Total Custodial Funds	**17,624,658.25**

(cash balances with a debit balance are overdrawn (negative cash)

SUMMARY	
Lyon County	90,819,556.18
Custodial Funds	17,624,658.25
Unallocated Cash	
Unapportioned Secured Taxes	-
Unapportioned Unsecured Taxes	-
Unapportioned Purchase Cards	(6,013.99)
Unapportioned Interest	-
TOTAL	**108,438,200.44**

BANK ACCOUNTS AND PETTY CASH	
Wells Fargo Bank Checking	54,662,691.82
Local Government Investment Pool	53,754,271.29
Inmate Trust	11,379.33
Fernley Swimming Pool Imprest	300.00
Dayton Utilities Imprest	500.00
Silver Springs GID Imprest	500.00
Petty Cash	8,558.00
TOTAL	**108,438,200.44**

CLAIMS REPORT
JANUARY 1 THROUGH JANUARY 15, 2022

LYON COUNTY	BILLS	PAYROLL
Governmental Funds		
General	668,416.70	1,157,983.38
Employees Benefits		
Park Construction Tax		
Co-Op Extension	783.32	
Unemployment		
Room Tax	3,536.96	
Aid to Domestic Violence	445.00	
Vehicle Acquisition		
Fair and Rodeo		
Capital Improvements	60,763.00	
Justice Court Special Assessment	525.00	
District Court Restricted Fees		
Juvenile Probation Special Assessment		792.30
County Library Gift		
Western Regional Youth Facility	6,143.61	70,011.55
911 Surcharge	112,867.66	
Mining Claim Map		
Road	117,037.63	58,192.73
R T C	65.00	
Road Improvement	1,087.87	
General Indigent	33,590.47	67,604.17
Medical Indigent	106,621.22	9,264.91
Senior Services	31,490.86	62,317.07
Senior Services Donations	777.54	
Animal Control Donations		
Enterprise Funds		
Dayton Water Utility	89,585.34	68,039.58
Dayton Sewer Utility	48,910.63	44,918.73
Component Unit Funds		
Mason Valley Mosquito Control District	55.35	4,326.96
Central Lyon Vector Control District		
Walker River Weed Control District	155.00	
Silver Springs General Improvement District	10,908.74	
Willowcreek General Improvement District	24,000.00	
Subtotal	**1,317,766.90**	**1,543,451.38**

TRUST AND AGENCY	BILLS	PAYROLL
DNA Testing	1,168.00	
Mason Valley Swimming Pool District	2,205.69	129.18
Silver Springs/Stagecoach Hospital	4,083.77	3,162.43
Fernley Swimming Pool	15,824.58	14,137.70
City of Fernley	583,982.69	
Mason Valley Fire Protection District	23,990.63	38,504.79
North Lyon County Fire Protection District	163,190.41	
Smith Valley Fire Protection District	15,041.50	2,628.56
Stagecoach General Improvement District	23,689.24	
South Lyon Hospital District	103,422.08	
State of Nevada	1,116,476.55	
City of Yerington	19,414.85	
Fish and Game		
Walker River Irrigation District	66,094.30	
Range Improvement		
Lyon County Bond		
Coroner Estate Proceeds		
County Trust Property		
Social Security Payee Program	7,117.90	
Central Lyon County Fire Protection District	353,389.11	
Carson Water Sub-Conservancy District	49,490.32	
Dayton Valley Ground Water	4,197.20	
Smith Valley Artesia	15,403.72	
Mason Valley Artesia	6,879.72	
Churchill Valley Ground Water	1,709.72	
Truckee Carson Irrigation District	26,623.66	
Fernley Ground Water	4,582.30	
Lyon County School District	1,543,678.72	
Subtotal	**4,151,656.66**	**58,562.66**

SUMMARY

Lyon County	1,317,766.90	1,543,451.38
Trust & Agency	4,151,656.66	58,562.66
TOTAL	**5,469,423.56**	**1,602,014.04**

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
14.c

Subject:
For Possible Action: Review and accept travel claims.

Summary:
The Board of Commissioners has requested to review travel claims paid by the Comptroller's office.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Approval Recommended

ATTACHMENTS

- - Travel Report 1-1-22 to 1-15-22

LYON COUNTY TRAVEL REPORT

January 1-15, 2022

Department / Name	Description	Amount
Sheriff		
Marty Dues	NITV CVBA Kissimmee, FL 01/02-01/08/2022 -Flight	972.25
Michael Messmann	NITV CVBA Kissimmee, FL 01/02-01/08/2022 -Flight	972.25
Christopher Bixby	ELITE Academy Midway, UT 02/06-02/12/2022 -Registration, Flight, Lodging, Per Diem	2,810.25
Mitchell Brantingham	Management Supervision & Leadership Mesquite, NV 01/09-01/14/2022 -Registration	625.00
Jeffrey Miller	Management Supervision & Leadership Mesquite, NV 01/09-01/14/2022 -Registration	625.00
Brett Willey	Management Supervision & Leadership Mesquite, NV 01/09-01/14/2022 -Registration	625.00
Nicholas Walker	Handgun Instructor Course Reno, NV 03/28-04/01/2022 -Registration	750.00
Brian Kharrl	K9 Training Raleigh, NC 11/13/21-12/23/2021 -Car Rental	2,621.62
Colleen Straub	Dayton Post Office 10/01/21 & 12/29/2021 -Mileage	11.20
Tyrell Joyner	Arrest & Control Instructor Reno, NV 05/02-05/06/2022 -Registration	750.00
Tyrell Joyner	Drug Unit Supervisor Las Vegas, NV 01/23-01/26/2022 -Per Diem	205.00
District Attorney		
Tiffany Rodriguez	Training Dayton, NV 01/04-01/05/2022 -Mileage	122.85
Library		
Darby Porter	Travel Nov-Dec 2021 to Cover Branch Yerington, NV -Mileage	141.12
Recorder		
Margie Kassebaum	PRIA Conference Phoenix, AZ 02/14/2022 -Flight	264.79
Planning		
Tammy Hendrix	Planning Commission Meeting 12/04/2021 -Mileage	35.84
Loretta Sell	Planning Commission Meeting 12/04/2021 -Mileage	36.96
Audrey Allan	Planning Commission Meeting 01/11/2022 -Mileage	55.81
Michael Carlson	Planning Commission Meeting 01/11/2022 -Mileage	54.99
Tammy Hendrix	Planning Commission Meeting 01/11/2022 -Mileage	37.44
Loretta Sell	Planning Commission Meeting 01/11/2022 -Mileage	38.61
Constantine Kuzmicki	Planning Commission Meeting 01/11/2022 -Mileage	32.76
Commissioner		
Ken Gray	Travel Sept-Dec 2021 -Mileage	283.92
		10,128.16

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
15.a

Subject:
For Possible Action: Appoint a member to the Smith Valley Advisory Board, with a term expiring December 31, 2023.

Summary:
There is one seat open on the Smith Valley Advisory Board. Rodger Rodarte's term expired in 2021 and is reapplying.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

- - Roger Rodarte, Application
- - Michael Palmer, Application

Lyon County
Application to Serve on Board or Commission

Please note that all information contained in this application is considered public record and available for public review.

Check the Board or Commission for which you are applying:

- ☐ 911 Surcharge Committee
- ☐ Advisory Board to Manage Wildlife
- ☐ Animal Control Advisory Board
- ☐ Central Lyon Park & Recreation Board
- ☐ Central Lyon Vector Control Board
- ☐ Dayton Regional Advisory Board
- ☐ Dayton Valley Events Center Board
- ☐ Debt Management Commission
- ☐ Library Board of Trustees
- ☐ Lyon County Fair Board
- ☐ Mason Valley Advisory Board
- ☐ Mason Valley Mosquito Abatement
- ☐ Mound House Advisory Board
- ☐ Planning Commission
- ☐ Regional Transportation Board
- ☐ Room Tax Board
- ☐ Silver City Cemetery Board
- ☐ Silver City Town Advisory Board
- ☐ Silver Springs Advisory Board
- ☑ Smith Valley Advisory Board
- ☑ Smith Valley Cemetery Board
- ☐ Smith Valley Park & Recreation Board
- ☐ Stagecoach Advisory Board
- ☐ Walker River Weed Control Board

Contact Information:

Name: Roger [illegible]

Address: [illegible] Smith, NV 89430

Phone: Home (775) 465-[illegible] – Cel (775) [illegible] Email: [illegible]@yahoo.com

How long have you been a resident of Lyon County? 7 years

Are you currently registered to vote? Yes ☑ No ☐

How many board or commission meetings have you attended in the last year? 0.0

Have you ever been convicted of a felony or misdemeanor other than minor traffic violations?
Yes ☐ No ☑

If yes please list conviction dates and nature:

List boards or commissions you presently serve on or have served on in the past including dates of service: As Decon and Board member for Valley Christian Fellowship in Gardnerville, NV 1999 to 2004

Same for the River ministries in Walker, CA From April of 2004 to Present.

Education and/or training relevant to the position you are applying for:

High School Graduate in 1979

I have completed some Supervisor courses - for work - and train New Employees for Variety jobs and tasks

Explain briefly why you would like to be appointed to this board or commission:

I plan on living in this Community for the Rest of my life, I would like to be more involved, in this community of Smith Valley. I would like to see the Community thrive for future generations.

By signing this application you agree to attend training classes as scheduled.

I certify that, to the best of my knowledge, the information I provided in this application is true. If the information provided is false or incomplete, it shall be sufficient cause for disqualification or removal, if appointed.

Signature: _____ Date: 12/12/2021

Please return the application to:

Email: elopez@lyon-county.org
Or
Lyon County Manager's Office
27 South Main Street
Yerington, Nevada 89447
Office: (775)463-6531; Fax: (775)463-6500

Notice:

At the meeting to consider your application for appointment to the Smith Valley Advisory Board Cemetery Board, the Board or Commission, or the County Commission, may consider your character, alleged misconduct, professional competence, or physical or mental health. This notice is provided pursuant to NRS 241.031 and 241.033. The topics of discussion will relate to your ability to serve in the position for which you have applied. If the Advisory Board of County Commission desires to close the meeting, they must allow you to: (a) attend the closed meeting or that portion of the closed meeting during which the character, alleged misconduct, professional competence, or physical or mental health of the person is considered; (b) have an attorney or other representative of the person's choosing present with the person during the closed meeting; and (c) present written evidence, provide testimony and present witnesses relating to the character, alleged misconduct, professional competence, or physical or mental health of the person to the public body during the closed meeting. You will not receive any additional notice, and by signing this application you hereby agree to waive any right to future notice pursuant to NRS Chapter 241.

Signature: _____ Date: 12/12/2021

Name: Roger Roberts

Lyon County
Application to Serve on an Advisory Board

Please note that all information contained in this application is considered public record and available for public review.

Check the Board or Commission for which you are applying:

- ☐ 911 Surcharge Committee
- ☐ Advisory Board to Manage Wildlife
- ☐ Animal Control Advisory Board
- ☐ Central Lyon Park & Recreation Board
- ☐ Central Lyon Vector Control Board
- ☐ Dayton Regional Advisory Board
- ☐ Dayton Valley Events Center Board
- ☐ Debt Management Commission
- ☐ Library Board of Trustees
- ☐ Lyon County Fair Board
- ☐ Mason Valley Advisory Board
- ☐ Mason Valley Mosquito Abatement
- ☐ Mound House Advisory Board
- ☐ Planning Commission
- ☐ Regional Transportation Board
- ☐ Room Tax Board
- ☐ Silver City Cemetery Board
- ☐ Silver City Advisory Board
- ☐ Silver Springs Advisory Board
- ☒ Smith Valley Advisory Board
- ☐ Smith Valley Park & Recreation Board
- ☐ Stagecoach Advisory Board
- ☐ Walker River Weed Control Board

Contact Information:

Name: Michael Palmer

Address: 111 Quinn Way Wellington NV 89444

Phone: 310 489-6453 Email: mikepalmer161@Gmail.com

How long have you been a resident of Lyon County? 1 year

How many board or commission meetings have you attended in the last year? 0

List boards or commissions you presently serve on or have served on in the past including dates of service:

HOA President - 1984-85, Norton NJ

Prospectors N/C President 2019-2021

Education and/or training relevant to the position you are applying for:

Education, As a Gaffer on TV-Film + Commercials I have experience working directly with Producers & keeping my crews Workers to meet production needs.

Explain briefly why you would like to be appointed to this board or commission:

I would like to be active in the Community

I certify that, to the best of my knowledge, the information I provided in this application is true. If the information provided is false or incomplete, it shall be sufficient cause for disqualification or removal, if appointed. I acknowledge that, if appointed, I am required to attend all necessary training in a timely manner. I am aware that failure to complete all required training is grounds for removal from the advisory board.

Signature: [signature] Date: 1-12-2022

Notice:
At the meeting to consider your application for appointment, the Board or Commission, may consider your character, alleged misconduct, professional competence, or physical or mental health. This notice is provided pursuant to NRS 241.031 and 241.033. The topics of discussion will relate to your ability to serve in the position for which you have applied. If the Advisory Board of County Commission desires to close the meeting, they must allow you to: (a) attend the closed meeting or that portion of the closed meeting during which the character, alleged misconduct, professional competence, or physical or mental health of the person is considered; (b) have an attorney or other representative of the person's choosing present with the person during the closed meeting; and (c) present written evidence, provide testimony and present witnesses relating to the character, alleged misconduct, professional competence, or physical or mental health of the person to the public body during the closed meeting. You will not receive any additional notice, and by signing this application you hereby agree to waive any right to future notice pursuant to NRS Chapter 241.

Signature: [signature] Date: 1-12-2022

Please return the application to:

Lyon County Manager's Office
ATTN: Erin Lopez
27 South Main Street
Yerington, Nevada 89447
Office: (775)463-6531; Fax: (775)463-6500

Via email: elopez@lyon-county.org

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
16.a

Subject:
For Possible Action: Approve a resolution adopting policies for naming county facilities, parks, cemeteries, open space and drainages. (Requested by Commissioner Jacobson)

Summary:
Commissioner Jacobson requested staff to develop a policy for naming county owned facilities, parks, cemeteries and open spaces for the Board to consider for approval. Staff has researched the issue and provided the policy in the resolution.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Motion to accept the Resolution adopting policies for naming county owned buildings, parks, facilities, cemeteries, and open space.

ATTACHMENTS

- - Res. Policies for Naming County Facilities, Parks, Cemeteries, Open Space and Drainages

RESOULTION NO.

A RESOLUTION OF THE LYON COUNTY, NV BOARD OF COMMISSIONERS ESTABLISHING POLICY RELATING TO NAMING COUNTY FACILITIES, PARKS, CEMETERIES, OPEN SPACE AND DRAINAGES

WHEREAS, the County of Lyon believes that the designation of names for facilities, parks, cemeteries, open space and drainages should be approached with deliberation; and

WHEREAS, the County of Lyon further believes that the setting forth by resolution of policies and procedures relating to the naming of facilities, parks, cemeteries, open space and drainages

NOW THEREFORE, THE BOARD OF COMMISSIONERS OF LYON COUNTY, NV, DOES RESOLVE AS FOLLOWS:

Section 1. It is the policy of the Lyon County Board of Commissioners to choose names for facilities, parks, cemeteries, open space and drainages.

Section 2. It is the policy of the Lyon County Board of Commissioners to choose names for facilities, parks, cemeteries, open space and drainages based upon the following criteria, in no particular priority order

- Neighborhood or geographical identification
- A natural or geological feature
- Historical or cultural significance
- A historical figure; or individual (living or deceased) who has made significant land, monetary or significant civic contribution to the facilities, parks, cemeteries, open space and drainages; gave their life while serving the United States of America in military service; gave their life while serving Lyon County as an employee or volunteer;
- As required by purchase agreement

Section 3. The Lyon County Board of Commissioners shall designate names of facilities, parks, cemeteries, open space and drainages. Unless the name of the facilities, parks, cemeteries, open space and drainages is designated in a purchase agreement or an accepted gift of the property, the Board of Lyon County Commissioners should make its selection after receiving a recommendation of the Citizens Advisory

Board or Parks Board having jurisdiction, which shall be based upon public input from individuals and organizations.

Section 4. Following selection of a name for facilities, parks, cemeteries, open space and drainages by the Board of Lyon County Commissioners, the County shall identify the specific facilities, parks, cemeteries, open space and drainages with appropriate signage specifying the name. The name shall remain for a minimum of 25 years.

PASSED, ADOPTED and APPROVED this **3rd** day of **February, 2022** by the following vote of the Lyon County Board of Commissioners.

AYES: _____

NAYES: _____

ABSENT: _____

ABSTENTIONS: _____

LYON COUNTY BOARD OF COMMISSIONERS

_____
By: Chairman

Attest:

_____
Clerk of the Board

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
16.b

Subject:
For Presentation & Report: Update the Board of Commissioners on the status of purchasing/building a Community Center in Mound House. (Requested by Commissioner Gray)

Summary:
Lyon County was given APN 16-221-40 158 Garnet Circle in Mound House. The approximately 2 acre lot is adjacent to the Moonlight Bunny Ranch. The property has water service and would require a commercial septic. The property is master planned Public Facilities but currently zoned RR2T which will require a zone change. A CUP would be required if the occupancy is 350 or more.

The Mound House Advisory Board will address the issue of what types of use the proposed facility may be used for in addition to CAB meetings. Construction costs for the building are approximately $300/square foot. A 4000 square foot building would be an approximate $1,200,000.00. That is the cost of building construction and does not include site improvements, Additional expenses include permitting through NDEP and installation of commercial septic system.

Financial Department Comments:
I recommend that we take a look at this project along with other proposed projects so that we can evaluate them together and prioritize them. This could be done during the budget process.

Approved As To Legal Form:

County Manager Comments:

Recommendation:
No action recommended.

ATTACHMENTS

-

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
16.c

Subject:
For Possible Action: Presentation, discussion and direction to the County Manager on the location, supporting road network, and funding for a second bridge in the Dayton area. (Requested by Commissioner Gray)

Summary:

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

- Carson River Bridge - Prime Agreement Exhibits.pdf
- CARSON RIVER BRIDGE FEAS STUDY cond pdf.pdf
- Vidler Proposal Final - Stantec 05.31.2018.pdf
- Carson River Bridge - Prelim Eng_Fee Estimate.pdf

EXHIBIT A
SCOPE OF WORK

Lyon County

Carson River Bridge and Chaves Road – Preliminary Engineering

INTRODUCTION

Lyon County has contacted Farr West Engineering to provide planning, design and administrative services to support a BUILD grant application for the Carson River Bridge and Chaves Road extension in Lyon County, Nevada. The proposed roadway is approximately 4.4 miles in length and extends southerly from U.S. 50 along the existing Chaves Road, crossing the Carson River, and connecting to Dayton Valley Road. This proposal outlines the services to be provided to complete the application for submittal of the 2020 BUILD grant funding opportunity.

The BUILD grant process is a competitive program and the more preparation that is put into project engineering design, field investigations, environmental studies and clearances from agencies with jurisdiction, the higher the chances of award.

Lyon County has requested Farr West Engineering to do as much as possible within the timeframe and budget provided for the 2020 BUILD grant application. This effort would not advance the project to "bid ready". If the project were taken closer to the bidding phase, it would increase the chances of award. It is estimated that the design will be completed to approximately 15% based on the available budget. However, the grant application review committee may require a higher level of project readiness prior to award.

The phase and task breakdown for the project is designated as follows:

Design Services

- Task 1 – Project Management
- Task 2 – Preliminary Engineering
- Task 3 – Preliminary Environmental
- Task 4 – BUILD Grant Application

DESIGN SERVICES

Task 1 – Project Management

Objective

To plan, organize, direct, control, and communicate all relevant activities set forth in this Scope of Work within the approved budget and schedule.

Approach

Farr West will routinely review project progress and communicate project status on a regular basis. Communication will be through email and telephone, and with monthly project coordination meetings with the Client and Farr West staff. This task will include the following activities:

- Project administration includes scheduling maintenance, cost control, monthly invoicing, filing, resource allocation, subconsultant management, and routine communications.
- Conducting a project kick-off meeting with Farr West and Client staff.
- Team coordination, including conference calls and internal meetings.
- Monitoring changes to the scope, budget, or schedule and developing change management strategies with Client.

Deliverables

The following deliverables will be submitted under this task:

- Project schedule.
- Monthly status reports.

Assumptions

The following assumptions apply:

- Monthly reports will be provided with timely invoices.
- Project-related issues will be identified, communicated, and resolved.

Task 2 – Preliminary Engineering

Objective

To develop the design to approximately 15% to establish preliminary bid quantities and an Engineer's Opinion of Probable Cost that is required to support Task 4.

Approach

This task will include the following activities:

- Prepare Project Design Criteria form. This form will be the basis of design that ensures the project meets the *AASHTO A Policy on Geometric Design of Highways and Streets,* 2011, Lyon County requirements, and other required standards for new roadway construction.
- Establish preliminary horizontal alignment that complies with the *AASHTO A Policy on Geometric Design of Highways and Streets, 2011*, based on the roadway classification and design speed. The preliminary alignment will be presented to the client for approval prior to initiation of field investigations.
- Review Lyon County Master Plan 2 to assist with roadway planning and traffic study analysis. Understanding the forecast of development within Lyon County and the required improvements to support development will assist in developing the project cost estimate and support the BUILD grant application narrative.
- Complete traffic study and intersection analysis for proposed roadway. This study will assemble twenty year traffic volumes for the proposed roadway, develop twenty year turning movements at key intersections, and provide two or three alternative traffic control options at each of the key intersections. The study will also review the need for left and right turn lanes at each of the key locations. This effort will assist in developing the Engineer's Opinion of Probable Costs and Benefit-Cost Analysis.

- Obtain 1"=300' color aerial photography, and planimetric mapping supporting 1"=40' map scale with one foot contours. The mapping limits include the entire roadway corridor with a width of 300 feet. Control survey will be provided prior to the aerial survey and panel locations will be set to support the flight. The topographic data combined with the preliminary alignment will be used to establish roadway profile and preliminary earthwork quantities. The profile will be designed per the *AASHTO A Policy on Geometric Design of Highways and Streets, 2011*, based on the roadway classification and design speed. Supplemental topographic data will be collected by traditional field survey methods at the critical tie-in locations of the proposed roadway.
- A preliminary geotechnical investigation will be completed as part of this scope of work. This will include both test pits and vertical test borings along the proposed alignment. Boring depths will range from 10 to 20 feet below ground surface. Representative samples of subgrade soils will be tested as to R-value, optimum moisture content and maximum density (proctor), and index properties. An analysis will be completed that consists of ESAL determination and structural section design. A report will be prepared that summarizes the field investigation, laboratory testing, and analysis, and will include recommendations for roadway construction. The recommendations contained within the report will be the basis for the roadway structural section and subgrade preparation that will be used for cost estimating.
- Preliminary bridge support vertical test borings ranging from 50 to 90 feet below ground surface will be completed to support the bridge foundation design. Three borings drilled at the bridge site will be completed (one at each abutment location and one at an intermediate location.) Samples will be collected and analyzed similar to the roadway borings. A report will be prepared that summarizes the field investigation, laboratory testing, and analysis, and will include recommendations for bridge foundation design. The recommendations contained within the report will be the basis for the preliminary bridge design and cost estimating.
- Geophysical testing, both refraction and ReMi, will be completed at the bridge site and bedrock knoll area. Refraction testing will be limited to the bridge south abutment and the bedrock knoll area. ReMi geophysical testing will be completed at both abutment areas to determine site classification to develop seismic parameters. Recommendations for design will be included in the aforementioned geotechnical reports.
- Review existing drainage maps and studies within the project area. This effort will assist in determining roadway grading and major drainage crossings that may be required. These improvements will be considered in the cost estimating effort.
- Complete preliminary hydrologic and hydraulic analysis for major roadway drainage crossings for the 25-year and 100-year storm events. The 100-year event will be required to be passed for the roadway to be used as an emergency access route. The SCS unit-hydrograph method will be used for the hydrologic calculations using the USACE HEC-MHS software. CulvertMaster software will be used to provide preliminary recommendations for major drainage crossings. A storm drain system within the roadway to convey street runoff to adjacent ditches will be required during final design and is excluded from this scope of work.
- Prepare plan and profile sheets to approximately 15% design. The design will be limited to include the following: centerline alignment, centerline profile, right-of-way, roadway and intersection layout, and major drainage crossings. Intersection layouts will be included for each alternative discussed in the traffic study. These will assist in the public involvement effort by the client.
- Prepare Bridge Type Selection Report. The bridge selection process involves evaluating many features to identify the most appropriate bridge type for the site. Potentially relevant features include the elements of the bridge (e.g., foundations, abutments, piers, girders, bearings, expansion joints), materials (e.g., concrete, steel), and geometrics (e.g., clearances, structure depth, structure width, span lengths). High-cost features or those with a "fatal flaw" should be eliminated early in the evaluation process. The Bridge Type Selection Report documents the findings of this selection process and recommends the most appropriate bridge type.
- Prepare preliminary bridge plans for the bridge type recommended in the Bridge Type Selection Report. The plans will include plan view, elevation view, profile grade, typical section and

miscellaneous relevant details. Foundation details, including piers, will not be provided for this level of design.
- Complete preliminary bridge hydraulics design identifying erosion protection at bridge abutments and intermediate piers.
- Develop a preliminary right-of-way acquisition summary identifying ownership and acquisition area data.
- Develop Engineer's Opinion of Probable Costs based on the information stated above, while utilizing historic bid prices to determine total project cost. Major drainage crossings for the 25-year and 100-year storm event will be included as alternatives.
- Develop a Benefit-Cost Analysis (BCA) to support the BUILD grant application. The BCA will consider improvements to safety and traffic flow by diverting through traffic on Dayton Valley Road to Chaves Road. User benefits such as reduced travel time and fuel savings will also be considered.

Deliverables

The following deliverables will be submitted under this task:

- Project Design Criteria form.
- Preliminary hydrology and hydraulic analysis for major roadway drainage crossings.
- Preliminary geotechnical investigation report for roadway and bridge construction.
- Preliminary plan and profile sheets with aerial imagery background. (15% design, 11"x17", 1"=200')
- Intersection alternative layout sheets.
- Bridge Type Selection Report and preliminary bridge plans for recommended alternative.
- Traffic study and intersection analysis in letter form.
- Colored aerial photography and planimetric mapping.
- Engineer's Opinion of Probable Costs.
- Benefit-Cost Analysis.

Assumptions

The following assumptions apply:

- A hydrology and hydraulic report for this roadway is not available.
- Existing hydrology study for Lyon County (Dayton Area) will be provided by client.
- Engineer's opinion of probable costs will include 20% contingency to reflect the current level of design and include a cost escalation contingency for the year of anticipated construction.
- A traffic and safety study for the proposed roadway has not been completed.
- Right-of-entry for work on privately owned parcels will be provided by the client.
- No USACE permit will be required for investigative work.

Task 3 – Preliminary Environmental

Objective

To identify the permitting requirements for the proposed roadway and environmental resources within the project area and to establish the level of environmental documentation with approval from the Federal DOT. This information will be the basis for the project environmental document required under the National Environmental Policy Act (NEPA). Farr West Engineering will meet with the local State and Federal DOT agencies to discuss the NEPA requirements for the proposed project assuming the project would receive federal funding. The Federal DOT may provide guidance on the NEPA document that would be required if

the project were awarded a federal grant. At this time the level of environmental documentation is unknown, therefore it is excluded from the Scope of Work. If the level of environmental documentation can be resolved with the Federal DOT, Farr West can provide a fee estimate to move forward if Lyon County directs. It is understood that Task 5 will be used for this additional work if budget allows. It would be recommended to proceed with the environmental document if funding is available.

Approach

This task will include the following activities:

- Review preliminary roadway alignment.
- Identify environmental resources or issues within the project area that may include:
    - Wetlands and other water resources
    - Threatened and endangered species habitat
    - Water bodies, including floodplains
    - Wildlife resources
    - Existing land use
    - Air quality
    - Noise
    - Environmental justice
    - Health and Human Safety
    - Land Use/ Important Farmland/ Formally Classified lands

  Review of these resources would include correspondence with entities including but not limited to the following:

    - Nevada State Historic Preservation Office
    - U.S. Fish and Wildlife Service
    - Nevada Division of Environmental Protection, Safe Drinking Water
    - Nevada Division of Environmental Protection, Division of Clean Air
    - Nevada Division of Environmental Protection, Bureau of Water Pollution Control
    - Nevada Natural Heritage Program
    - Nevada Dept. of Conservation and Natural Resources, State Engineer
    - Nevada Department of Wildlife
    - Nevada State Clearing House
- Complete Routine On-site Inventory of Aquatic Resources (waters of the US including wetlands. An unmanned aerial system (UAS) equipped with a multispectral camera to capture color and infrared photography will be used to focus the Routine On-site Field Investigation.
- Prepare report of findings for waters of the US including wetlands in accordance with the *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (January 2016)*.
- Coordinate with the USACE for Wetland Delineation verification.
- Prepare Technical Memorandum that narratively describes and tabularly quantities the types of Aquatic Resources (WOUS and wetlands) that would appear to be impacted by the proposed roadway. The memo would outline a recommended mitigation strategy, and most likely mitigation ratio that would be required by the Corps.
- Coordinate with the Nevada Department of Transportation and the local office of the Federal Highway Administration regarding environmental document requirements and compliance with NEPA. A federal environmental document will not be completed. This subtask is necessary to ensure that all environmental resources will be addressed and a path moving forward to completion of a federal environmental document can be understood and accurately described in the grant application.
- Conduct a search of archival records at the NVCRIS for existing sites and previous investigations within a 1-mile radius of the entire project alignment. The request will include obtaining GIS

datasets for the cultural resource components and site records for all sites within the project area buffer.

- Conduct a search of historic documents including GLO plats and historic maps available on line and at various repositories to identify historic features, including roads and trails that may be present on the landscape. Lyon County Assessor's records will be consulted to determine if architectural resources surrounding the project area meet the 50-year age threshold for National Register consideration.
- Prepare letters to affected tribes and applicable historical societies requesting information regarding known cultural resources within the project vicinity. Upon completion of the Class III Inventory, those parties will be invited to comment on project effects and mitigation measures for any cultural resources identified within the project APE. Coordination may require presentations at local meetings.
- **Class III Inventory** - Conduct a Class III cultural resources survey of the proposed right-of-way that meets the requirements outlined in USACE Sacramento District Guidelines/FHWA guidelines for Compliance with Section 106 of the National Historic Preservation Act (February 2011). Pedestrian inventory will be accomplished utilizing 30 meter transects across the length of the project APE. In addition, any known and National Register eligible resources identified from the record search will be re-visited and records updated as necessary. Visual effects will be assessed by photo documentation.
- Fully record and map all sites located within and adjacent to the proposed road right-of-way on the appropriate Nevada State Historic Preservation Office (NV SHPO) forms, using NV SHPO guidance which includes:
    - Archaeological IMACS forms;
    - Architectural Resource Assessment (ARA) form.
    - Guidelines for Section 106 Submissions Nevada Section 106 Architectural Survey and Inventory Guidelines (Revised Spring 2012).
    - All sites boundaries in the APE will be recorded using GPS and GIS shapefiles will be provided to Reclamation with the Final Report.
- Prepare a report in accordance with FHWA's requirements. The report will include an historic context, previous research, survey results, recommendations for National Register eligibility, finding of effect, and propose avoidance or mitigation requirements to avoid project effects to historic properties including those along the proposed right-of-way alignment identified as eligible to the National Register.

Deliverables

The following deliverables will be submitted under this task:

- Final report for WOUS and wetlands delineation in accordance with the *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (January 2016)*.
- Technical Memorandum that narratively describes and tabularly quantities the types of Aquatic Resources (WOUS and wetlands), including mitigation strategies.
- Autodesk Civil 3D (2017) CAD drawing and 0.25-foot resolution orthomosaic image.
- USACE Wetland Delineation Verification.
- Report that includes historic context, previous research, survey results, recommendations for National Register eligibility, finding of effect, and propose avoidance or mitigation requirements to avoid project effects to historic properties including those along the proposed right-of-way alignment identified as eligible to the National Register.
- Technical Memorandum summarizing environmental resources within the project area.

Assumptions

The following assumptions apply:

- A federal environmental document will not be completed.
- Public involvement is not included.
- Right-of-entry for work on privately owned parcels will be provided by the client.
- No permits will be applied for.
- Formal government to government consultations with tribes under the Section 106 process will not be completed.

Task 4 – 2020 BUILD Grant Application

Objective

To submit a BUILD grant application to the Federal Department of Transportation (DOT) following the recommended outline specified within the Notice of Funding Opportunity (NOFO) for 2020.

Approach

This grant application will include the following information if available information allows:

1. Standard Form 424 (Application for federal assistance)
2. Standard Form 424C (Budget information for construction programs)
3. Cover Page
4. Project Narrative
    a. Project description
    b. Project location
    c. Grant funds, sources and uses of project funds
        i. Project costs;
        ii. For all funds to be used for eligible project costs, the source and amount of those funds;
        iii. For non-Federal funds to be used for eligible project costs, documentation of funding commitments should be referenced here and included as an appendix to the application;
        iv. For Federal funds to be used for eligible project costs, the amount, nature, and source of any required non-Federal match for those funds;
        v. A budget showing how each source of funds will be spent.
    d. Merit Criteria
        i. Primary Selection Criteria
            1. Safety
            2. State of good repair
            3. Economic competitiveness
            4. Environmental sustainability
            5. Quality of life
        ii. Secondary Selection Criteria
            1. Innovation
            2. Partnership
    e. Project readiness

i. Technical feasibility
ii. Project schedule
iii. Required approvals
iv. Assessment of project risks and mitigation strategies

f. Benefit cost analysis

Deliverables

The following deliverables will be submitted under this task:

- BUILD grant application with supporting documents.

Assumptions

The following assumptions apply:

- Grant awards require the local entity to provide supplemental project funding of up to 20% of the award amount. Available local funding that can be used for this supplemental funding and verification or approvals of its use for this purpose will be provided by client.
- Client to provide information regarding previous agency approvals and public involvement if available.

EXHIBIT B
SCHEDULE

Task 2.0 - Preliminary Engineering:	**June 2020**
Task 3.0 - Preliminary Environmental:	**June 2020**
Task 4.0 – 2019 BUILD Grant Application:	**July 2020**

- Schedule assumes release of NOFO and initiation of consultant contract by April 2019.

EXHIBIT C
BUDGET

Task 1	Project Management	$22,008
Task 2	Preliminary Engineering	$256,721
Task 3	Preliminary Environmental	$88,646
Task 4	2020 BUILD Grant Application	$18,504
	TOTAL:	**$385,879**

EXHIBIT D
ENGINEER'S RATE SCHEDULE

Title	Hourly Rate	Title	Hourly Rate
Principal Engineer	$160	Building Inspector II	$70
Senior Engineer II	$152	Building Inspector I	$65
Senior Engineer	$142	Designer III	$115
Engineer IV	$134	Designer II	$105
Engineer III	$125	Designer I	$95
Engineer II	$115	GIS Analyst II	$130
Engineer I	$105	GIS Analyst I	$115
Engineer in Training II	$95	GIS Specialist	$95
Engineer in Training I	$87	GIS Technician	$85
Senior Hydrogeologist	$155	Water Rights Specialist III	$150
Hydrogeologist II	$100	Water Rights Specialist II	$125
Hydrogeologist I	$85	Water Rights Specialist I	$105
Electrical Engineer	$150	Water Rights Technician III	$95
Construction Inspector III	$105	Water Rights Technician II	$90
Construction Inspector II	$100	Water Rights Technician I	$75
Construction Inspector I	$90	Professional Surveyor	$130
Project Assistant	$70	Survey Technician II	$90
Admin IV	$90	Survey Technician I	$75
Admin III	$80	1 Man Survey Crew	$130
Admin II	$70	2 Man Survey Crew	$170
Admin I	$55	3 Man Survey Crew	$245
Intern	$45	Utility Operator	$115

Other Fees and Charges:

1. All direct project expenses, including subconsultants, will be billed at actual cost plus 15%.
2. An overtime surcharge of 25% will be applied to the hourly rates of non-salaried employees for authorized overtime work.
3. Different survey and construction inspection labor rates will apply on prevailing wage projects. Rates for prevailing wage projects will be provided on a case by case basis.

SUMMIT ENGINEERING CORPORATION™

March 19, 2008

RECD MAR 21 2008

Mr. Dennis Stark
Lyon County
27 South Main Street
Yerington, NV 89447

RE: Proposal for Hydraulic Analysis, Carson River Bridge Feasibility Study
Cardelli Road & Sutro Street, Dayton

Dear Mr. Stark:

On behalf of Summit Engineering Corporation I would like to thank you for the opportunity to provide you with the following proposal for the Hydraulic Analysis of the proposed bridge at the Cardelli Road and Sutro Street cross-section on the Carson River in Dayton, Nevada. Drew Motter and myself met with Don Tibbals at the site of the proposed bridge and discussed the need for a Hydraulic Analysis to determine the feasibility of the bridge. The Hydraulic Analysis will include the following scope of services:

Hydraulic Analysis Report

1. Seven surveyed cross-sections across the Carson River
2. Hydraulic Analysis using HEC-RAS
3. Master Hydrology Report (including Hydraulic Analysis Display(s))

FEES FOR HYDRAULIC ANALYSIS REPORT

Hydraulic Analysis of the proposed bridge (Cardelli Road & Sutro Street cross-section) **$10,960.00**

The aforementioned fees are to determine the 100-year peak flow elevations at the proposed location. This analysis is to model the United States Geological Survey (USGS) peak flows at the proposed cross-section and determine the feasibility of the proposed bridge. The analysis would then provide Lyon County with the appropriate information to determine the length and height of the proposed bridge to obtain a cost estimates.

I hope this provides you with the information you've requested. Should you have any questions please contact me.

Sincerely,

SUMMIT ENGINEERING CORPORATION

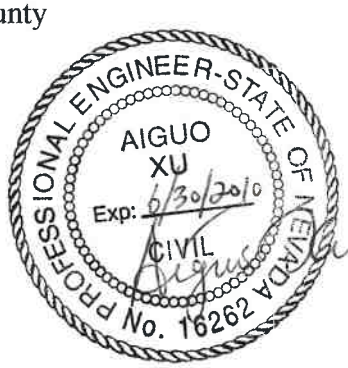
Charles Dettling,
Project Manager

5405 Mae Anne Avenue • Reno, Nevada 89523 • (775) 747-8550 FAX (775) 747-8559
313 Pilot Road, Suite A • Las Vegas, Nevada 89119 • (702) 252-3236 FAX (702) 252-3247
1150 Lamoille Highway • Elko, Nevada 89801 • (775) 738-8058 FAX (775) 738-8267
824 E. Aultman • Ely, Nevada 89301 • (775) 289-4445 FAX (775) 289-4043

Hydraulic Modeling of a Segment of Carson River For Proposed Cardelli Road Bridge

Prepared for

Lyon County



8/13/2008

Prepared by

TEC CIVIL ENGINEERING CONSULTANTS

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Reno, Nevada 89511
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August, 2008

Purpose of Study

In July, 2008 TEC Civil Engineering contracted with Lyon County to complete a preliminary engineering report for a proposed highway bridge crossing of the Carson River at Cardelli Road in Dayton, Nevada. The purpose of the report is to provide the Lyon County Board of County Commissioners a preliminary analysis related to two major topics. The first one is a hydraulic analysis evaluating the potential flooding effects that may be caused on adjacent and upstream private properties as a result of a new bridge, the other one is to provide the a preliminary budget for different bridge scenarios.

The scope of services does not include a design of a bridge or any analysis or level of accuracy that might only be justified after a completed design. The intent is to provide a preliminary look at both the hydraulic conditions at the proposed location and approximate costs. In doing so, TEC has hydraulically analyzed the geometry of five different bridge scenarios against two separate flow rates. Cost estimates for each of the five bridge scenarios and flooding effects associated with them are summarized at the conclusion of this report.

Hydraulic Analysis Introduction

The proposed bridge is located at the Cardelli Road/Sutro Road alignment approximately five miles east of downtown Dayton, Nevada at Long. 119° 31' 39.94" W., Lat. 39° 16' 50.20" N. A 100' wide easement exists at this location for the construction of a bridge facility should it be determined feasible.

The FEMA 100-year flood plain for the segment of the Carson River was based on a study performed by Nimbus Engineers (1990). In 2002, TEC Civil Engineering performed a hydraulic analysis of the Carson River to determine the effects of a residential development in the vicinity (immediately downstream) of the Cardelli Road bridge easement. There are two FEMA FIRM panels that cover the proposed bridge and its vicinity; they are 3200290135C and 3200290142 with an update date of 7/01/2002.

TEC created a hydraulic model of the Carson River to evaluate the impact of various scenarios of a proposed bridge crossing at the Cardelli Road on the flood elevations in the vicinity of the bridge crossing. The existing floodplain conditions and future conditions with the various scenarios of the proposed bridge under both the 100-year flood and a 1.5 times the 100-year flood were analyzed.

Modeling Methodology

The hydraulic analysis of the Carson River near the proposed bridge segment was performed using the widely applied hydraulic model HEC-RAS (Version 3.1.3, May, 2005) developed by U.S. Army Corps of Engineers.

A steady state flow model with current channel and floodplain geometry as represented by the 1-foot topographic map provided by the Carson Subconservancy was constructed to calculate the water surface along the segment. The 100-year flood flow used was 36,100 cubic feet per second (cfs) as determined by the FEMA Flood Insurance Study. The flow model boundary at the upstream cross-sections was set as normal flow depth boundary as determined by the natural channel slope at the cross-section location. The flow model boundary at the downstream cross-section was set as known water level boundary at FEMA flood elevation (4294.93 ft NAVD 88 converted from 4291.53 NGVD 29 based on Longitude 119.51232°, Latitude 39.28664°).

In addition, a raised flow of 54,150 cfs equivalent to 1.5 times the 100-year flood flow (36,100 cfs x 1.5) was applied to the channel and all the proposed bridge scenarios. The flow model boundary for the increased flow at the upstream and downstream cross-sections are both set as normal flow depth boundary as determined by the natural channel slope at those locations.

Data Preparation

One (1) foot topographic map was obtained from the Carson Subconservancy. Cross-sections are located at nearly the same locations as shown in FEMA flood insurance study with additional cross-sections added to better represent the channel geometry and to meet modeling calculation requirements as well as to allow the incorporation of the proposed bridge scenarios. Therefore, the cross-sections along and next to the proposed bridge alignment do not follow the FEMA flood insurance study. The cross-section locations and the distances between them for the main channel and the left and right overbanks are shown in Figure 2. In Figure 2, the Cross-sections I, J, K, N, O are as designated by the FEMA insurance study. The actual stationing and elevation representation of the cross-sections are presented in Appendix A.

Bridge Scenarios

A total of five bridge scenarios were examined. They range from a total bridge span of 700 ft, 900 ft, 1100 ft, 1300 ft and 3200 ft. The 3200 ft scenario spans the entire floodway and floodway fringe without embankment constriction encroaching into the existing floodway fringe. The 1100 ft spans the flood way with embankment constriction encroaching the entire fringe area of the flood plain. The total bridge span of 700 ft and 900 ft both encroach within the floodway as currently delineated by the FEMA FIRM Panels.

Although the longest total bridge span scenario was 3,200 feet, each scenario bridge was assumed to be supported by piers, with a pier to pier section of individual span of 100 ft except the two spans at the center of the river channel. Those two center spans are 150 ft from pier to pier. All pier plan shapes are circular with a diameter of 6 ft. The pier bases are also circular with a diameter of 10 ft. Vertically, the base rises from below ground to

an elevation of 4298 ft (NAVD 88) and the pier with 6 ft diameter rises from 4298 ft to 4305 ft at the bottom of the low chord of the bridge structure. The bridge high chord was assumed at an elevation of 4310 ft. For convenience of reference, these bridge scenarios are designated as Scenario #1 (700 ft span), Scenario # 2 (900 ft span), Scenario #3 (1100 ft span), Scenario #4 (1300 ft span) and Scenario #5 (3200 ft span). See Figures 3, 4, 5, 6 and 7 for a schematic representation of the bridge scenarios.

Modeling Parameters

The main model parameter is the Manning's roughness coefficients for the left overbank, main channel, and right overbank for the various segments following each cross-section. TEC staff completed a field visit to visually inspect the vegetation and condition of the floodway. After visual inspection, a comparison of existing conditions and previously published conditioners were made. For the left and right overbanks, Manning's roughness coefficients are the same as or larger than those used by FEMA model.

Although the same Manning's roughness coefficient values are used in the TEC model, the geometry as represented in the TEC model is based on 1-foot topographic map and is much more refined than that represented in the FEMA model. This refined representation of the cross-section geometry results in longer wetted perimeter than those in the FEMA model. Therefore TEC's current model is more conservative in the determination of the Manning's coefficient values than the original FEMA model. For the actual Manning's coefficient values used in the TEC model, please Refer to Appendix A.

The drag coefficient for the momentum bridge modeling method was set as 1.2 for the circular piers.

Modeling Results and Discussion

Table 1 lists the model outputs for all the cross-sections under the 100 yr flood condition and Table 2 lists the model outputs for all the cross-sections under the 1.5 times of the 100 yr flood conditions.

Appendix B lists modeling results for the individual cross sections and other modeling results.

Table 1 Summary of results from the HEC-RAS model under 100y-flood condition

River Sta	Plan	Min Ch El (ft)	W.S. Elev (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sec. 1 (Sta 90)	No_Bridge	4291	4304.75	4304.91	0.000557	4.59	13088.96	2342.63	0.23
	100Y-S#1	4291	4305.03	4305.18	0.000516	4.49	13751.35	2432.23	0.23
	100Y-S#2	4291	4305.01	4305.16	0.000522	4.5	13697.97	2426.52	0.23
	100Y-S#3	4291	4305.01	4305.16	0.00052	4.5	13716.94	2428.55	0.23
	100Y-S#4	4291	4304.96	4305.1	0.00051	4.44	13575.16	2410.19	0.22
	100Y-S#5	4291	4304.78	4304.94	0.00055	4.57	13157.74	2352.31	0.23
Sec. 2 (Sta 80)	No_Bridge	4290	4303.72	4303.92	0.001504	5.93	12461.24	2713.7	0.36
	100Y-S#1	4290	4304.19	4304.34	0.001114	5.25	13721.75	2721.1	0.31
	100Y-S#2	4290	4304.15	4304.3	0.001139	5.3	13622.11	2720.51	0.31
	100Y-S#3	4290	4304.16	4304.32	0.00113	5.29	13657.98	2720.72	0.31
	100Y-S#4	4290	4304.09	4304.25	0.001181	5.38	13466.72	2719.6	0.32
	100Y-S#5	4290	4303.78	4303.97	0.001448	5.84	12614.97	2714.6	0.35
Sec. 3 (Sta 70)	No_Bridge	4288	4302.07	4302.28	0.001161	5.08	12452.3	2209.66	0.29
	100Y-S#1	4288	4303.03	4303.19	0.000789	4.46	14592.81	2252.02	0.24
	100Y-S#2	4288	4302.96	4303.12	0.000816	4.52	14431.21	2250.68	0.25
	100Y-S#3	4288	4302.98	4303.15	0.000806	4.5	14490.57	2251.17	0.24
	100Y-S#4	4288	4302.84	4303.01	0.000862	4.61	14167.59	2248.48	0.25
	100Y-S#5	4288	4302.23	4302.43	0.001077	4.95	12798.7	2224.31	0.28
Sec. 4 (Sta 60)	No_Bridge	4288.8	4301.27	4301.49	0.000692	4.69	13076.59	3023.85	0.25
	100Y-S#1	4288.8	4301.65	4302.2	0.001238	6.42	6522.11	3065.9	0.34
	100Y-S#2	4288.8	4301.8	4302.23	0.001013	5.86	7626.65	3080.37	0.31
	100Y-S#3	4288.8	4301.97	4302.33	0.000874	5.5	8566.44	3096.94	0.29
	100Y-S#4	4288.8	4301.89	4302.21	0.000815	5.28	9287.06	3088.75	0.28
	100Y-S#5	4288.8	4301.52	4301.71	0.000603	4.45	13833.82	3053.26	0.24
Sec. 5 (Sta 50)	No_Bridge	4288.3	4301.21	4301.39	0.000609	4.34	13508.56	3138	0.24
	100Y-S#1	4288.3	4301.26	4301.8	0.001324	6.42	6395.22	3144.13	0.35
	100Y-S#2	4288.3	4301.25	4301.63	0.00099	5.55	7772.74	3142.82	0.3
	100Y-S#3	4288.3	4301.24	4301.55	0.000867	5.19	8728	3141.37	0.28
	100Y-S#4	4288.3	4301.23	4301.52	0.000815	5.03	9395.11	3140.48	0.28
	100Y-S#5	4288.3	4301.23	4301.41	0.000602	4.33	13565.28	3140.55	0.24
Sec. 6 (Sta 40)	No_Bridge	4287.5	4300.68	4300.9	0.000894	4.93	11571.53	2344.35	0.28
	100Y-S#1	4287.5	4300.69	4300.91	0.000886	4.91	11605.89	2346.87	0.28
	100Y-S#2	4287.5	4300.69	4300.91	0.000886	4.91	11605.89	2346.87	0.28
	100Y-S#3	4287.5	4300.69	4300.91	0.000886	4.91	11605.89	2346.87	0.28
	100Y-S#4	4287.5	4300.69	4300.91	0.000886	4.91	11605.89	2346.87	0.28
	100Y-S#5	4287.5	4300.69	4300.91	0.000886	4.91	11605.89	2346.87	0.28

Table 1 Summary of results from the HEC-RAS model under 100y-flood condition ***(Continued)***

River Sta	Plan	Min Ch El (ft)	W.S. Elev (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sec. 7 (Sta 30)	No_Bridge	4286	4299.44	4299.75	0.001375	6.17	10235.45	2340.3	0.35
	100Y-S#1	4286	4299.44	4299.75	0.001375	6.17	10235.45	2340.3	0.35
	100Y-S#2	4286	4299.44	4299.75	0.001375	6.17	10235.45	2340.3	0.35
	100Y-S#3	4286	4299.44	4299.75	0.001375	6.17	10235.45	2340.3	0.35
	100Y-S#4	4286	4299.44	4299.75	0.001375	6.17	10235.45	2340.3	0.35
	100Y-S#5	4286	4299.44	4299.75	0.001375	6.17	10235.45	2340.3	0.35
Sec. 8 (Sta 20)	No_Bridge	4286.1	4298.72	4298.96	0.00111	5.81	11276.98	2339.19	0.32
	100Y-S#1	4286.1	4298.72	4298.96	0.00111	5.81	11276.98	2339.19	0.32
	100Y-S#2	4286.1	4298.72	4298.96	0.00111	5.81	11276.98	2339.19	0.32
	100Y-S#3	4286.1	4298.72	4298.96	0.00111	5.81	11276.98	2339.19	0.32
	100Y-S#4	4286.1	4298.72	4298.96	0.00111	5.81	11276.98	2339.19	0.32
	100Y-S#5	4286.1	4298.72	4298.96	0.00111	5.81	11276.98	2339.19	0.32
Sec. 9 (Sta 10)	No_Bridge	4285.1	4297.22	4297.51	0.00158	5.41	9509.04	2334.91	0.36
	100Y-S#1	4285.1	4297.22	4297.51	0.00158	5.41	9509.04	2334.91	0.36
	100Y-S#2	4285.1	4297.22	4297.51	0.00158	5.41	9509.04	2334.91	0.36
	100Y-S#3	4285.1	4297.22	4297.51	0.00158	5.41	9509.04	2334.91	0.36
	100Y-S#4	4285.1	4297.22	4297.51	0.00158	5.41	9509.04	2334.91	0.36
	100Y-S#5	4285.1	4297.22	4297.51	0.00158	5.41	9509.04	2334.91	0.36
Sec. 10 (Sta 0)	No_Bridge	4285	4294.93	4295.17	0.001372	4.92	10373.52	2621.86	0.33
	100Y-S#1	4285	4294.93	4295.17	0.001372	4.92	10373.52	2621.86	0.33
	100Y-S#2	4285	4294.93	4295.17	0.001372	4.92	10373.52	2621.86	0.33
	100Y-S#3	4285	4294.93	4295.17	0.001372	4.92	10373.52	2621.86	0.33
	100Y-S#4	4285	4294.93	4295.17	0.001372	4.92	10373.52	2621.86	0.33
	100Y-S#5	4285	4294.93	4295.17	0.001372	4.92	10373.52	2621.86	0.33

Table 2 Summary of results from the HEC-RAS model under 1.5x100y-flood condition

River Sta	Plan	Min Ch El (ft)	W.S. Elev (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sec. 1 (Sta 90)	1.5xNoBridge	4291	4306.36	4306.57	0.000651	5.4	17201	2763.58	0.26
	1.5X100Y-S#1	4291	4306.89	4307.06	0.000509	4.89	18667.9	2768.88	0.23
	1.5x100Y-S#2	4291	4306.79	4306.97	0.000533	4.98	18384	2767.86	0.23
	1.5x100Y-S#3	4291	4306.77	4306.95	0.000538	5	18331.3	2767.67	0.24
	1.5x100Y-S#4	4291	4306.68	4306.87	0.000559	5.08	18096.2	2766.82	0.24
	1.5x100y-S#5	4291	4306.4	4306.61	0.000638	5.35	17321.1	2764.01	0.25
Sec. 2 (Sta 80)	1.5xNoBridge	4290	4305.35	4305.56	0.0013	6.06	16900.1	2739.66	0.34
	1.5X100Y-S#1	4290	4306.16	4306.32	0.000878	5.21	19126.2	2755.21	0.28
	1.5x100Y-S#2	4290	4306.02	4306.18	0.000939	5.34	18725.6	2750.53	0.29
	1.5x100Y-S#3	4290	4305.99	4306.15	0.000951	5.36	18650.4	2749.83	0.29
	1.5x100Y-S#4	4290	4305.86	4306.03	0.001009	5.49	18306.8	2747.84	0.3
	1.5x100y-S#5	4290	4305.42	4305.62	0.001253	5.98	17099.4	2740.82	0.34
Sec. 3 (Sta 70)	1.5xNoBridge	4288	4303.63	4303.92	0.001359	6.08	15948.7	2263.26	0.32
	1.5X100Y-S#1	4288	4305.14	4305.33	0.000748	4.91	19394.8	2290.09	0.24
	1.5x100Y-S#2	4288	4304.91	4305.11	0.000815	5.06	18868.3	2287.27	0.25
	1.5x100Y-S#3	4288	4304.87	4305.07	0.000828	5.09	18766.7	2286.44	0.25
	1.5x100Y-S#4	4288	4304.66	4304.87	0.000896	5.23	18289.3	2282.53	0.26
	1.5x100y-S#5	4288	4303.8	4304.08	0.001263	5.92	16339.1	2266.48	0.31
Sec. 4 (Sta 60)	1.5xNoBridge	4288.8	4302.81	4303.04	0.000699	5.16	17801.5	3102.12	0.26
	1.5X100Y-S#1	4288.8	4303.31	4304.17	0.001636	8.11	7713.91	3103.44	0.4
	1.5x100Y-S#2	4288.8	4303.4	4304.06	0.001322	7.32	9096.05	3103.68	0.36
	1.5x100Y-S#3	4288.8	4303.58	4304.11	0.001104	6.76	10371.1	3104.16	0.33
	1.5x100Y-S#4	4288.8	4303.49	4303.94	0.000999	6.4	11400.5	3103.91	0.32
	1.5x100y-S#5	4288.8	4303.07	4303.28	0.000615	4.91	18611.9	3102.81	0.25
Sec. 5 (Sta 50)	1.5xNoBridge	4288.3	4302.74	4302.95	0.000628	4.84	18347.7	3178.51	0.25
	1.5X100Y-S#1	4288.3	4302.72	4303.61	0.001824	8.23	7445.33	3178.07	0.42
	1.5x100Y-S#2	4288.3	4302.75	4303.35	0.001318	7.01	9152.3	3178.59	0.36
	1.5x100Y-S#3	4288.3	4302.75	4303.23	0.001112	6.44	10421.7	3178.63	0.33
	1.5x100Y-S#4	4288.3	4302.75	4303.17	0.001009	6.13	11395.1	3178.57	0.31
	1.5x100y-S#5	4288.3	4302.77	4302.97	0.000621	4.82	18419.1	3178.87	0.25
Sec. 6 (Sta 40)	1.5xNoBridge	4287.5	4302.16	4302.43	0.000933	5.55	15096.6	2394.35	0.3
	1.5X100Y-S#1	4287.5	4302.17	4302.44	0.000927	5.54	15126.9	2394.61	0.3
	1.5x100Y-S#2	4287.5	4302.17	4302.44	0.000927	5.54	15126.9	2394.61	0.3
	1.5x100Y-S#3	4287.5	4302.17	4302.44	0.000927	5.54	15126.9	2394.61	0.3
	1.5x100Y-S#4	4287.5	4302.17	4302.44	0.000927	5.54	15126.9	2394.61	0.3
	1.5x100y-S#5	4287.5	4302.17	4302.44	0.000927	5.54	15126.9	2394.61	0.3

Table 2 Summary of results from the HEC-RAS model under 1.5x100y-flood condition ***(Continued)***

River Sta	Plan	Min Ch El (ft)	W.S. Elev (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sec. 7 (Sta 30)	1.5xNoBridge	4286	4300.97	4301.31	0.001334	6.71	13989.1	2546.63	0.36
	1.5X100Y-S#1	4286	4300.97	4301.31	0.001334	6.71	13989.1	2546.63	0.36
	1.5x100Y-S#2	4286	4300.97	4301.31	0.001334	6.71	13989.1	2546.63	0.36
	1.5x100Y-S#3	4286	4300.97	4301.31	0.001334	6.71	13989.1	2546.63	0.36
	1.5x100Y-S#4	4286	4300.97	4301.31	0.001334	6.71	13989.1	2546.63	0.36
	1.5x100y-S#5	4286	4300.97	4301.31	0.001334	6.71	13989.1	2546.63	0.36
Sec. 8 (Sta 20)	1.5xNoBridge	4286.1	4300.25	4300.54	0.001123	6.41	14918.6	2477.8	0.33
	1.5X100Y-S#1	4286.1	4300.25	4300.54	0.001123	6.41	14918.6	2477.8	0.33
	1.5x100Y-S#2	4286.1	4300.25	4300.54	0.001123	6.41	14918.6	2477.8	0.33
	1.5x100Y-S#3	4286.1	4300.25	4300.54	0.001123	6.41	14918.6	2477.8	0.33
	1.5x100Y-S#4	4286.1	4300.25	4300.54	0.001123	6.41	14918.6	2477.8	0.33
	1.5x100y-S#5	4286.1	4300.25	4300.54	0.001123	6.41	14918.6	2477.8	0.33
Sec. 9 (Sta 10)	1.5xNoBridge	4285.1	4298.87	4299.19	0.001356	5.77	13392	2372.03	0.34
	1.5X100Y-S#1	4285.1	4298.87	4299.19	0.001356	5.77	13392	2372.03	0.34
	1.5x100Y-S#2	4285.1	4298.87	4299.19	0.001356	5.77	13392	2372.03	0.34
	1.5x100Y-S#3	4285.1	4298.87	4299.19	0.001356	5.77	13392	2372.03	0.34
	1.5x100Y-S#4	4285.1	4298.87	4299.19	0.001356	5.77	13392	2372.03	0.34
	1.5x100y-S#5	4285.1	4298.87	4299.19	0.001356	5.77	13392	2372.03	0.34
Sec. 10 (Sta 0)	1.5xNoBridge	4285	4297.54	4297.71	0.000646	4.19	17797.9	3056.32	0.24
	1.5X100Y-S#1	4285	4297.54	4297.71	0.000646	4.19	17797.9	3056.32	0.24
	1.5x100Y-S#2	4285	4297.54	4297.71	0.000646	4.19	17797.9	3056.32	0.24
	1.5x100Y-S#3	4285	4297.54	4297.71	0.000646	4.19	17797.9	3056.32	0.24
	1.5x100Y-S#4	4285	4297.54	4297.71	0.000646	4.19	17797.9	3056.32	0.24
	1.5x100y-S#5	4285	4297.54	4297.71	0.000646	4.19	17797.9	3056.32	0.24

From Tables1 and 2, it can be seen that the largest water level effects from the various bridge scenarios occur at Section 3, which is immediately upstream of the cross-sections (4 and 5) containing the bridge. The simulated water level increase at Section 3 ranges from 0.16 ft to 0.96 ft under the 100 year flood flow condition. Under the 1.5 x 100-y flood flow condition, the simulated water level increase range is from 0.17 to 1.51 ft at Section 3. The bridge scenarios will have negligible effects on downstream water levels (Sections 6~10).

Table 2 also shows that even at the 1.5 times of the 100y flood, the bridge low cord elevation at 4305 ft is still approximately 1.4 ft higher than the highest water level at Section 4 which is immediately upstream of the bridge.

Comparison of FEMA Flood Insurance Study Results with TEC's Model Results

The FEMA flood insurance model as performed by Nimbus Engineers (1990) determined that the flood water surface elevations for Cross-Sections I, J, K, N and O. as 4291.53 ft, 4294.27 ft, 4296.18 ft, 4300 and 4300.8 ft, respectively (as represented by the FIRM panels 3200290135C and 3200290142 with an update date of 7/01/2002). The proposed bridge alignment is primarily located at Cross-Sections L and M by crossing them due to the different alignment directions.

The elevations in the FEMA model and on the FEMA panels are referenced to the National Geodetic Vertical Datum 1929 (NGVD 29). The geometric data and the water surface elevations represented in the TEC HEC-RAS model are referenced to NAVD 1988.

In order to compare the results from FEMA with TEC's model results, all the FEMA elevations were converted from NGVD 29 to NAVD 88 for the site based on a point on Cross-Section I with an approximate Longitude 119.51232° W, Latitude 39.28664° N referenced in the horizontal grid NAD 27 to NAD 83 (Convert from NGVD 29 to NAVD 88, add 3.402 ft).

The comparison of the FEMA results with TEC's model results are listed in Table 3.

Table 3 Comparison of Water Surface Elevations from Nimbus Model and TEC model

Cross Section	Nimbus Water Surface Elevation (ft) NGVD 29	Nimbus Water Surface Elevation (ft) NAVD 88	TEC Water Surface Elevation (No bridge) NAVD 88
I	4291.53	4294.93	4294.93
J	4294.27	4297.67	4297.22
K	4296.18	4299.58	4299.75
N	4299.9	4303.30	4303.72
O	4300.8	4304.20	4304.75

Table 3 shows that TEC results are in fair agreement with those as determined by Nimbus Engineers with slightly higher TEC's water surface elevations at Cross-Sections K, N and O. This difference may be the results of the fill at the Rolling "A" ranch which has changed the river geometry slightly and the more conservative Manning's values used in the TEC model as well as the longer channel and flood plain paths as represented in the TEC model.

Summary and Conclusion regarding Hydraulic Study

A steady state hydraulic model was constructed by using HEC-RAS for a segment of Carson River near the proposed Cardelli Road to evaluate the impact of 5 bridge scenarios on the water surface level during the 100-year flood event and a flood event with 1.5 times the 100-year flood.

The basis for the channel and floodplain geometry is based on a topographic map with contour interval of 1 foot. The river channel and floodplain were field-examined to estimate their Manning's roughness coefficient values (See Appendix C for Pictures along the segment of Carson River).

Model parameters and results are compared with those contained within the FEMA Insurance Study for the area. The comparison shows that TEC's model is generally more conservative than the FEMA model and study. The final water surface elevations are fairly consistent with those of FEMA.

In conclusion, the proposed bridge scenarios will have various effects on water level upstream the bridge with a range of largest water level increase from 0.16 ft to 0.96 ft for the 100 year flood at Section 3. For the 1.5 x 100-y flood, the range is from 0.17 to 1.51 ft at Section 3. The bridge scenarios will have negligible effects on downstream water levels.

Cost Estimates

The preliminary cost estimates detailed within this report are for planning purposes only and are rudimentary in nature as no designs exist. For the purpose of this report, TEC assumed that the bridge will be a simple span bridge, constructed of reinforced concrete and steel members. The simple span bridge will have a series of piers that will be placed 100' apart except for two spans of 150' across the low flow river channel. The scour depth of the bridge piers, size and shape of the piers and number of piers are all assumed to have a cost component prorated from the total cost of the bridge.

The preliminary cost estimates detailed within this report are not based upon an actual design; rather they are based upon average costs for other recently constructed bridge projects similar to the modeled Cardelli Bridge as described above. TEC also looked into trends in the construction industry, in particular how construction prices are being affected by the current downturn in the housing market and increase in fuel prices. It was determined that materials have not decreased in price over the past year, some have even increased and labor might be less expensive on private construction projects, however public works project that require labor to be paid on a prevailing wage are non-affected by the downturn.

To estimate a preliminary construction cost, TEC had to derive a formula for estimating costs that would be comprehensive, yet still functional based upon the limited scope of the report. To determine a formula, TEC and Lyon County Engineering Staff met with members of NDOT's bridge department. NDOT provided final construction costs to design and build several similar bridges over the past six years. Each of the bridges were discussed in detail, including the type of bridge, the location of the structure, the date of construction and the number of contractors that submitted bids for the project. Based upon the discussions, we were able to eliminate some of the bridge projects from our estimates as the final cost were either inflated or low priced for specific reasons that would not likely be associated with the proposed Cardelli Bridge. After eliminating the bridges that had construction anomalies associated with them, the remaining bridges were then analyzed on a cost per square foot of bridge surface. A formula based upon an average cost per sq ft of bridge surface was derived at $180 per Sq Ft.

For the purpose of this report, we've assumed that regardless of the bridge length, the width of the bridge will be the same (64ft). The width will be wide enough to accommodate 4 traffic lanes, a sidewalk and gutter on either side that is similar to the bridge crossing at Dayton Valley Road. The following lists the cost estimates with their assumptions.

Cardelli Road Bridge Cost Estimates

Major Assumptions

Bridge Width

a. 4 X 11 ft lanes
b. 2 x 8 ft for Rail, Sidewalk and Gutter
c. 1 x 4 ft center
Total width approximately 64 ft

Scenario 1

Total Bridge Span 700 ft

Scenario 2

Total Bridge Span 900 ft

Scenario 3

Total Bridge Span 1100 ft

Scenario 4

Total Bridge Span 1300 ft

Scenario 5

Total Bridge Span 3200 ft

Unit Cost

NDOT data for bridge construction costs for the period of 10/01/2006 through 9/30/07

Award Date	Contract #	Unit Cost ($/sqft)	Bridge Type
11/22/2006	Contract 3320 B2797 (Truckee River)	176.02	PC Conc I Girder
9/18/2006	Contract 3319 B-85	151.83	PC Conc I Girder
10/4/2004	Contract 3241 B-1274	172.35	PC Conc I Girder

Cost Estimates

Scenario	Total Span (ft)	Width (ft)	Area (sqft)	Unit Cost ($)	Total Cost (Million $)
1	700	64	44800	180	8.064
2	900	64	57600	180	10.368
3	1100	64	70400	180	12.672
4	1300	64	83200	180	14.976
5	3200	64	204800	180	36.864

Summary and Conclusion

Hydraulic analyses and preliminary cost estimates were performed for five bridge scenarios of the proposed Cardelli Bridge. The bridge width is assumed to be 64 ft with various total span lengths representing the different scenarios. The five total span length scenarios are: 700 ft, 900 ft, 1100 ft, 1300 ft and 3200 ft.

The proposed bridge scenarios will have various effects on water level upstream the bridge with a range of largest water level increase from 0.16 ft to 0.96 ft for the 100 year flood at Section 3. For the 1.5 x 100-y flood, the range is from 0.17 to 1.51 ft at Section 3. The bridge scenarios will have negligible effects on downstream water levels.

The approximate bridge cost estimates range from $8.06 million for the shortest total span of 700 ft to $36.86 million for the largest total span of 3200 ft.

References

Nimbus Engineers, 1990, Carson River HEC-2 Model, prepared for FEMA under Contract #EMW-89-C-2841.

Thiel Engineering Consultants, 2002, Carson River HEC-RAS Model, prepared for Lyon County Public Works.

U.S. Army Corps of Engineers, 2005, HEC-RAS Hydraulic Reference Manual.

NDOT, Data for bridge construction costs for the period of 10/01/2006 through 9/30/07

Appendix A

HEC-RAS MODEL Input Data

For a Segment of Carson River For Proposed Cardelli Road Bridge

Cross-Section Data

Cross-Section Parameters

Reach Lengths

Proposed Bridge Parameters

Steady State Flow Model Input Data

Section 1

indicates main channel stations

Station	Elevation	Station	Elevation
0	4306.3	2100	4300
50	4306	2150	4300.3
100	4306	2200	4301.5
150	4305.8	2250	4299
200	4305.6	2300	4299
250	4305.4	2350	4299.4
300	4305.1	2400	4299
350	4304.9	2450	4299
400	4304.7	2500	4302
450	4304.4	2550	4300
500	4304	2600	4305
550	4304	2650	4304
600	4303	2700	4302.5
650	4302.3	2750	4305
700	4302	2800	4310
750	4301	2850	4314
800	4300	2900	4316
850	4299	2950	4318
900	4298	3000	4322
950	4298	3050	4329
1000	4298	3087.69	4338
1050	4299		
1100	4296.1		
1150	4296.3		
1200	4295.7		
1250	4295.3		
1300	4291		
1350	4291.2		
1400	4291		
1450	4300		
1500	4300		
1550	4298		
1600	4298		
1650	4298		
1700	4297		
1750	4298		
1800	4298.2		
1850	4298		
1900	4298		
1950	4297.5		
2000	4297		
2050	4299		

Section 2 indicates main channel stations

Station	Elevation	Station	Elevation
0	4313.3	2100	4301.2
50	4313.1	2150	4301.5
100	4313.1	2200	4299
150	4312.8	2250	4297.5
200	4312.2	2300	4297.8
250	4312.8	2350	4299
300	4313.4	2400	4301.5
350	4313	2450	4300.7
400	4306	2500	4300
450	4290	2550	4302
500	4294	2600	4302
550	4300	2650	4302
600	4297.5	2700	4302.4
650	4299	2750	4302.2
700	4298.2	2800	4302.1
750	4298	2850	4301.6
800	4298.5	2900	4301.4
850	4299	2950	4301.5
900	4299	3000	4301
950	4299.2	3050	4300.5
1000	4299.2	3100	4302.1
1050	4298.8	3150	4306
1100	4299	3200	4308
1150	4299.5	3250	4314
1200	4299	3300	4326
1250	4299.2	3350	4345
1300	4299.1	3400	4348.1
1350	4299	3450	4348.8
1400	4298.7	3459.24	4349
1450	4297.1		
1500	4296.9		
1550	4296		
1600	4297.2		
1650	4297.4		
1700	4297.5		
1750	4297.3		
1800	4297		
1850	4298.1		
1900	4299		
1950	4298		
2000	4298		
2050	4298		

Section 3 indicates main channel stations

Station	Elevation	Station	Elevation
0	4309.2	2100	4294.3
50	4310.4	2150	4300.9
100	4310	2200	4302.4
150	4309.1	2250	4301.2
200	4307	2300	4301
250	4298	2350	4301.1
300	4297	2400	4301.6
350	4297.3	2450	4301.2
400	4297	2500	4305
450	4298	2550	4323
500	4297	2600	4340
550	4297.5	2650	4348
600	4297	2700	4351
650	4295	2750	4348
700	4292.8	2800	4347
750	4291.5	2850	4348
800	4288	2889.54	4350
850	4289.8		
900	4298.1		
950	4296		
1000	4298		
1050	4298		
1100	4298.2		
1150	4298.2		
1200	4297.3		
1250	4297		
1300	4296		
1350	4296		
1400	4296.2		
1450	4296.5		
1500	4294.5		
1550	4292.9		
1600	4295.1		
1650	4294.1		
1700	4294.5		
1750	4293.2		
1800	4293		
1850	4297.3		
1900	4297		
1950	4296		
2000	4295.7		
2050	4294.5		

Section 4 indicates main channel stations

Station	Elevation	Station	Elevation
0	4301	2100	4298
50	4299	2150	4299.2
100	4302	2200	4300
150	4301.3	2250	4301.3
200	4300.5	2300	4301
250	4299.5	2350	4301
300	4297.2	2400	4301.2
350	4296.4	2450	4301
400	4295	2500	4300.5
450	4295.3	2550	4300.2
500	4295.4	2600	4299.4
550	4296.2	2650	4298.5
600	4295	2700	4297.3
650	4295	2750	4297
700	4296.5	2800	4298
750	4296	2850	4296
800	4295.4	2900	4294
850	4295.8	2950	4295
900	4296	3000	4297
950	4295	3050	4297
1000	4292	3100	4302
1050	4291	3150	4321
1100	4289.7	3200	4343
1150	4289.3	3250	4346.2
1200	4288.8	3300	4346.8
1250	4288.9	3317.18	4346.8
1300	4291.3		
1350	4295.1		
1400	4295.2		
1450	4294.5		
1500	4294.3		
1550	4293		
1600	4298		
1650	4300.1		
1700	4300.3		
1750	4300.1		
1800	4300.2		
1850	4300.3		
1900	4300.1		
1950	4300.2		
2000	4300		
2050	4299		

Section 5 indicates main channel stations

Station	Elevation	Station	Elevation
0	4305.2	2100	4300.1
50	4305.1	2150	4300.2
100	4301	2200	4300.2
150	4300	2250	4300.2
200	4300.2	2300	4300.4
250	4300.5	2350	4300.1
300	4301.3	2400	4300
350	4298	2450	4300.2
400	4298	2500	4300
450	4297.6	2550	4300
500	4298	2600	4300
550	4296	2650	4300.1
600	4296	2700	4300
650	4295	2750	4300
700	4296	2800	4301.4
750	4295	2850	4297
800	4295.4	2900	4295
850	4295	2950	4294
900	4295	3000	4298
950	4296	3050	4298.7
1000	4293	3100	4298
1050	4295	3150	4297
1100	4295	3200	4298
1150	4295	3250	4301
1200	4292	3300	4313
1250	4289	3350	4334
1300	4292.2	3400	4340
1350	4292.3	3450	4344
1400	4288.3	3500	4345
1450	4288.7	3502.78	4345
1500	4290		
1550	4294		
1600	4294		
1650	4294		
1700	4292.2		
1750	4294		
1800	4294		
1850	4300		
1900	4300.3		
1950	4300.2		
2000	4300.2		
2050	4300.3		

Section 6 indicates main channel stations

Station	Elevation	Station	Elevation
0	4307.3	2100	4298.3
50	4307	2150	4298.4
100	4298	2200	4298.6
150	4296	2250	4298.8
200	4297	2300	4298.9
250	4298	2350	4300
300	4298.1	2400	4300.5
350	4297.7	2450	4300.8
400	4297.4	2500	4304
450	4297.5	2550	4311
500	4297.7	2600	4310
550	4297.5	2650	4313
600	4297.3	2700	4310.2
650	4299.2	2750	4315
700	4298.5	2752.56	4315
750	4298		
800	4298		
850	4292		
900	4296.5		
950	4291		
1000	4294		
1050	4293.6		
1100	4295		
1150	4295		
1200	4296		
1250	4295		
1300	4296.2		
1350	4296.5		
1400	4295.7		
1450	4295		
1500	4296.3		
1550	4295.4		
1600	4295.1		
1650	4292.3		
1700	4292.1		
1750	4294.5		
1800	4293		
1850	4291.1		
1900	4289		
1950	4287.5		
2000	4289		
2050	4293.2		

Section 7 indicates main channel stations

Station	Elevation	Station	Elevation
0	4300	2100	4296.5
50	4299.8	2150	4296.7
100	4299.4	2200	4296.8
150	4299.2	2250	4297
200	4299	2300	4297.2
250	4297	2350	4297.5
300	4296.2	2400	4297.8
350	4296.5	2450	4300.1
400	4296.2	2500	4300.5
450	4296.2	2550	4301
500	4296.3	2600	4301.1
550	4296.1	2650	4301.2
600	4296.2	2700	4301.4
650	4295.9	2750	4301.7
700	4296	2800	4301.9
750	4286	2850	4305
800	4286.1	2900	4310
850	4291	2926.15	4314
900	4292		
950	4293		
1000	4293.3		
1050	4293.4		
1100	4293.9		
1150	4294.1		
1200	4295		
1250	4294.5		
1300	4294		
1350	4294.5		
1400	4294		
1450	4294.2		
1500	4293.7		
1550	4293.5		
1600	4294.1		
1650	4294.3		
1700	4294.5		
1750	4294.8		
1800	4295.1		
1850	4295.6		
1900	4295.8		
1950	4296		
2000	4296.1		
2050	4296.4		

Section 8 indicates main channel stations

Station	Elevation	Station	Elevation
0	4302.4	2100	4295.9
50	4302.2	2150	4296
100	4301.1	2200	4296
150	4298	2250	4296.2
200	4294.8	2300	4296.3
250	4294.8	2350	4296.6
300	4294.7	2400	4296.8
350	4294.6	2450	4297
400	4294.6	2500	4300.1
450	4294.5	2550	4300
500	4294.4	2600	4300.3
550	4294.3	2650	4300.5
600	4294.3	2700	4300.8
650	4294.2	2750	4304
700	4294.1	2800	4319
750	4294	2850	4332
800	4293	2900	4338
850	4293	2927.41	4338
900	4292.9		
950	4288		
1000	4286.5		
1050	4286.1		
1100	4294		
1150	4292.3		
1200	4292.4		
1250	4292.4		
1300	4292.6		
1350	4292.7		
1400	4292.9		
1450	4292.9		
1500	4293		
1550	4293.2		
1600	4293.3		
1650	4293.5		
1700	4293.6		
1750	4293.8		
1800	4294		
1850	4293.7		
1900	4295		
1950	4295.2		
2000	4295.6		
2050	4295.7		

Section 9 indicates main channel stations

Station	Elevation	Station	Elevation
0	4301	2100	4285.1
50	4300	2150	4291
100	4300	2200	4296
150	4299.7	2250	4296.1
200	4299.9	2300	4296
250	4301.2	2350	4296.1
300	4301.1	2400	4296.1
350	4301.1	2450	4296.3
400	4301	2500	4296.3
450	4299	2550	4296.4
500	4294	2600	4296.5
550	4293.1	2650	4296.6
600	4293	2700	4296.7
650	4293	2750	4296.8
700	4293.3	2800	4297
750	4293.3	2850	4301
800	4293.2	2900	4304
850	4293.1	2950	4306
900	4293.1	3000	4307
950	4292.9	3050	4308.3
1000	4292.5	3100	4309.5
1050	4292.4	3150	4310
1100	4292	3200	4309.8
1150	4292.1	3205.91	4309.7
1200	4292.2		
1250	4292.1		
1300	4292		
1350	4292.2		
1400	4292		
1450	4292		
1500	4292		
1550	4292		
1600	4292.1		
1650	4292.2		
1700	4292.2		
1750	4292.1		
1800	4292		
1850	4289		
1900	4294		
1950	4294		
2000	4288		
2050	4286.3		

Section 10 indicates main channel stations

Station	Elevation	Station	Elevation
0	4296	2100	4290.6
50	4296	2150	4290.4
100	4295.7	2200	4291
150	4295.2	2250	4290.6
200	4295	2300	4290.7
250	4297	2350	4290.7
300	4297	2400	4290.8
350	4297	2450	4290.9
400	4297	2500	4291
450	4294	2550	4290.8
500	4293.5	2600	4290.9
550	4292.7	2650	4291
600	4293.1	2700	4291
650	4293.3	2750	4291.1
700	4293.1	2800	4291.8
750	4293	2850	4294.2
800	4292.8	2900	4294.4
850	4292	2950	4294.7
900	4287	3000	4294.8
950	4285	3050	4294.9
1000	4290	3056.32	4294.9
1050	4294		
1100	4289		
1150	4285.5		
1200	4286		
1250	4286		
1300	4288		
1350	4290.2		
1400	4290.3		
1450	4290.2		
1500	4290.1		
1550	4290.3		
1600	4290.8		
1650	4291		
1700	4290		
1750	4290.3		
1800	4290.4		
1850	4290.8		
1900	4291.2		
1950	4291.4		
2000	4291.3		
2050	4291		

Manning's n or k Values

Section	River Station	Frctn (n/K)	n #1	n #2	n #3
1	90	n	0.045	0.04	0.045
2	80	n	0.05	0.04	0.06
3	72	n	0.055	0.045	0.075
4	60	n	0.05	0.04	0.05
5	50	n	0.045	0.04	0.05
6	40	n	0.05	0.04	0.05
7	30	n	0.05	0.04	0.05
8	20	n	0.05	0.04	0.05
9	10	n	0.05	0.04	0.05
10	0	n	0.045	0.04	0.045

n #1 Manning's n for left overbank
n #2 Manning's n for main channel
n #3 Manning's n for right overbank

Contraction/Expansion Coefficients

Base Geometry without Bridge

Section	River Station	Contraction	Expansion
1	90	0.1	0.3
2	80	0.1	0.3
3	72	0.3	0.5
4	60	0.3	0.5
5	50	0.1	0.3
6	40	0.1	0.3
7	30	0.1	0.3
8	20	0.1	0.3
9	10	0.1	0.3
10	0	0.1	0.3

For all Bridge Scenarios

Section	River Station	Contraction	Expansion
1	90	0.1	0.3
2	80	0.1	0.3
3	72	0.3	0.5
4	60	0.3	0.5
	55	Bridge	
5	50	0.3	0.5
6	40	0.3	0.5
7	30	0.1	0.3
8	20	0.1	0.3
9	10	0.1	0.3
10	0	0.1	0.3

Downstream Reach Lengths (ft)

Section	River Station	LOB	Channel	ROB
1	90	1528.48	1547.45	918.5
2	80	1531.51	1552.09	1061.06
3	72	1060.67	922.96	789.91
4	60	119.71	119.74	119.72
5	50	596.56	717.27	773.59
6	40	683.85	1363.67	935.62
7	30	705.88	692.91	543.4
8	20	1046.45	1201.27	1036.27
9	10	1468.91	1548.39	1751.32
10	0	10	10	10

LOB --- Left overbank
ROB --- Right overbank

Proposed Bridge Parameters

Bridge Deck Low Cord Elevation: 4305 ft (NAVD 88)
Bridge Deck High Cord Elevation: 4310 ft
Abutments Slope: 2:1 (H:V)

Piers: Circular, 6 ft diameter
Pier Elevation: 4298~4305 ft
Pier Base: Circular, 10 ft diamter
Pier Base Elevation: from Below Ground to 4298 ft

Scenario 1

Number of Piers:	5
Total Span:	700 ft
Pier Span:	100 ft
Two Central Main Span:	150 ft

Scenario 2

Number of Piers:	7
Total Span:	900 ft
Pier Span:	100 ft
Two Central Main Span:	150 ft

Scenario 3

Number of Piers:	9
Total Span:	1100 ft
Pier Span:	100 ft
Two Central Main Span:	150 ft

Scenarion 4

Number of Piers:	11
Total Span:	1300 ft
Pier Span:	100 ft
Two Central Main Span:	150 ft

Scenario 5

Number of Piers:	30
Total Span:	3200 ft
Pier Span:	100 ft
Two Central Main Span:	150 ft

Bridge Modeling Method

Using all the following methods with the hightest energy as the final answer
Energy
Momentum with drag coefficient of 1.20
Yarnell with Yarnell's pier Coefficient of 1.25

Steady Flow Model Input

100 Year Flood:

Flow Rate: 36100 cubic ft per second

Upstream Boundary: Normal Depth with a slope of 0.000646

Downstream Boundary: Known WS Elevation: 4294.932 ft

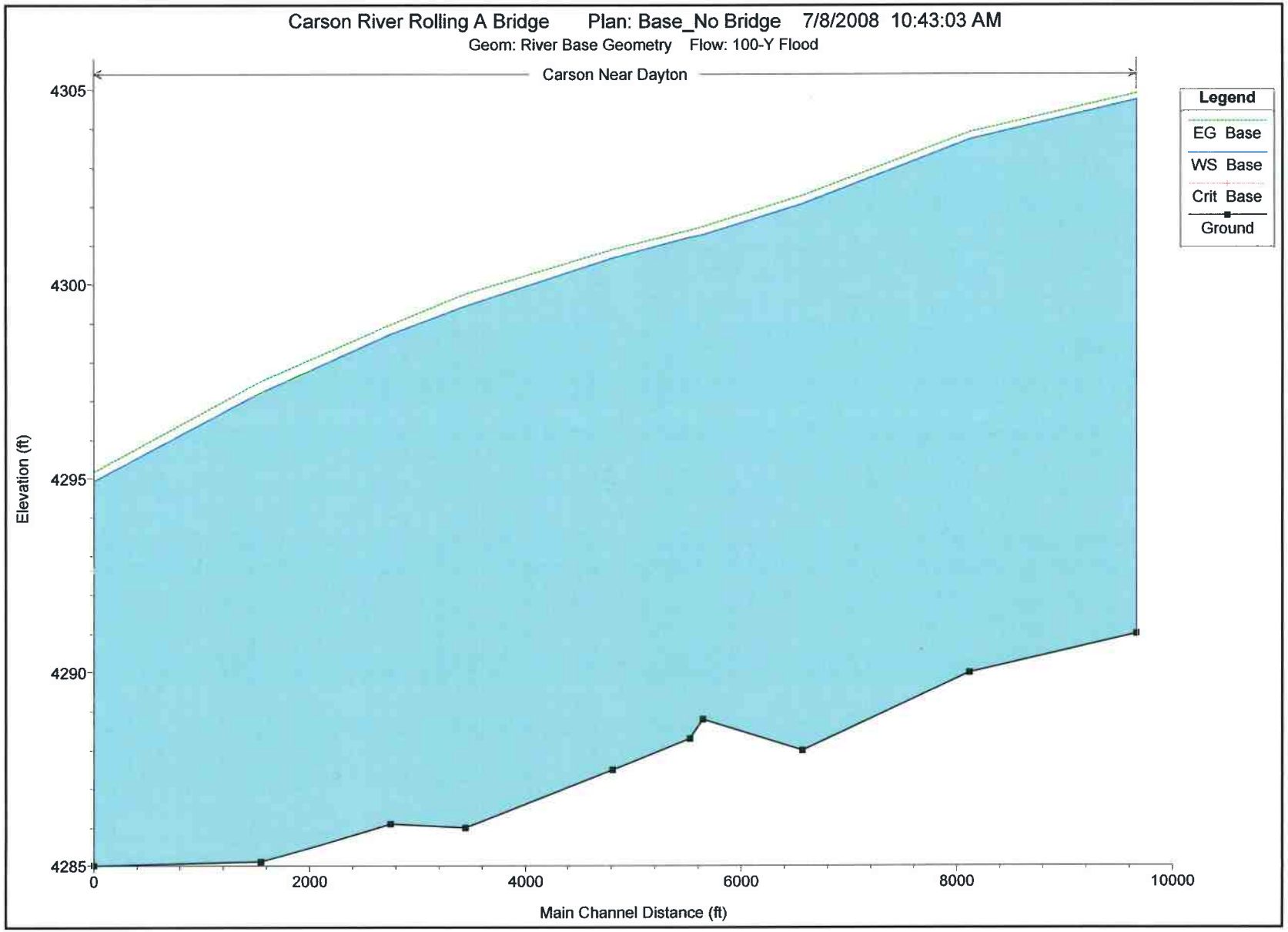
1.5 X 100 Year Flood:

Flow Rate: 54150 cubic ft per second

Upstream Boundary: Normal Depth with a slope of 0.000646

Downstream Boundary: Normal Depth with a slope of 0.000646

Appendix B HEC-RAS Modeling Outputs


Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Carson Near Dayton
Legend
EG Base
WS Base
Crit Base
Ground
Elevation (ft)
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: No_Bridge Carson Near Dayton RS: 90 Profile: Base

E.G. Elev (ft)	4304.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (ft)	4304.75	Reach Len. (ft)	1528.48	1547.45	918.50
Crit W.S. (ft)		Flow Area (sq ft)	3998.24	2407.59	6683.13
E.G. Slope (ft/ft)	0.000557	Area (sq ft)	3998.24	2407.59	6683.13
Q Total (cfs)	36100.00	Flow (cfs)	8662.23	11052.16	16385.61
Top Width (ft)	2342.63	Top Width (ft)	862.59	200.00	1280.04
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)	2.17	4.59	2.45
Max Chl Dpth (ft)	13.75	Hydr. Depth (ft)	4.64	12.04	5.22
Conv. Total (cfs)	1529392.0	Conv. (cfs)	366978.9	468229.6	694183.2
Length Wtd. (ft)	1150.85	Wetted Per. (ft)	862.75	200.99	1280.69
Min Ch El (ft)	4291.00	Shear (lb/sq ft)	0.16	0.42	0.18
Alpha	1.35	Stream Power (lb/ft s)	0.35	1.91	0.45
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	608.87	586.13	959.67
C & E Loss (ft)	0.00	Cum SA (acres)	141.73	65.91	250.31

Errors Warnings and Notes

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.

Plan: No_Bridge Carson Near Dayton RS: 80 Profile: Base

E.G. Elev (ft)	4303.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.040	0.060
W.S. Elev (ft)	4303.72	Reach Len. (ft)	1531.51	1552.09	1061.06
Crit W.S. (ft)		Flow Area (sq ft)		1216.64	11244.60
E.G. Slope (ft/ft)	0.001504	Area (sq ft)		1216.64	11244.60
Q Total (cfs)	36100.00	Flow (cfs)		7219.49	28880.51
Top Width (ft)	2713.70	Top Width (ft)		142.89	2570.82
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)		5.93	2.57
Max Chl Dpth (ft)	13.72	Hydr. Depth (ft)		8.51	4.37
Conv. Total (cfs)	930831.4	Conv. (cfs)		186153.2	744678.2
Length Wtd. (ft)	1238.26	Wetted Per. (ft)		145.55	2571.42
Min Ch El (ft)	4290.00	Shear (lb/sq ft)		0.78	0.41
Alpha	1.47	Stream Power (lb/ft s)		4.66	1.05
Frctn Loss (ft)	1.63	Cum Volume (acre-ft)	538.72	521.76	770.66
C & E Loss (ft)	0.00	Cum SA (acres)	126.60	59.82	209.71

Errors Warnings and Notes

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

Plan: No_Bridge Carson Near Dayton RS: 70 Profile: Base

E.G. Elev (ft)	4302.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.055	0.045	0.075
W.S. Elev (ft)	4302.07	Reach Len. (ft)	1060.67	922.96	789.91
Crit W.S. (ft)		Flow Area (sq ft)	1706.91	2889.64	7855.75
E.G. Slope (ft/ft)	0.001161	Area (sq ft)	1706.91	2889.64	7855.75
Q Total (cfs)	36100.00	Flow (cfs)	4330.66	14686.90	17082.45
Top Width (ft)	2209.66	Top Width (ft)	372.63	300.00	1537.03
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)	2.54	5.08	2.17
Max Chl Dpth (ft)	14.07	Hydr. Depth (ft)	4.58	9.63	5.11
Conv. Total (cfs)	1059516.0	Conv. (cfs)	127102.5	431052.8	501360.8

Plan: No_Bridge Carson Near Dayton RS: 70 Profile: Base (Continued)

Length Wtd. (ft)	902.18	Wetted Per. (ft)	373.03	300.94	1537.99
Min Ch El (ft)	4288.00	Shear (lb/sq ft)	0.33	0.70	0.37
Alpha	1.61	Stream Power (lb/ft s)	0.84	3.54	0.80
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	508.72	448.60	538.03
C & E Loss (ft)	0.00	Cum SA (acres)	120.05	51.93	159.68

Errors Warnings and Notes

Warning:	Divided flow computed for this cross-section.

Plan: No_Bridge Carson Near Dayton RS: 60 Profile: Base

E.G. Elev (ft)	4301.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4301.27	Reach Len. (ft)	119.71	119.74	119.72
Crit W.S. (ft)		Flow Area (sq ft)	3958.90	4207.29	4910.40
E.G. Slope (ft/ft)	0.000692	Area (sq ft)	3958.90	4207.29	4910.40
Q Total (cfs)	36100.00	Flow (cfs)	8693.69	19730.21	7676.11
Top Width (ft)	3023.85	Top Width (ft)	886.32	400.00	1737.53
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)	2.20	4.69	1.56
Max Chl Dpth (ft)	12.47	Hydr. Depth (ft)	4.47	10.52	2.83
Conv. Total (cfs)	1372064.0	Conv. (cfs)	330423.6	749891.8	291748.1
Length Wtd. (ft)	119.73	Wetted Per. (ft)	886.86	400.32	1738.30
Min Ch El (ft)	4288.80	Shear (lb/sq ft)	0.19	0.45	0.12
Alpha	1.80	Stream Power (lb/ft s)	0.42	2.13	0.19
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	439.74	373.42	422.28
C & E Loss (ft)	0.02	Cum SA (acres)	104.72	44.51	129.99

Errors Warnings and Notes

Warning:	Divided flow computed for this cross-section.
Warning:	The cross-section end points had to be extended vertically for the computed water surface.

Plan: No_Bridge Carson Near Dayton RS: 50 Profile: Base

E.G. Elev (ft)	4301.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4301.21	Reach Len. (ft)	596.56	717.27	773.59
Crit W.S. (ft)		Flow Area (sq ft)	4574.62	4135.35	4798.60
E.G. Slope (ft/ft)	0.000609	Area (sq ft)	4574.62	4135.35	4798.60
Q Total (cfs)	36100.00	Flow (cfs)	10933.22	17965.29	7201.49
Top Width (ft)	3138.00	Top Width (ft)	1045.89	400.00	1692.11
Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	2.39	4.34	1.50
Max Chl Dpth (ft)	12.91	Hydr. Depth (ft)	4.37	10.34	2.84
Conv. Total (cfs)	1463436.0	Conv. (cfs)	443215.2	728283.8	291936.8
Length Wtd. (ft)	672.69	Wetted Per. (ft)	1046.24	400.62	1693.09
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.17	0.39	0.11
Alpha	1.62	Stream Power (lb/ft s)	0.40	1.70	0.16
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	428.01	361.95	408.94
C & E Loss (ft)	0.00	Cum SA (acres)	102.06	43.41	125.28

Errors Warnings and Notes

Warning:	Divided flow computed for this cross-section.

Plan: No_Bridge Carson Near Dayton RS: 40 Profile: Base

E.G. Elev (ft)	4300.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4300.68	Reach Len. (ft)	683.85	1363.67	935.62
Crit W.S. (ft)		Flow Area (sq ft)	7794.02	3276.86	500.65
E.G. Slope (ft/ft)	0.000894	Area (sq ft)	7794.02	3276.86	500.65
Q Total (cfs)	36100.00	Flow (cfs)	19365.35	16146.80	587.85
Top Width (ft)	2344.35	Top Width (ft)	1664.87	350.00	329.48
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)	2.48	4.93	1.17
Max Chl Dpth (ft)	13.18	Hydr. Depth (ft)	4.68	9.36	1.52
Conv. Total (cfs)	1207602.0	Conv. (cfs)	647801.6	540136.2	19664.7
Length Wtd. (ft)	1039.78	Wetted Per. (ft)	1666.40	350.58	329.49
Min Ch El (ft)	4287.50	Shear (lb/sq ft)	0.26	0.52	0.08
Alpha	1.46	Stream Power (lb/ft s)	0.65	2.57	0.10
Frctn Loss (ft)	1.14	Cum Volume (acre-ft)	343.31	300.92	361.88
C & E Loss (ft)	0.01	Cum SA (acres)	83.50	37.24	107.33

Errors Warnings and Notes

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

Plan: No_Bridge Carson Near Dayton RS: 30 Profile: Base

E.G. Elev (ft)	4299.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4299.44	Reach Len. (ft)	705.88	692.91	543.40
Crit W.S. (ft)		Flow Area (sq ft)	1537.55	2379.37	6318.53
E.G. Slope (ft/ft)	0.001375	Area (sq ft)	1537.55	2379.37	6318.53
Q Total (cfs)	36100.00	Flow (cfs)	3155.86	14668.85	18275.28
Top Width (ft)	2340.30	Top Width (ft)	604.70	250.00	1485.60
Vel Total (ft/s)	3.53	Avg. Vel. (ft/s)	2.05	6.17	2.89
Max Chl Dpth (ft)	13.44	Hydr. Depth (ft)	2.54	9.52	4.25
Conv. Total (cfs)	973671.4	Conv. (cfs)	85118.4	395641.1	492912.0
Length Wtd. (ft)	624.98	Wetted Per. (ft)	604.75	251.25	1485.67
Min Ch El (ft)	4286.00	Shear (lb/sq ft)	0.22	0.81	0.36
Alpha	1.61	Stream Power (lb/ft s)	0.45	5.01	1.06
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	270.07	212.39	288.65
C & E Loss (ft)	0.02	Cum SA (acres)	65.69	27.85	87.83

Plan: No_Bridge Carson Near Dayton RS: 20 Profile: Base

E.G. Elev (ft)	4298.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4298.72	Reach Len. (ft)	1046.45	1201.27	1036.27
Crit W.S. (ft)		Flow Area (sq ft)	3302.77	2040.47	5933.75
E.G. Slope (ft/ft)	0.001110	Area (sq ft)	3302.77	2040.47	5933.75
Q Total (cfs)	36100.00	Flow (cfs)	8697.64	11847.04	15555.33
Top Width (ft)	2339.19	Top Width (ft)	761.53	200.00	1377.66
Vel Total (ft/s)	3.20	Avg. Vel. (ft/s)	2.63	5.81	2.62
Max Chl Dpth (ft)	12.61	Hydr. Depth (ft)	4.34	10.20	4.31
Conv. Total (cfs)	1083307.0	Conv. (cfs)	261003.0	355511.9	466792.1
Length Wtd. (ft)	1102.29	Wetted Per. (ft)	761.66	200.88	1377.77
Min Ch El (ft)	4286.10	Shear (lb/sq ft)	0.30	0.70	0.30
Alpha	1.53	Stream Power (lb/ft s)	0.79	4.09	0.78
Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	230.85	177.24	212.22
C & E Loss (ft)	0.00	Cum SA (acres)	54.62	24.27	69.97

Errors Warnings and Notes

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

Errors Warnings and Notes (Continued)

	section. This may indicate the need for additional cross sections.

Plan: No_Bridge Carson Near Dayton RS: 10 Profile: Base

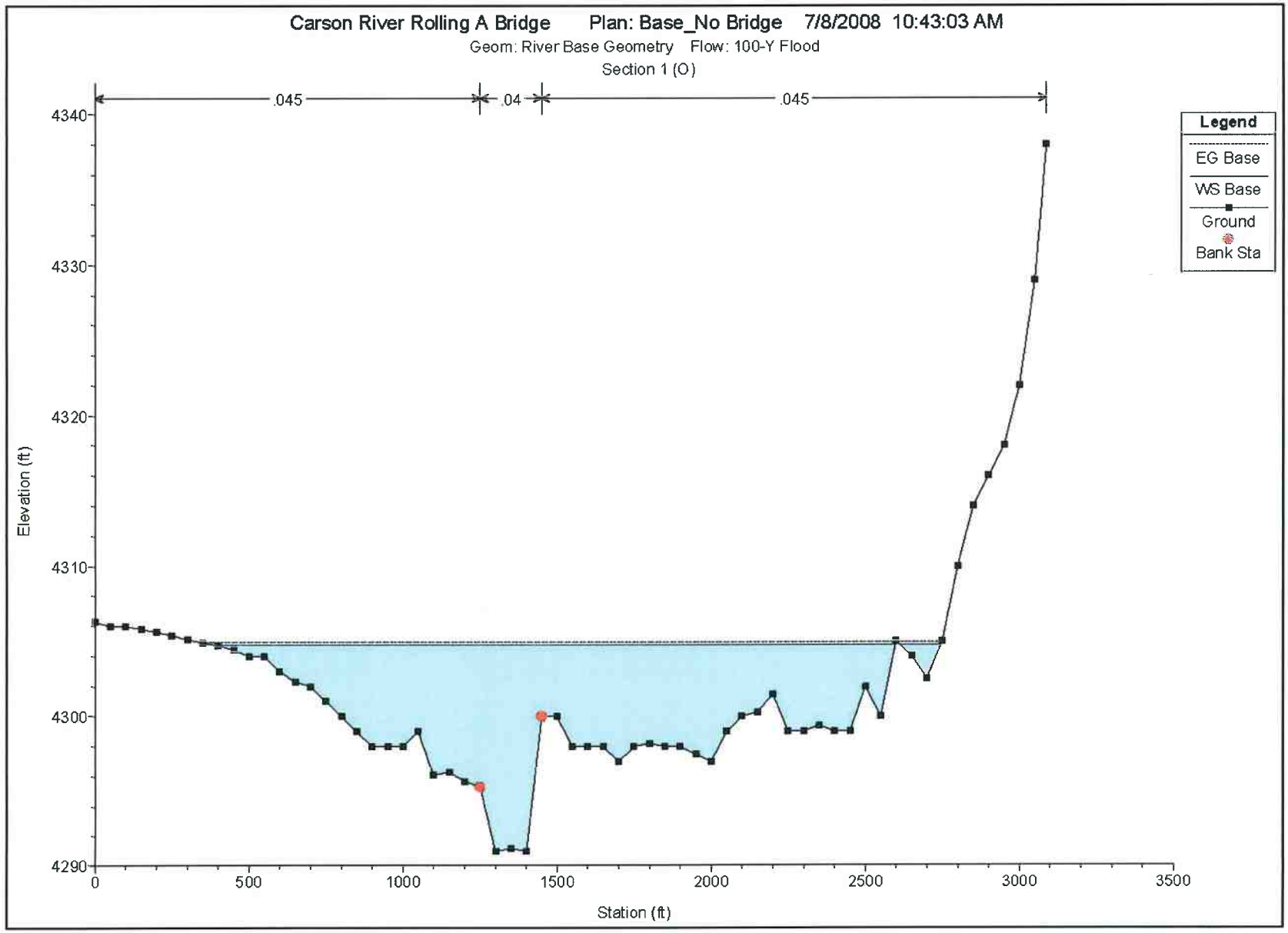
E.G. Elev (ft)	4297.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4297.22	Reach Len. (ft)	1468.91	1548.39	1751.32
Crit W.S. (ft)		Flow Area (sq ft)	6180.47	2817.31	511.26
E.G. Slope (ft/ft)	0.001580	Area (sq ft)	6180.47	2817.31	511.26
Q Total (cfs)	36100.00	Flow (cfs)	20307.07	15251.75	541.18
Top Width (ft)	2334.91	Top Width (ft)	1332.18	400.00	602.73
Vel Total (ft/s)	3.80	Avg. Vel. (ft/s)	3.29	5.41	1.06
Max Chl Dpth (ft)	12.12	Hydr. Depth (ft)	4.64	7.04	0.85
Conv. Total (cfs)	908184.1	Conv. (cfs)	510874.3	383695.1	13614.7
Length Wtd. (ft)	1576.85	Wetted Per. (ft)	1332.36	401.34	602.74
Min Ch El (ft)	4285.10	Shear (lb/sq ft)	0.46	0.69	0.08
Alpha	1.28	Stream Power (lb/ft s)	1.50	3.75	0.09
Frctn Loss (ft)	2.32	Cum Volume (acre-ft)	116.94	110.25	135.56
C & E Loss (ft)	0.01	Cum SA (acres)	29.47	16.00	46.42

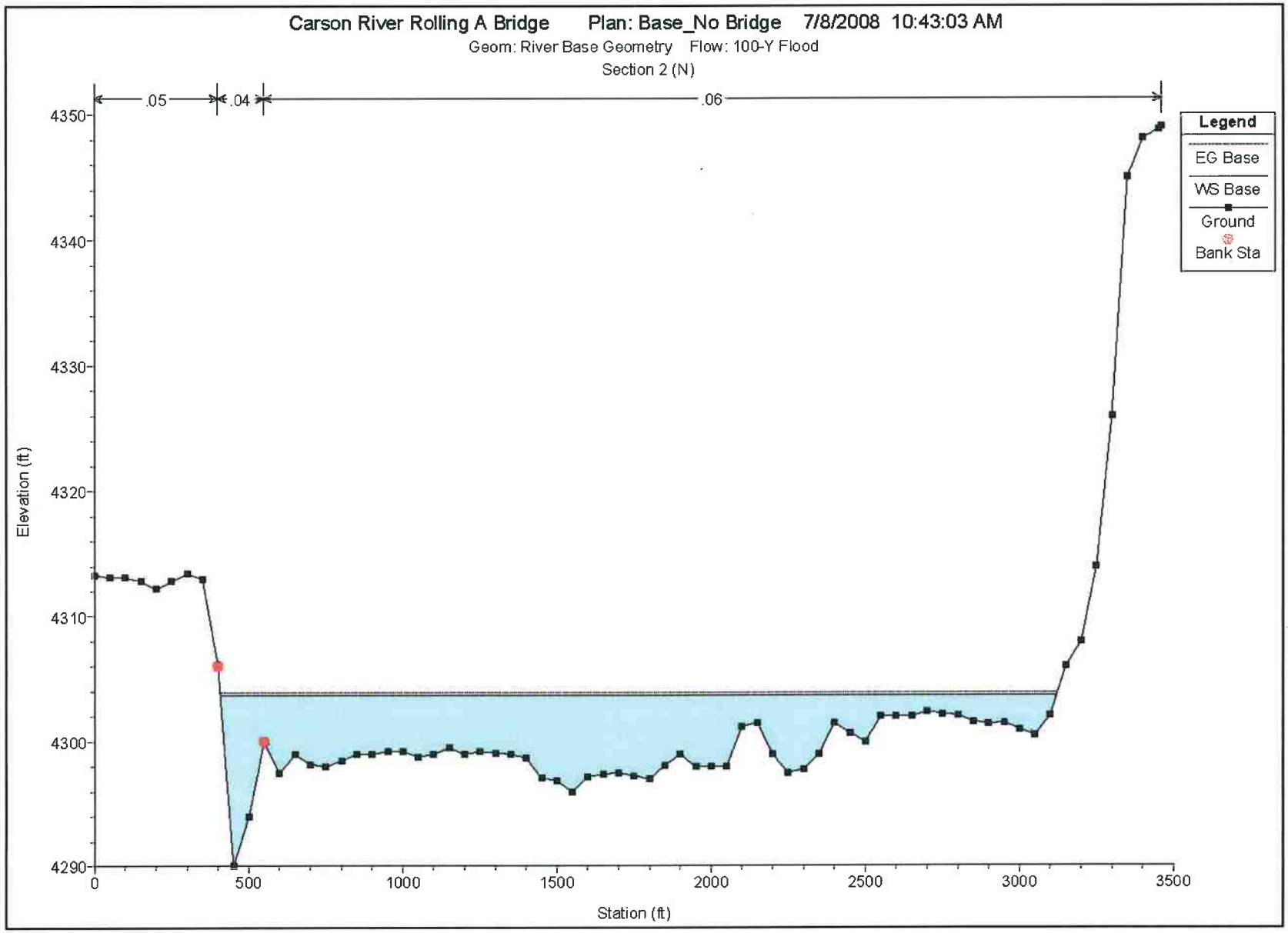
Errors Warnings and Notes

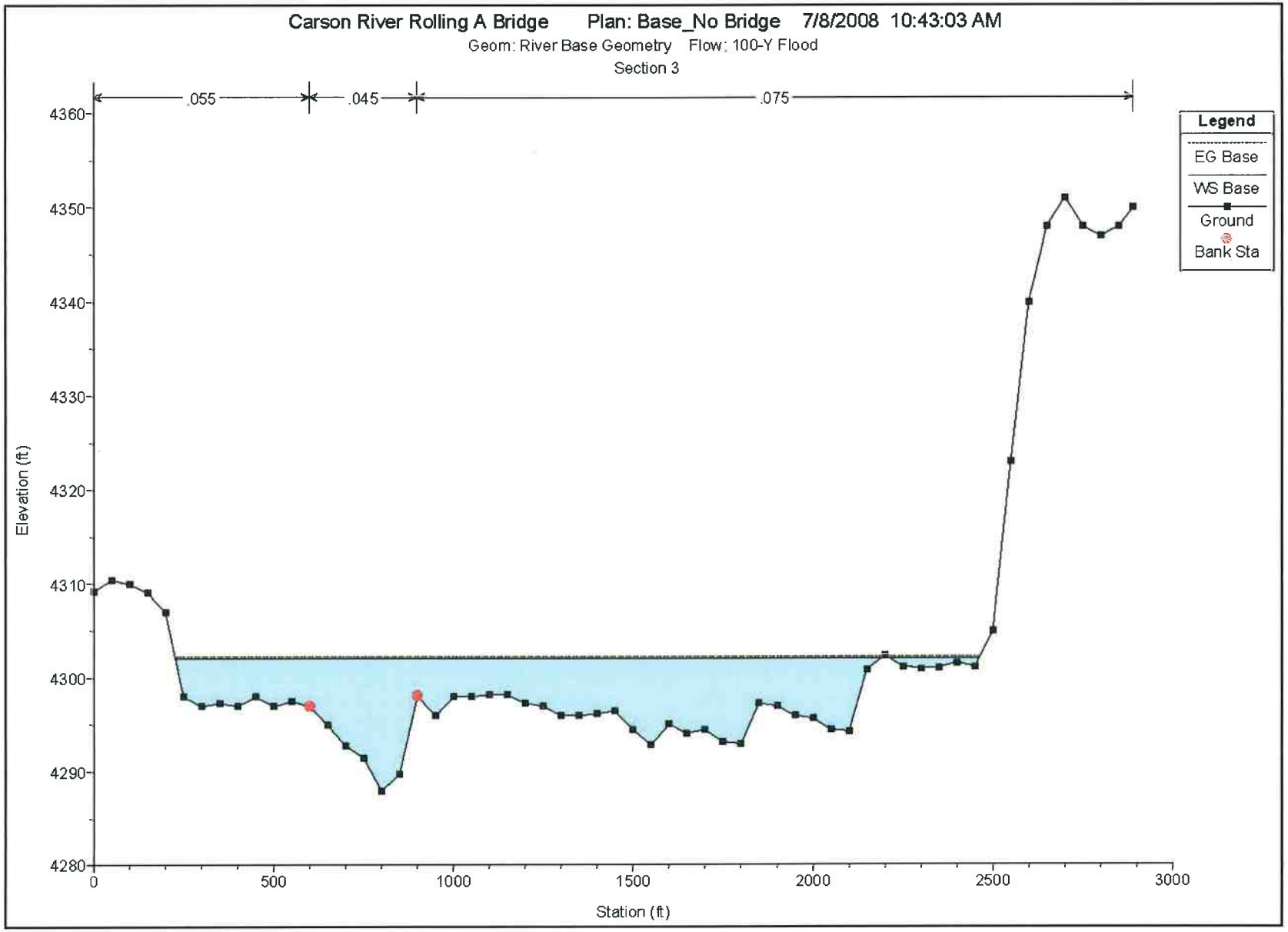
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
	section. This may indicate the need for additional cross sections.

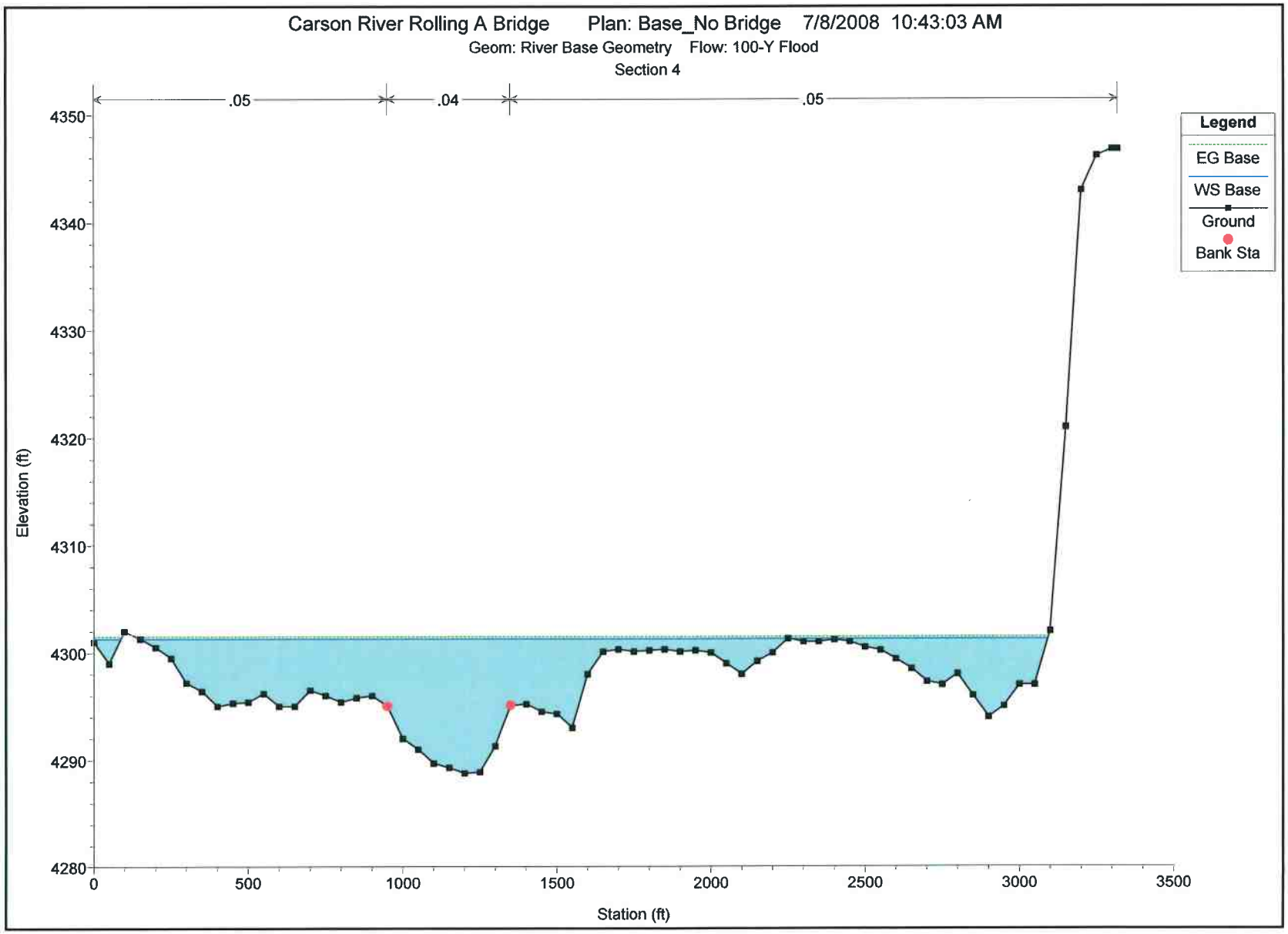
Plan: No_Bridge Carson Near Dayton RS: 0 Profile: Base

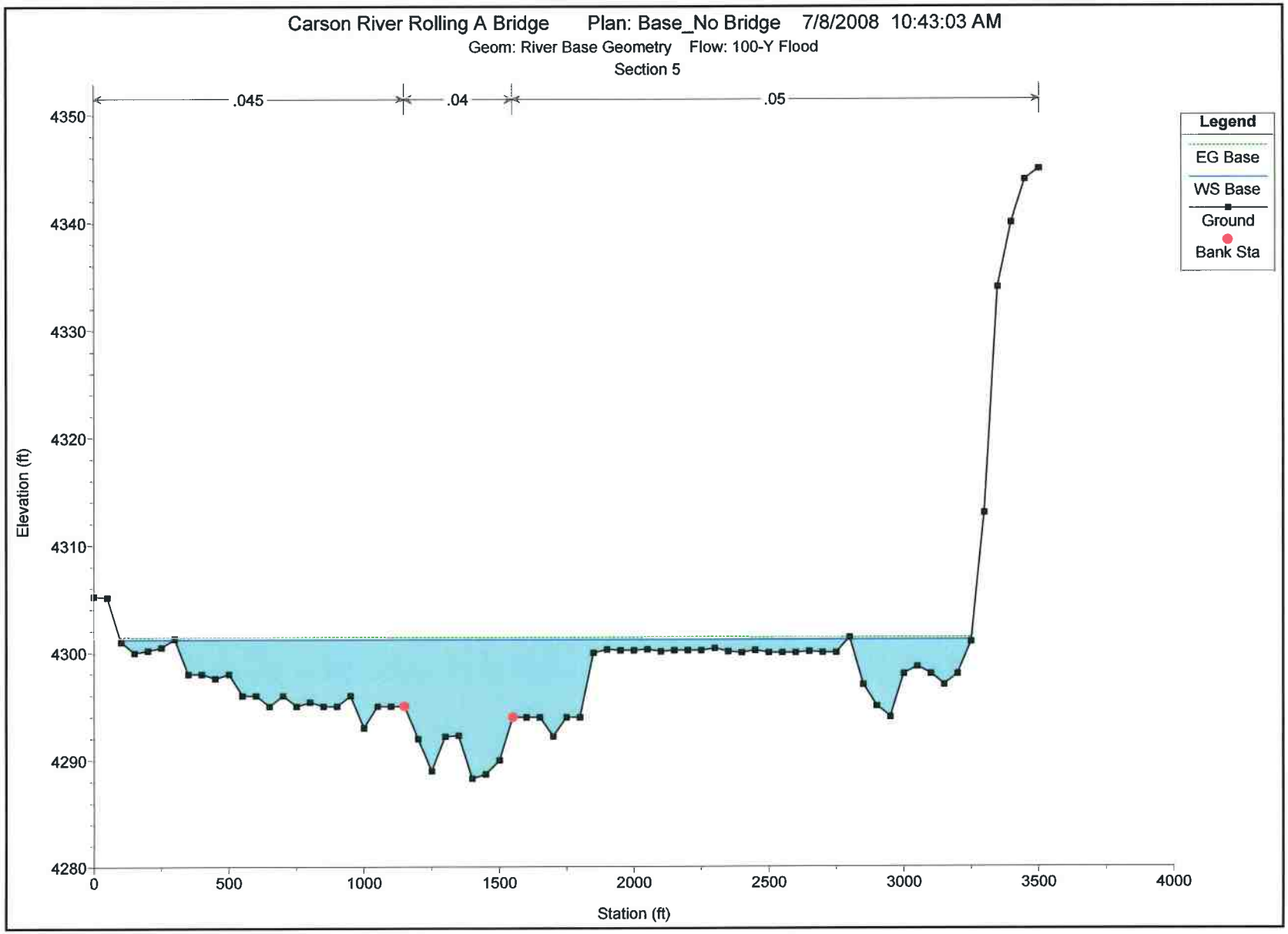
E.G. Elev (ft)	4295.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (ft)	4294.93	Reach Len. (ft)			
Crit W.S. (ft)	4292.64	Flow Area (sq ft)	755.09	3386.06	6232.37
E.G. Slope (ft/ft)	0.001372	Area (sq ft)	755.09	3386.06	6232.37
Q Total (cfs)	36100.00	Flow (cfs)	1374.99	16649.25	18075.76
Top Width (ft)	2621.86	Top Width (ft)	415.54	500.00	1706.32
Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)	1.82	4.92	2.90
Max Chl Dpth (ft)	9.93	Hydr. Depth (ft)	1.82	6.77	3.65
Conv. Total (cfs)	974736.3	Conv. (cfs)	37126.0	449546.5	488063.8
Length Wtd. (ft)		Wetted Per. (ft)	415.58	501.16	1706.44
Min Ch El (ft)	4285.00	Shear (lb/sq ft)	0.16	0.58	0.31
Alpha	1.28	Stream Power (lb/ft s)	0.28	2.84	0.91
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

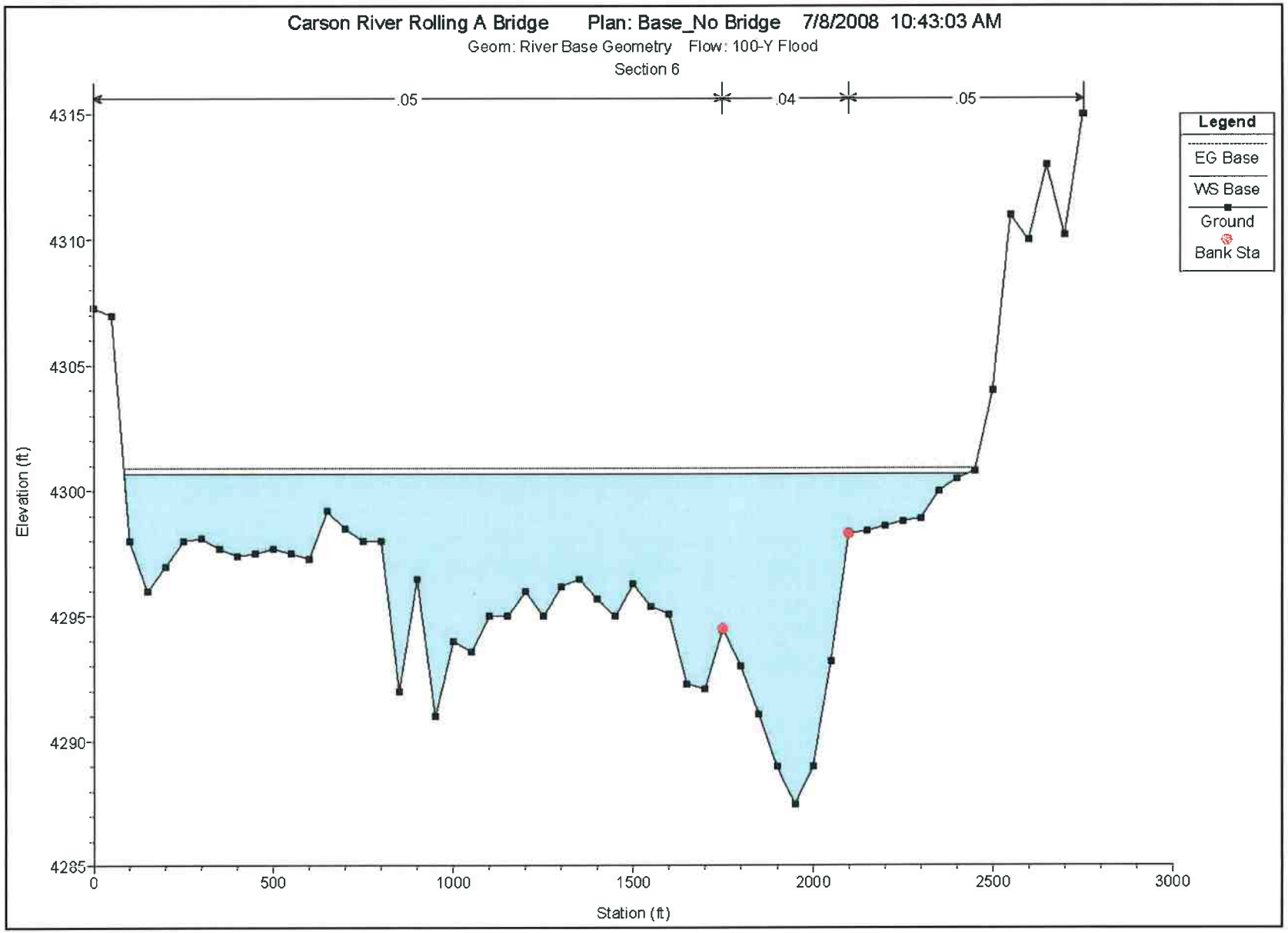

Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 1 (O)
.045
.04
.045
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4340
4330
4320
4310
4300
4290
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

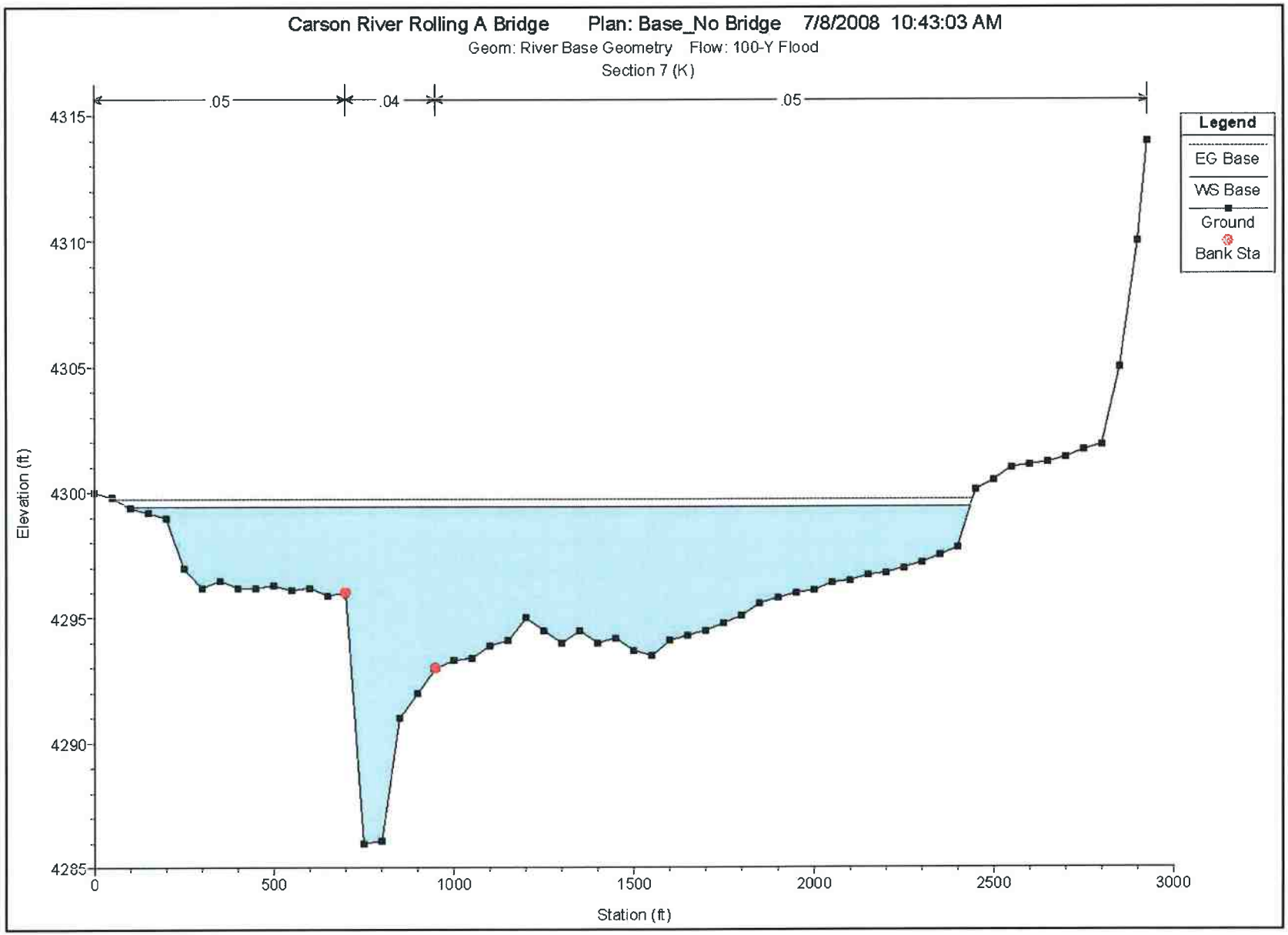

Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 2 (N)
.05
.04
.06
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

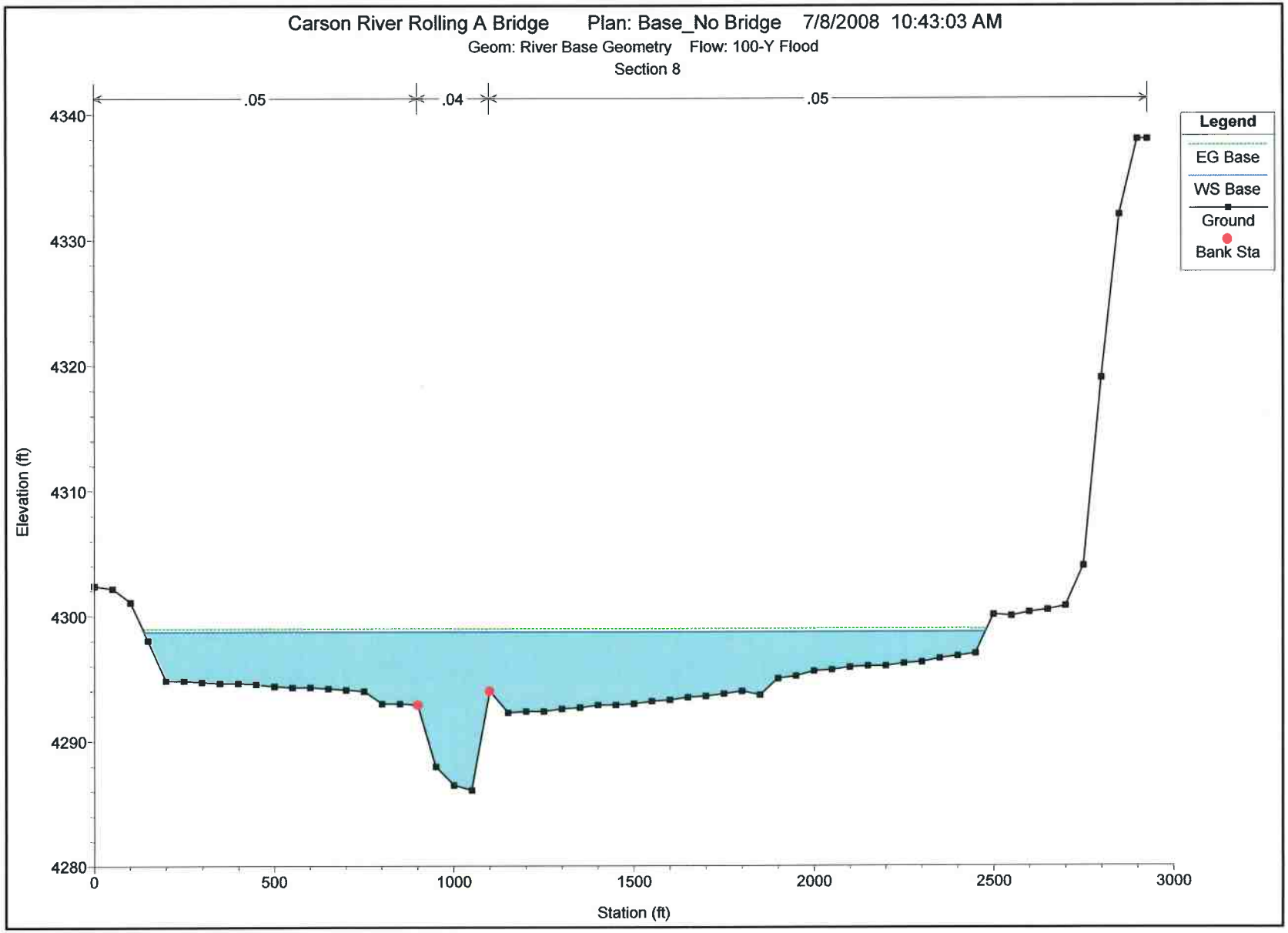

Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 3
.055
.045
.075
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4360
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
Station (ft)

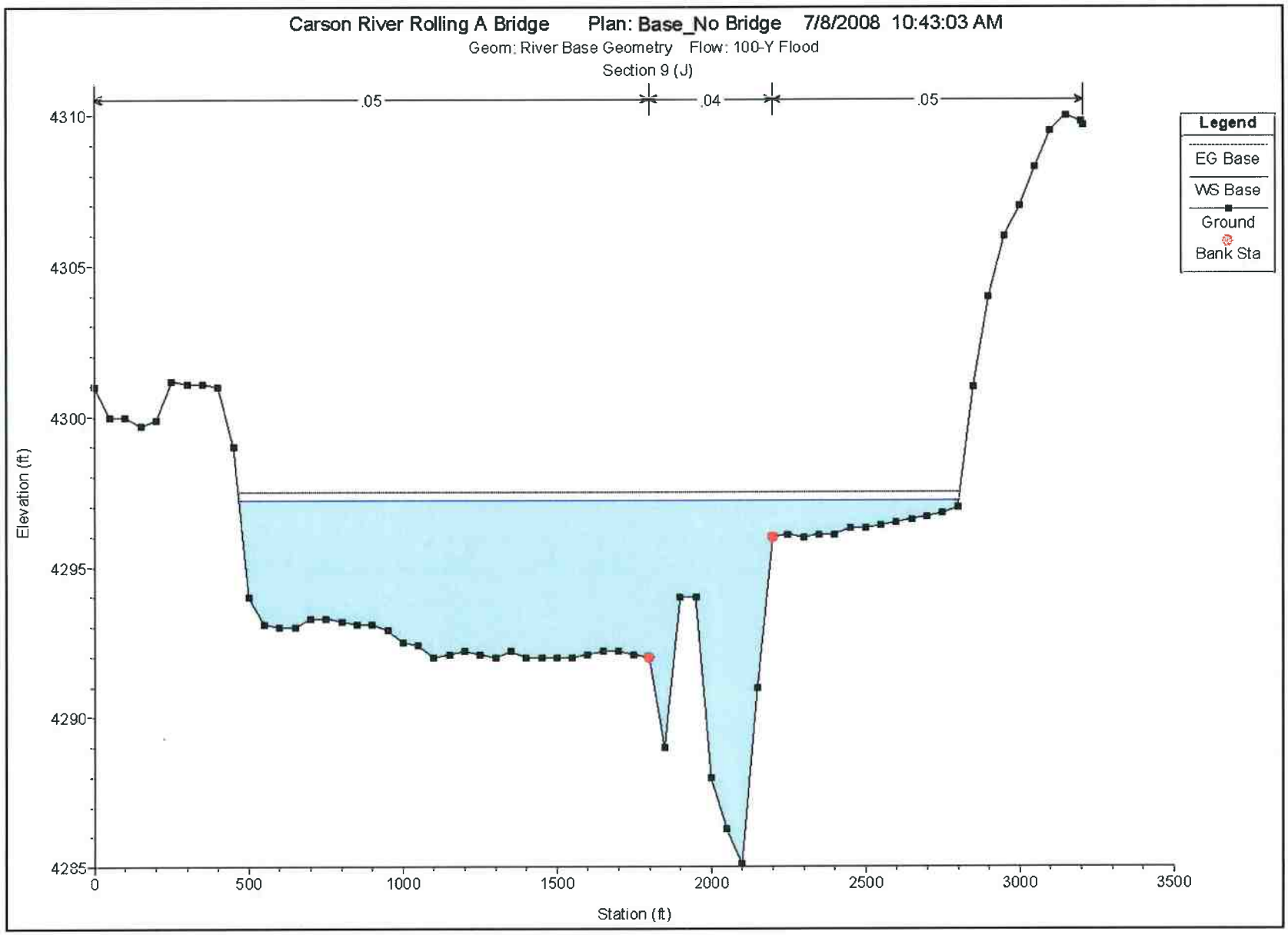

Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 4
.05
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

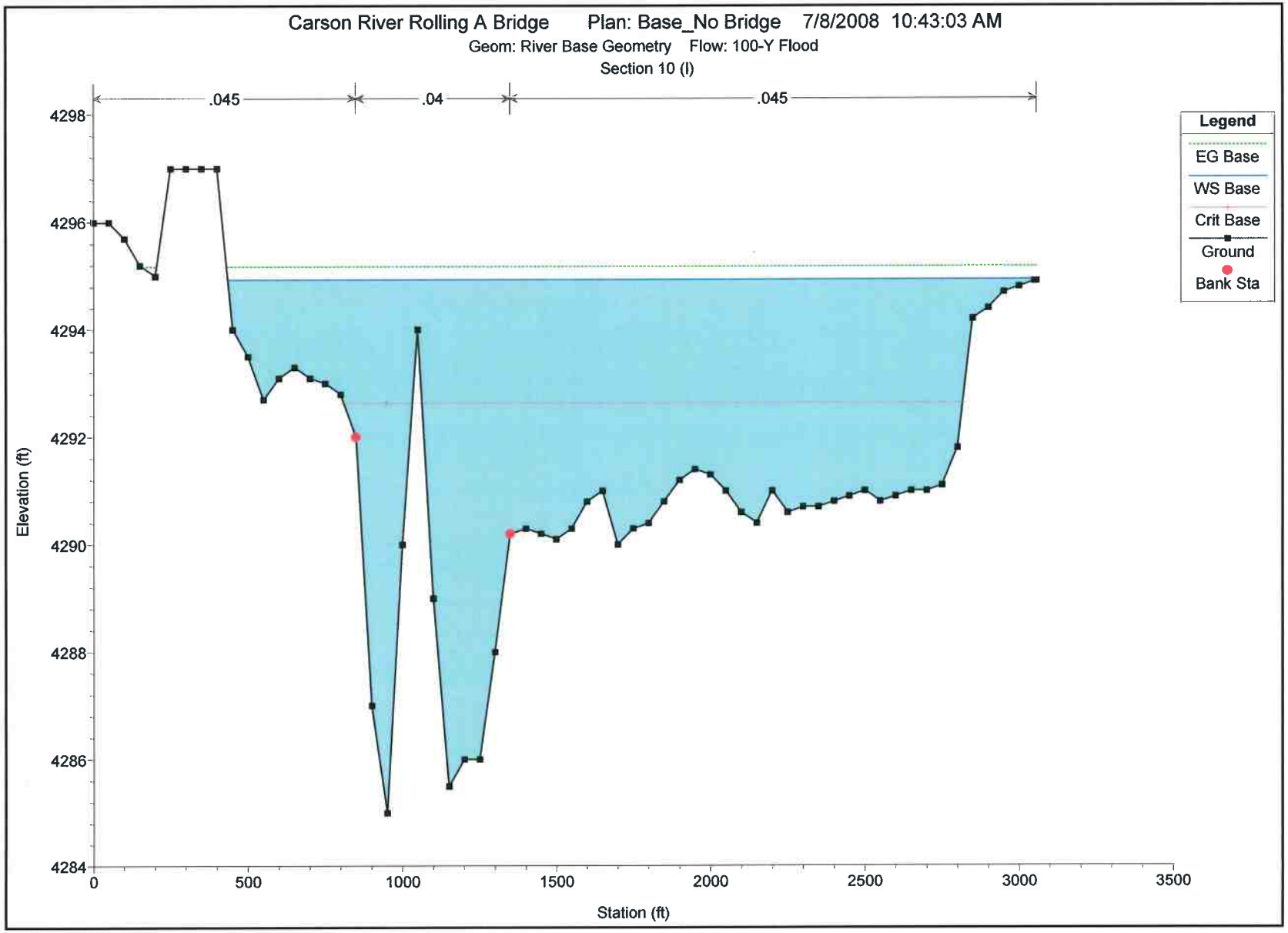

Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 5
.045
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 6
.05
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4315
4310
4305
4300
4295
4290
4285
0
500
1000
1500
2000
2500
3000
Station (ft)


Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 7 (K)
.05
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4315
4310
4305
4300
4295
4290
4285
0
500
1000
1500
2000
2500
3000
Station (ft)

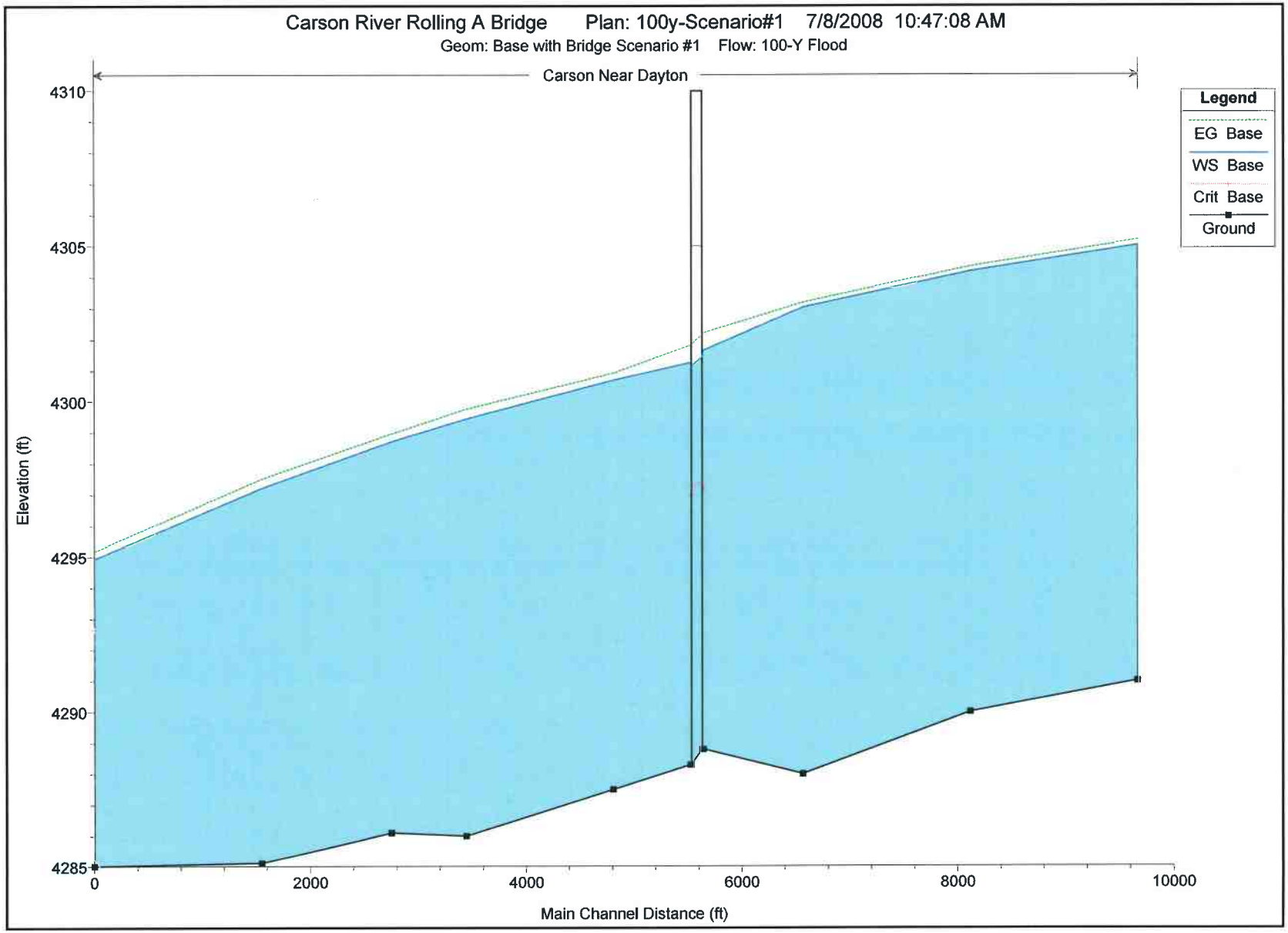

Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 8
.05
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
Station (ft)


Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 9 (J)
.05
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: Base_No Bridge 7/8/2008 10:43:03 AM
Geom: River Base Geometry Flow: 100-Y Flood
Section 10 (I)
.045
.04
.045
Legend
EG Base
WS Base
Crit Base
Ground
Bank Sta
Elevation (ft)
4298
4296
4294
4292
4290
4288
4286
4284
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

HEC-RAS Plan: No_Bridge River: Carson Reach: Near Dayton Profile: Base

Reach	River Sta	Profile	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)	
Near Dayton	90	Base	36100.00	4291.00	4304.75		4304.91	0.000557	4.59	13088.96	2342.63	0.23
Near Dayton	80	Base	36100.00	4290.00	4303.72		4303.92	0.001504	5.93	12461.24	2713.70	0.36
Near Dayton	70	Base	36100.00	4288.00	4302.07		4302.28	0.001161	5.08	12452.30	2209.66	0.29
Near Dayton	60	Base	36100.00	4288.80	4301.27		4301.49	0.000692	4.69	13076.59	3023.85	0.25
Near Dayton	50	Base	36100.00	4288.30	4301.21		4301.39	0.000609	4.34	13508.56	3138.00	0.24
Near Dayton	40	Base	36100.00	4287.50	4300.68		4300.90	0.000894	4.93	11571.53	2344.35	0.28
Near Dayton	30	Base	36100.00	4286.00	4299.44		4299.75	0.001375	6.17	10235.45	2340.30	0.35
Near Dayton	20	Base	36100.00	4286.10	4298.72		4298.96	0.001110	5.81	11276.98	2339.19	0.32
Near Dayton	10	Base	36100.00	4285.10	4297.22		4297.51	0.001580	5.41	9509.04	2334.91	0.36
Near Dayton	0	Base	36100.00	4285.00	4294.93	4292.64	4295.17	0.001372	4.92	10373.52	2621.86	0.33


Carson River Rolling A Bridge Plan: 100y-Scenario#1 7/8/2008 10:47:08 AM
Geom: Base with Bridge Scenario #1 Flow: 100-Y Flood
Carson Near Dayton
Legend
EG Base
WS Base
Crit Base
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 100Y-S#1 Carson Near Dayton RS: 55 BR U Profile: Base

E.G. Elev (ft)	4302.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4301.43	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4297.41	Flow Area (sq ft)	476.88	4015.26	1179.46
E.G. Slope (ft/ft)	0.002023	Area (sq ft)	476.88	4015.26	1179.46
Q Total (cfs)	36100.00	Flow (cfs)	1836.26	29212.08	5051.66
Top Width (ft)	655.73	Top Width (ft)	89.86	382.00	183.86
Vel Total (ft/s)	6.37	Avg. Vel. (ft/s)	3.85	7.28	4.28
Max Chl Dpth (ft)	12.62	Hydr. Depth (ft)	5.31	10.51	6.41
Conv. Total (cfs)	802715.9	Conv. (cfs)	40831.0	649556.9	112328.1
Length Wtd. (ft)	100.00	Wetted Per. (ft)	97.52	441.84	205.86
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.62	1.15	0.72
Alpha	1.14	Stream Power (lb/ft s)	2.38	8.35	3.10
Frctn Loss (ft)		Cum Volume (acre-ft)	431.01	372.14	412.50
C & E Loss (ft)		Cum SA (acres)	102.52	44.38	125.88

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 100Y-S#1 Carson Near Dayton RS: 55 Profile: Base

E.G. US. (ft)	4302.20	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4301.65	E.G. Elev (ft)	4302.15	4301.84
Q Total (cfs)	36100.00	W.S. Elev (ft)	4301.43	4301.12
Q Bridge (cfs)	36100.00	Crit W.S. (ft)	4297.41	4297.28
Q Weir (cfs)		Max Chl Dpth (ft)	12.62	12.82
Weir Sta Lft (ft)		Vel Total (ft/s)	6.37	6.47
Weir Sta Rgt (ft)		Flow Area (sq ft)	5671.60	5581.87
Weir Submerg		Froude # Chl	0.40	0.40
Weir Max Depth (ft)		Specif Force (cu ft)	34689.80	33513.27
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	8.65	8.52
Min El Prs (ft)	4305.00	W.P. Total (ft)	745.21	742.49
Delta EG (ft)	0.40	Conv. Total (cfs)	802715.9	783517.1
Delta WS (ft)	0.40	Top Width (ft)	655.73	655.13
BR Open Area (sq ft)	8036.93	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.47	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.96	1.00
Br Sel Method	Momentum	Power Total (lb/ft s)	6.12	6.44

Errors Warnings and Notes

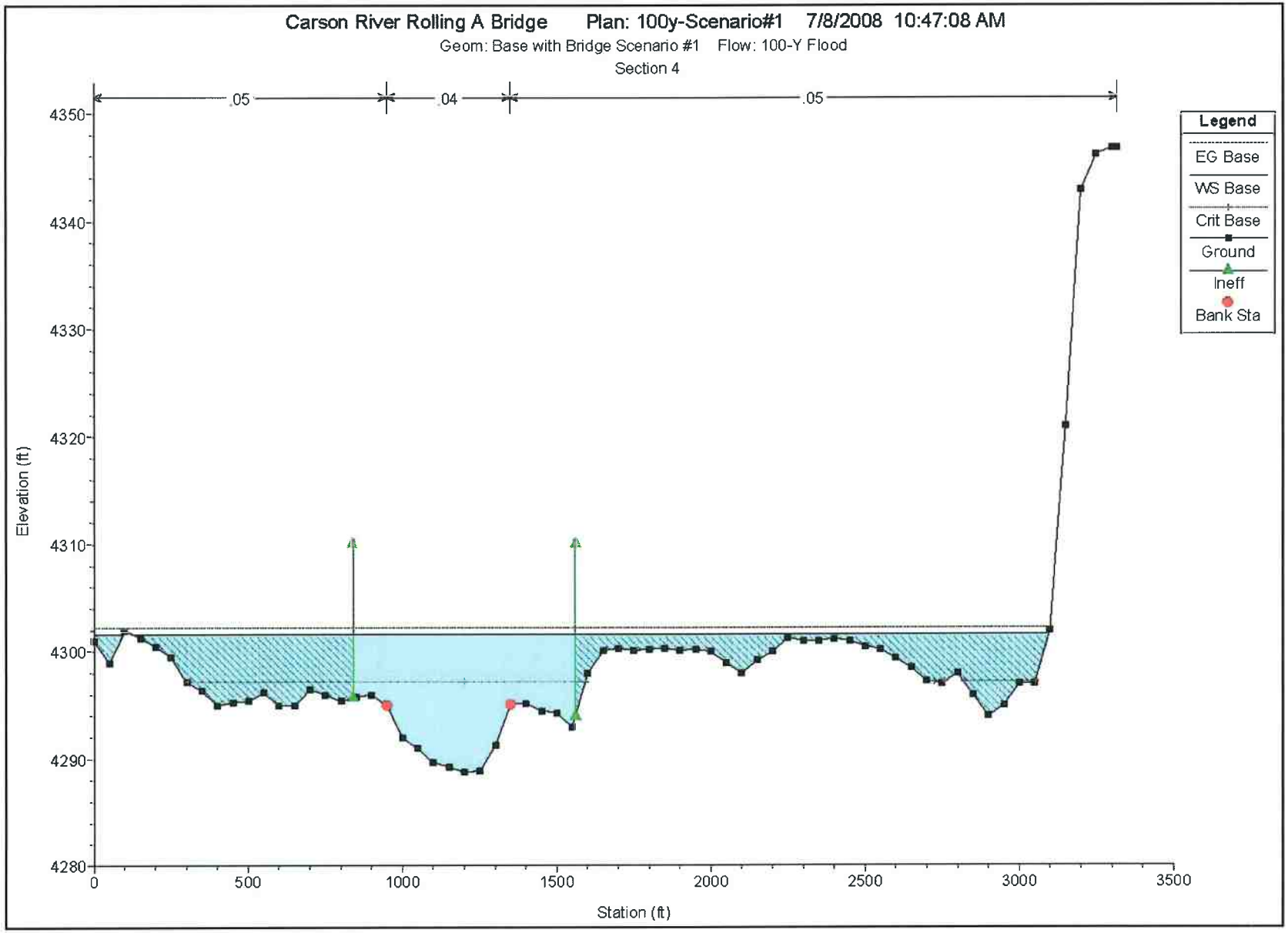
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

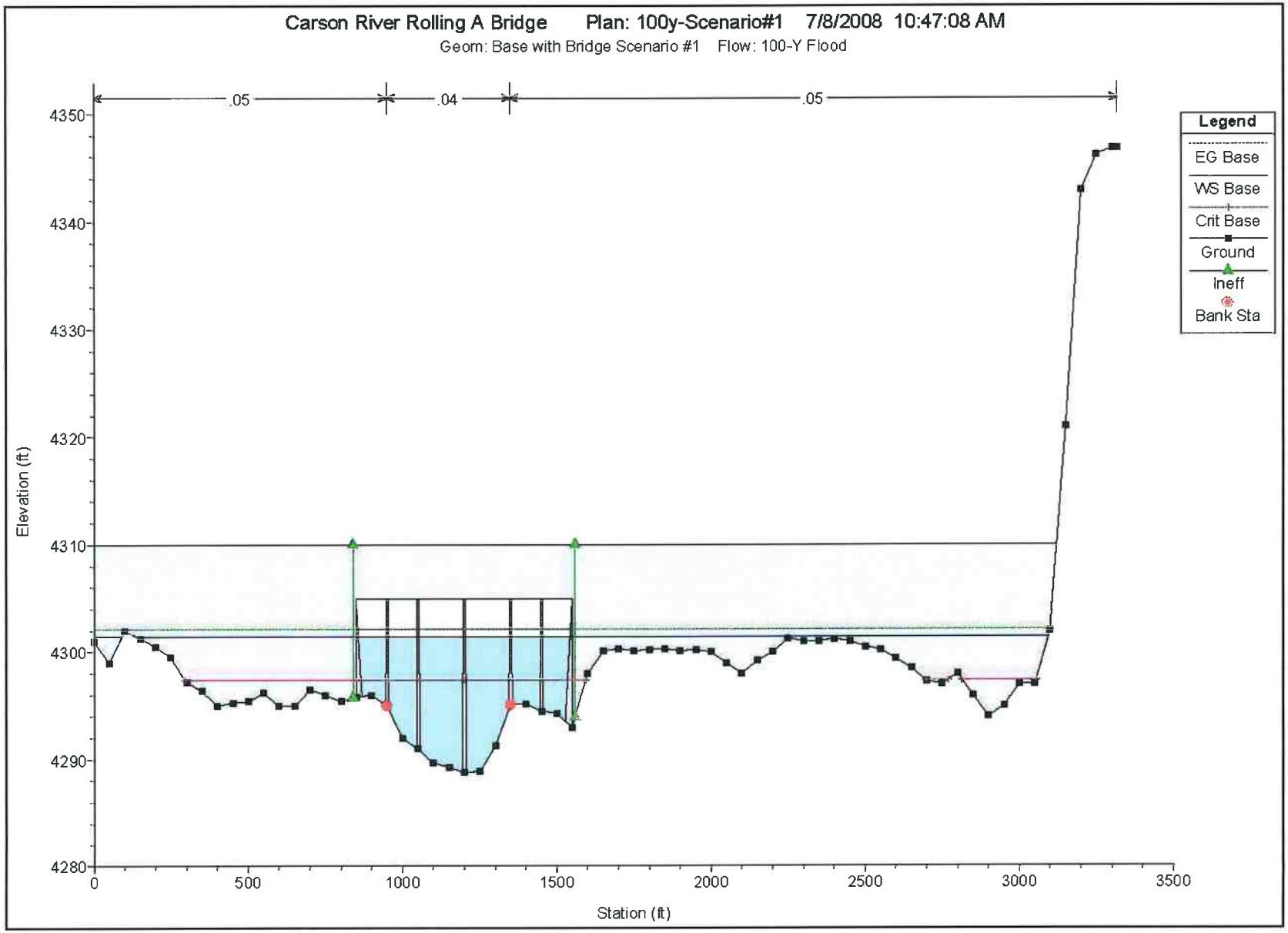
Plan: 100Y-S#1 Carson Near Dayton RS: 55 BR D Profile: Base

E.G. Elev (ft)	4301.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4301.12	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4297.28	Flow Area (sq ft)	1003.72	3852.70	725.45
E.G. Slope (ft/ft)	0.002123	Area (sq ft)	1003.72	3852.70	725.45
Q Total (cfs)	36100.00	Flow (cfs)	4872.04	28051.06	3176.90
Top Width (ft)	655.13	Top Width (ft)	161.89	382.00	111.24
Vel Total (ft/s)	6.47	Avg. Vel. (ft/s)	4.85	7.28	4.38
Max Chl Dpth (ft)	12.82	Hydr. Depth (ft)	6.20	10.09	6.52
Conv. Total (cfs)	783517.1	Conv. (cfs)	105743.2	608822.3	68951.6
Length Wtd. (ft)	9.74	Wetted Per. (ft)	176.19	439.12	127.19
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.75	1.16	0.76
Alpha	1.10	Stream Power (lb/ft s)	3.66	8.47	3.31
Frctn Loss (ft)		Cum Volume (acre-ft)	429.31	363.11	410.31
C & E Loss (ft)		Cum SA (acres)	102.23	43.50	125.55

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 100y-Scenario#1 7/8/2008 10:47:08 AM
Geom: Base with Bridge Scenario #1 Flow: 100-Y Flood
Section 4
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#1 7/8/2008 10:47:08 AM
Geom: Base with Bridge Scenario #1 Flow: 100-Y Flood
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
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4290
4280
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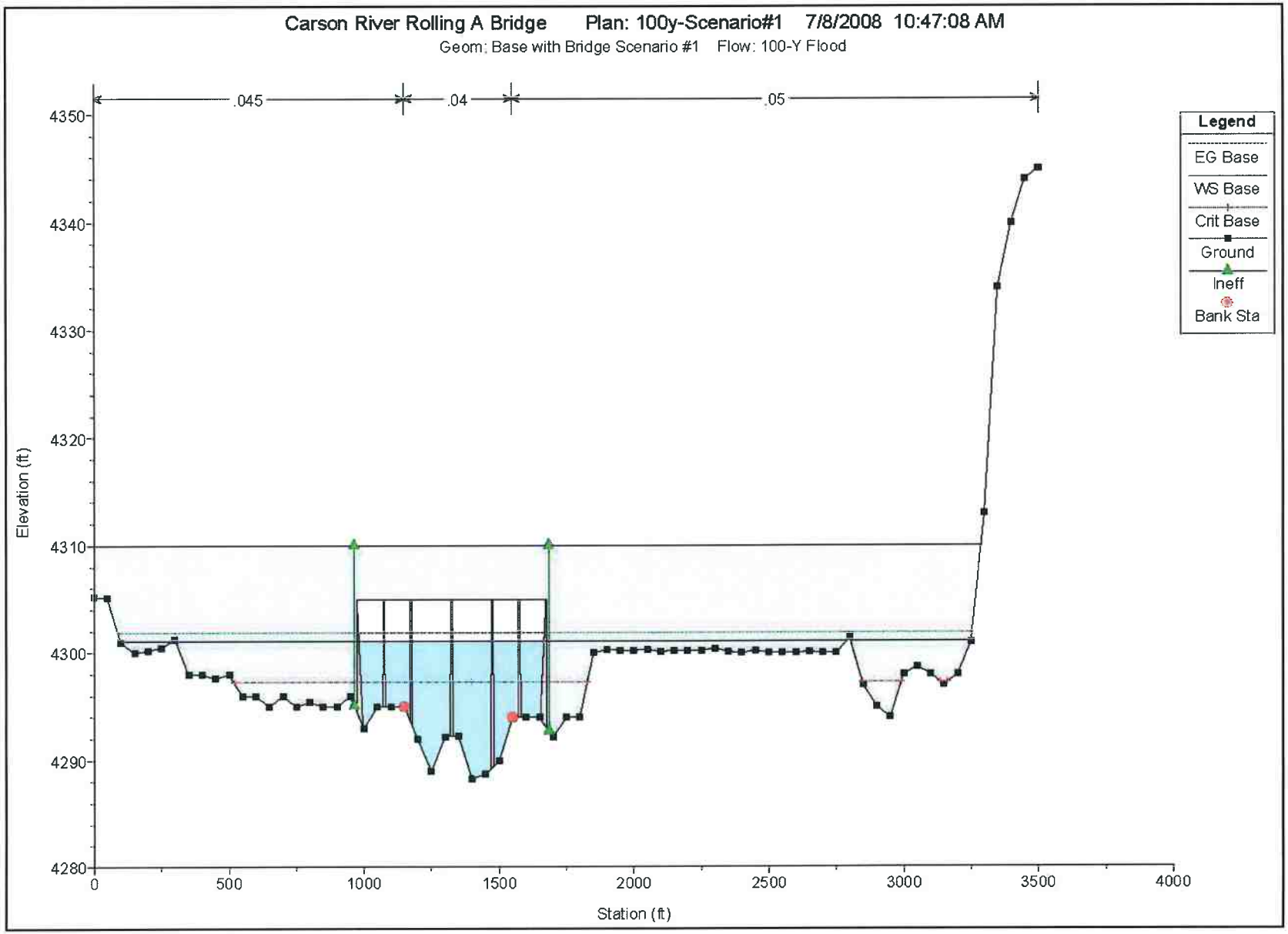
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#1 7/8/2008 10:47:08 AM
Geom: Base with Bridge Scenario #1 Flow: 100-Y Flood
.045
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
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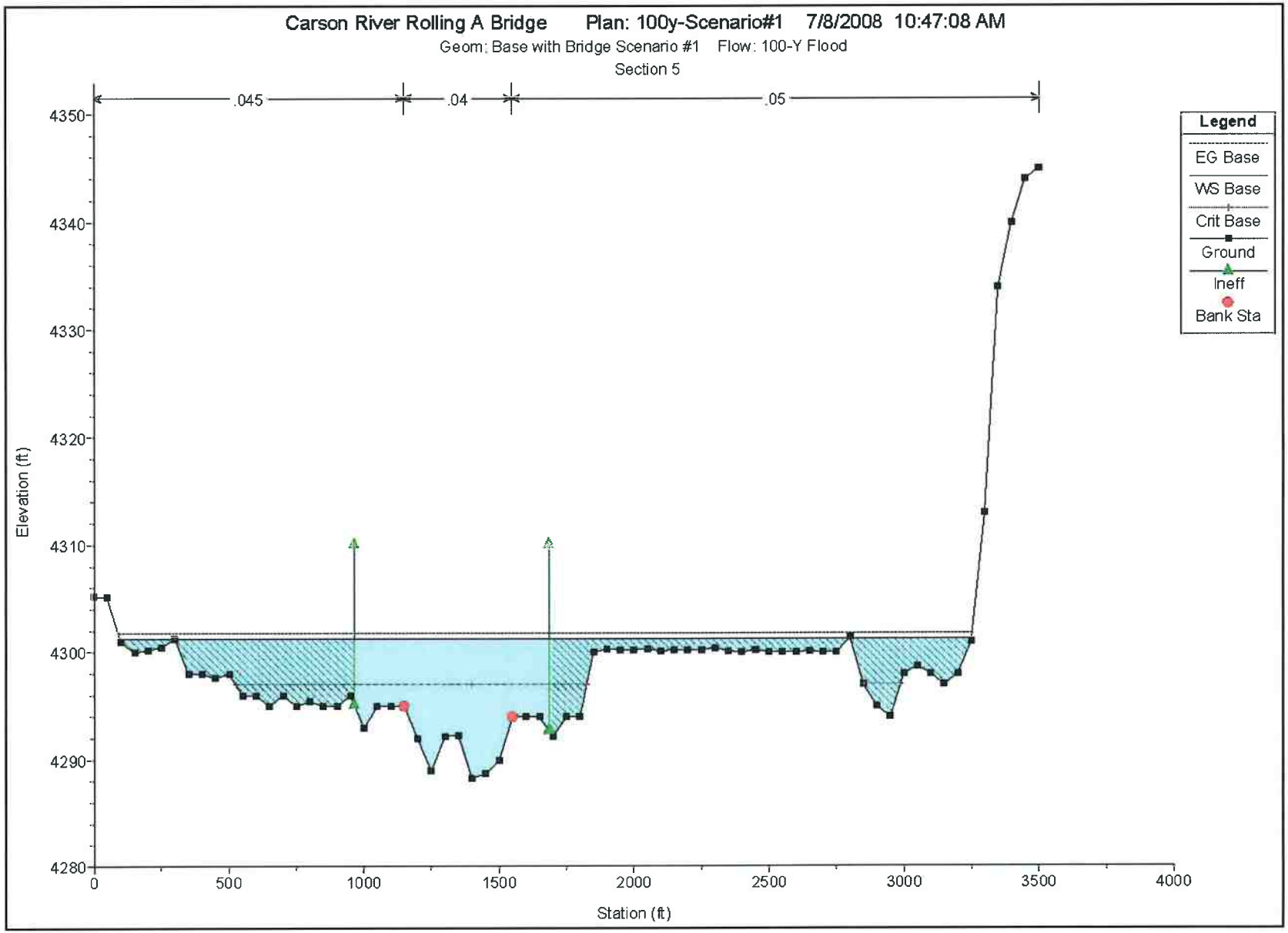
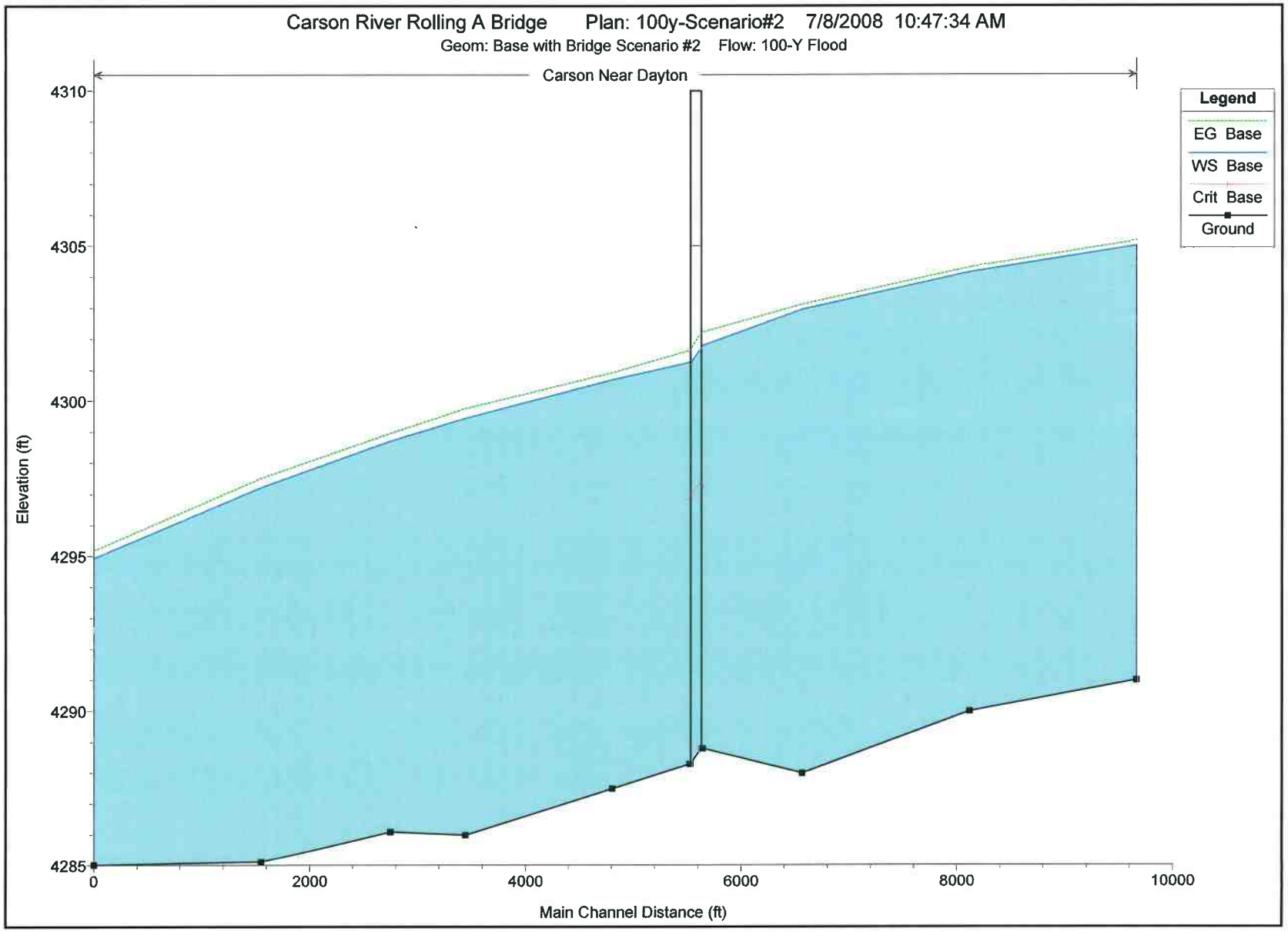
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#1 7/8/2008 10:47:08 AM
Geom: Base with Bridge Scenario #1 Flow: 100-Y Flood
Section 5
.045
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 100Y-S#1 River: Carson Reach: Near Dayton Profile: Base

Reach	River Sta	Profile	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)	
Near Dayton	90	Base	36100.00	4291.00	4305.03		4305.18	0.000516	4.49	13751.35	2432.23	0.23
Near Dayton	80	Base	36100.00	4290.00	4304.19		4304.34	0.001114	5.25	13721.75	2721.10	0.31
Near Dayton	70	Base	36100.00	4288.00	4303.03		4303.19	0.000789	4.46	14592.81	2252.02	0.24
Near Dayton	60	Base	36100.00	4288.80	4301.65	4297.16	4302.20	0.001238	6.42	6522.11	3065.90	0.34
Near Dayton	55		Bridge									
Near Dayton	50	Base	36100.00	4288.30	4301.26	4296.98	4301.80	0.001324	6.42	6395.22	3144.13	0.35
Near Dayton	40	Base	36100.00	4287.50	4300.69		4300.91	0.000886	4.91	11605.89	2346.87	0.28
Near Dayton	30	Base	36100.00	4286.00	4299.44		4299.75	0.001375	6.17	10235.45	2340.30	0.35
Near Dayton	20	Base	36100.00	4286.10	4298.72		4298.96	0.001110	5.81	11276.98	2339.19	0.32
Near Dayton	10	Base	36100.00	4285.10	4297.22		4297.51	0.001580	5.41	9509.04	2334.91	0.36
Near Dayton	0	Base	36100.00	4285.00	4294.93	4292.64	4295.17	0.001372	4.92	10373.52	2621.86	0.33


Carson River Rolling A Bridge Plan: 100y-Scenario#2 7/8/2008 10:47:34 AM
Geom: Base with Bridge Scenario #2 Flow: 100-Y Flood
Carson Near Dayton
Legend
EG Base
WS Base
Crit Base
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 100Y-S#2 Carson Near Dayton RS: 55 BR U Profile: Base

E.G. Elev (ft)	4302.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4301.68	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4297.41	Flow Area (sq ft)	1059.78	4111.50	1706.84
E.G. Slope (ft/ft)	0.001514	Area (sq ft)	1059.78	4111.50	1706.84
Q Total (cfs)	36100.00	Flow (cfs)	3674.61	26235.46	6189.93
Top Width (ft)	844.73	Top Width (ft)	184.37	382.00	278.37
Vel Total (ft/s)	5.25	Avg. Vel. (ft/s)	3.47	6.38	3.63
Max Chl Dpth (ft)	12.87	Hydr. Depth (ft)	5.75	10.76	6.13
Conv. Total (cfs)	927667.3	Conv. (cfs)	94427.0	674176.6	159063.6
Length Wtd. (ft)	100.00	Wetted Per. (ft)	204.15	443.35	316.75
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.49	0.88	0.51
Alpha	1.20	Stream Power (lb/ft s)	1.70	5.59	1.85
Frctn Loss (ft)		Cum Volume (acre-ft)	432.32	372.24	413.90
C & E Loss (ft)		Cum SA (acres)	102.74	44.38	126.11

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 100Y-S#2 Carson Near Dayton RS: 55 Profile: Base

E.G. US. (ft)	4302.23	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4301.80	E.G. Elev (ft)	4302.20	4301.65
Q Total (cfs)	36100.00	W.S. Elev (ft)	4301.68	4301.17
Q Bridge (cfs)	36100.00	Crit W.S. (ft)	4297.41	4297.02
Q Weir (cfs)		Max Chl Dpth (ft)	12.87	12.87
Weir Sta Lft (ft)		Vel Total (ft/s)	5.25	5.23
Weir Sta Rgt (ft)		Flow Area (sq ft)	6878.13	6906.01
Weir Submerg		Froude # Chl	0.34	0.34
Weir Max Depth (ft)		Specif Force (cu ft)	38086.18	37024.63
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	8.14	8.19
Min El Prs (ft)	4305.00	W.P. Total (ft)	964.25	960.32
Delta EG (ft)	0.60	Conv. Total (cfs)	927667.3	923246.6
Delta WS (ft)	0.55	Top Width (ft)	844.73	843.31
BR Open Area (sq ft)	9701.61	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.25	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.67	0.69
Br Sel Method	Momentum	Power Total (lb/ft s)	3.54	3.59

Errors Warnings and Notes

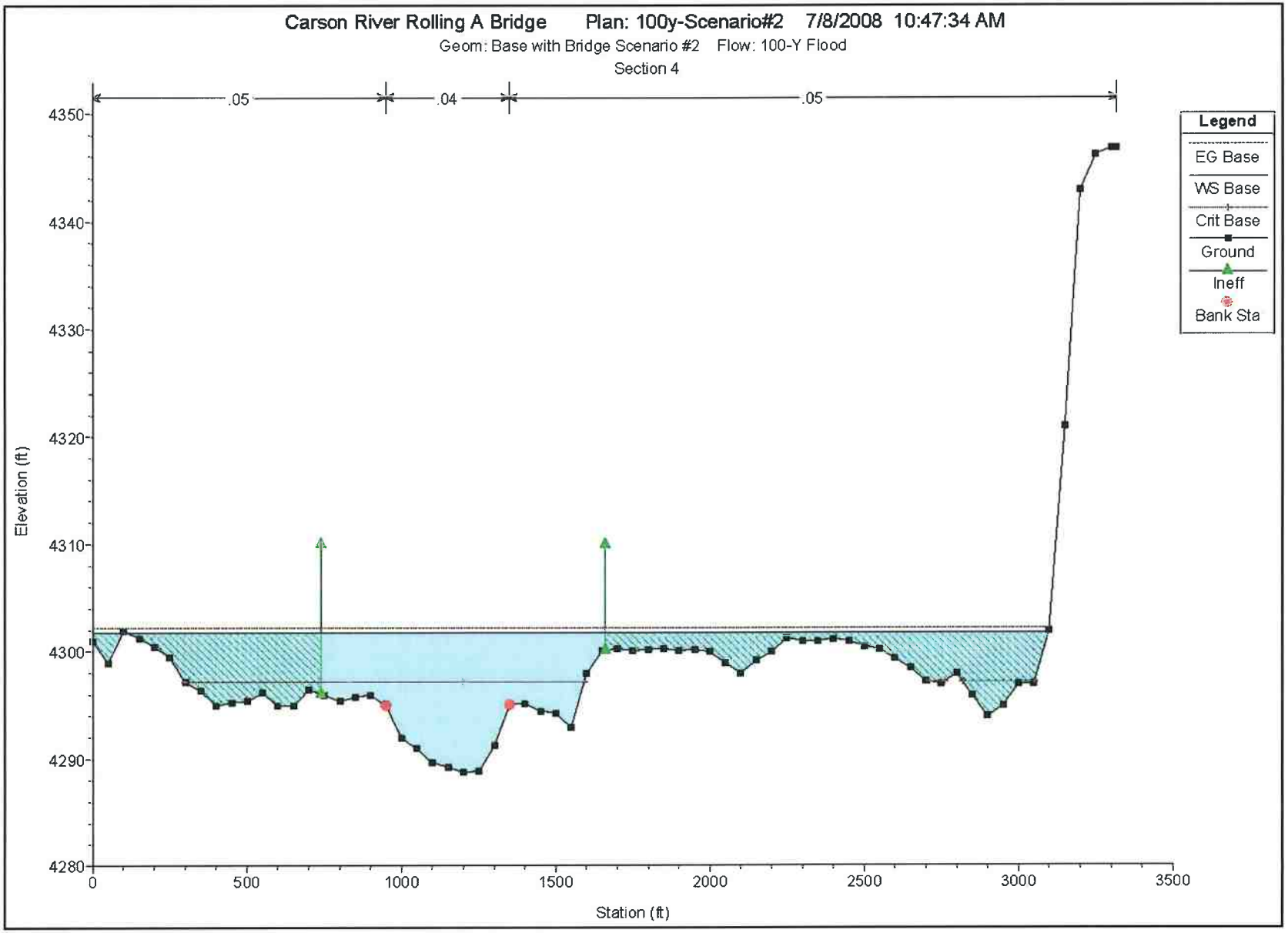
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 100Y-S#2 Carson Near Dayton RS: 55 BR D Profile: Base

E.G. Elev (ft)	4301.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4301.17	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4297.02	Flow Area (sq ft)	1565.10	3871.35	1469.56
E.G. Slope (ft/ft)	0.001529	Area (sq ft)	1565.10	3871.35	1469.56
Q Total (cfs)	36100.00	Flow (cfs)	6340.46	23987.38	5772.17
Top Width (ft)	843.31	Top Width (ft)	255.98	382.00	205.34
Vel Total (ft/s)	5.23	Avg. Vel. (ft/s)	4.05	6.20	3.93
Max Chl Dpth (ft)	12.87	Hydr. Depth (ft)	6.11	10.13	7.16
Conv. Total (cfs)	923246.6	Conv. (cfs)	162155.2	613469.9	147621.4
Length Wtd. (ft)	9.74	Wetted Per. (ft)	283.34	439.41	237.56
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.53	0.84	0.59
Alpha	1.13	Stream Power (lb/ft s)	2.14	5.21	2.32
Frctn Loss (ft)		Cum Volume (acre-ft)	429.30	363.08	410.25
C & E Loss (ft)		Cum SA (acres)	102.23	43.50	125.55

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 100y-Scenario#2 7/8/2008 10:47:34 AM
Geom: Base with Bridge Scenario #2 Flow: 100-Y Flood
Section 4
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Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
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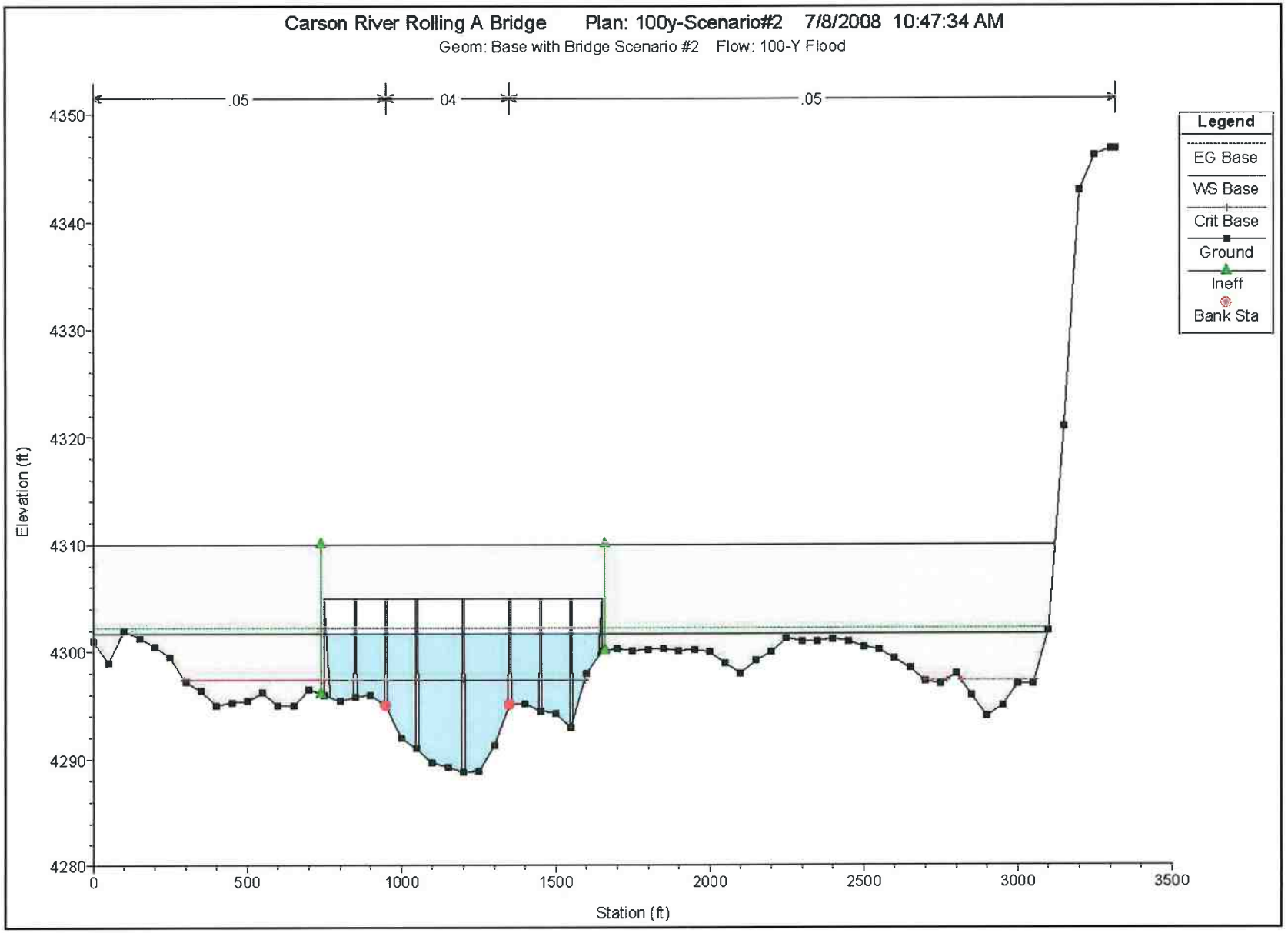
3500
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#2 7/8/2008 10:47:34 AM
Geom: Base with Bridge Scenario #2 Flow: 100-Y Flood
.05
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Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
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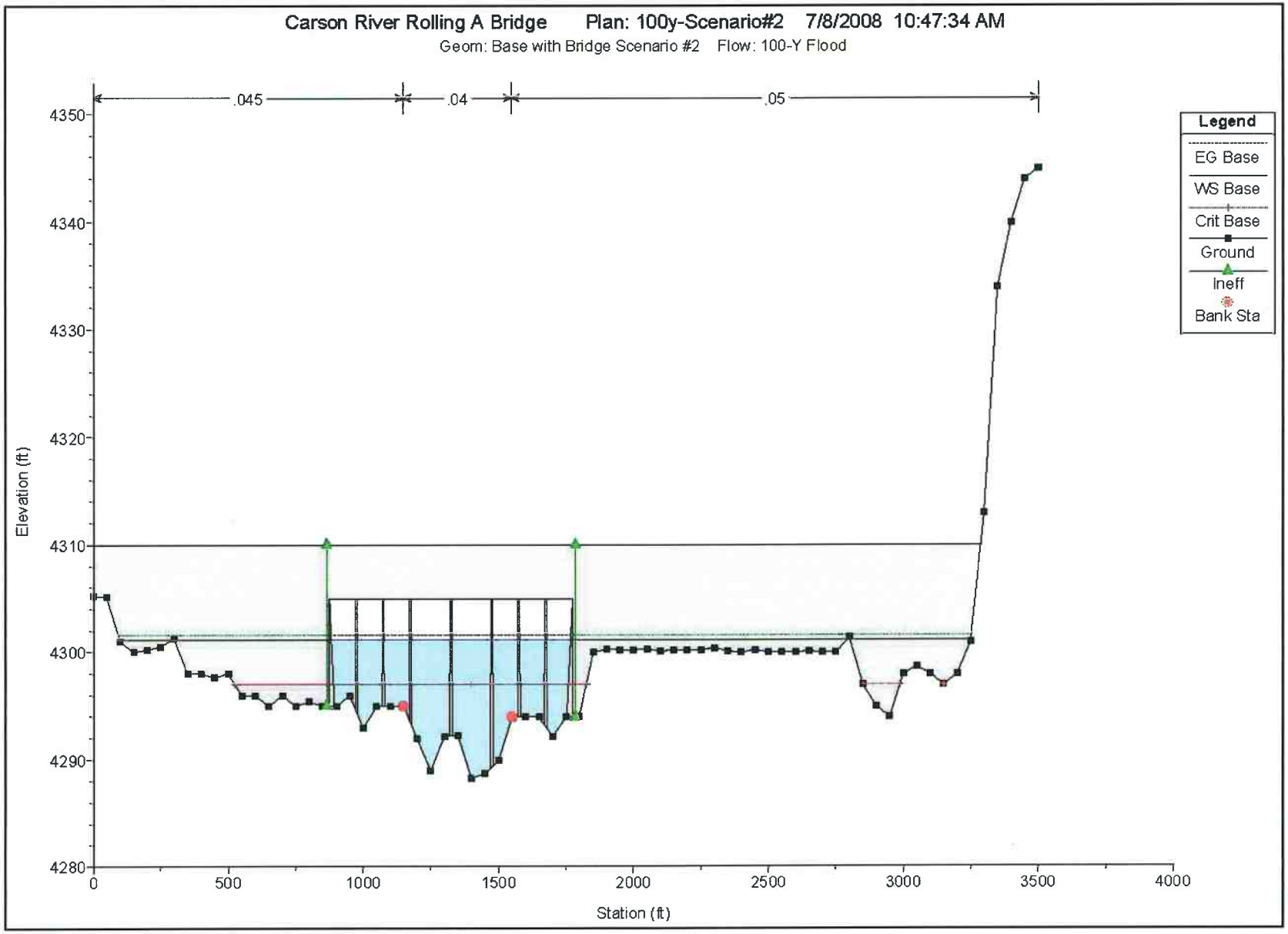
3500
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#2 7/8/2008 10:47:34 AM
Geom: Base with Bridge Scenario #2 Flow: 100-Y Flood
.045
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Legend
EG Base
WS Base
Crit Base
Ground
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Elevation (ft)
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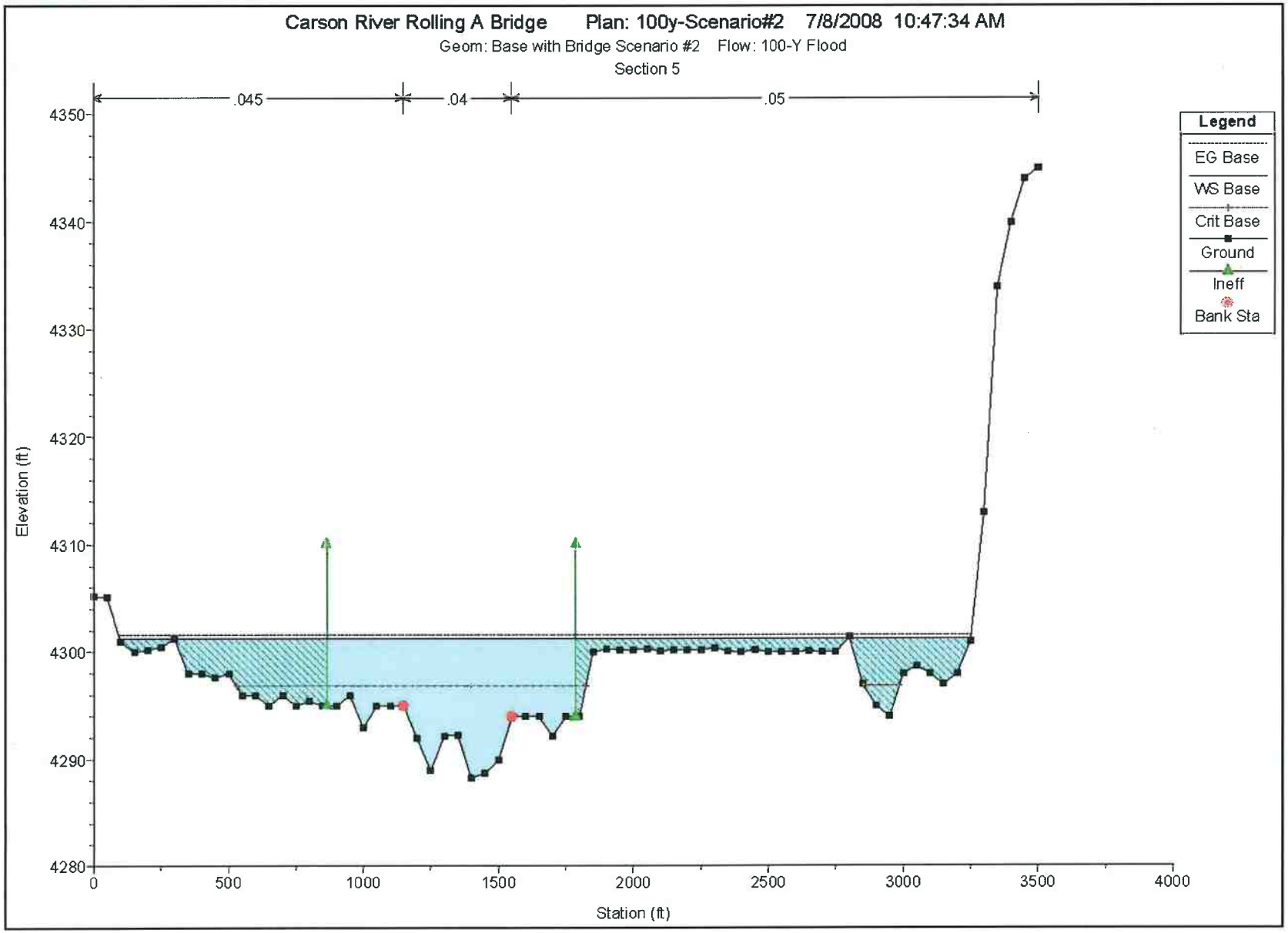
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#2 7/8/2008 10:47:34 AM
Geom: Base with Bridge Scenario #2 Flow: 100-Y Flood
Section 5
.045
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Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
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2500
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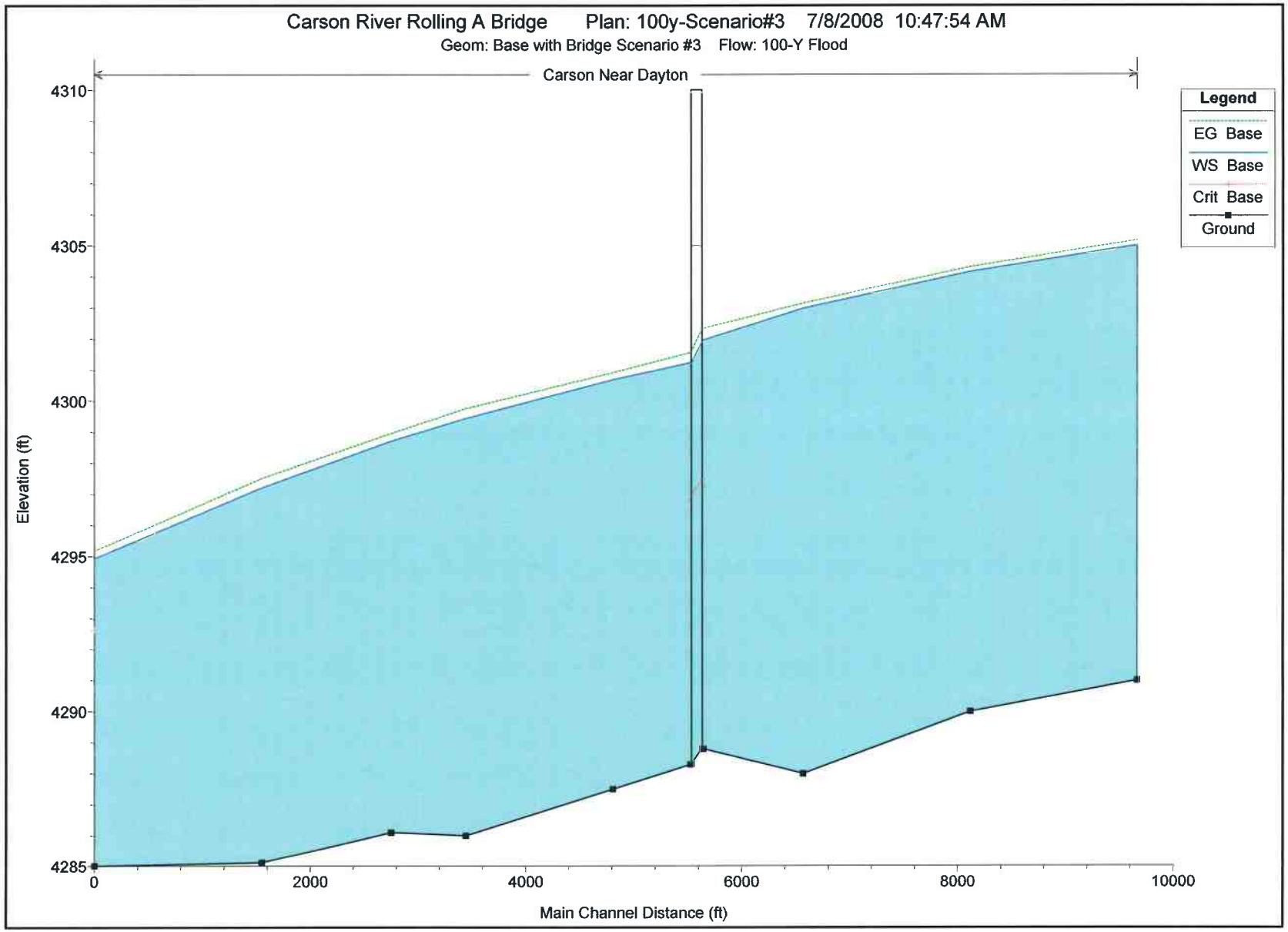
Station (ft)

HEC-RAS Plan: 100Y-S#2 River: Carson Reach: Near Dayton Profile: Base

Reach	River Sta	Profile	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)	
Near Dayton	90	Base	36100.00	4291.00	4305.01		4305.16	0.000522	4.50	13697.97	2426.52	0.23
Near Dayton	80	Base	36100.00	4290.00	4304.15		4304.30	0.001139	5.30	13622.11	2720.51	0.31
Near Dayton	70	Base	36100.00	4288.00	4302.96		4303.12	0.000816	4.52	14431.21	2250.68	0.25
Near Dayton	60	Base	36100.00	4288.80	4301.80	4297.23	4302.23	0.001013	5.86	7626.65	3080.37	0.31
Near Dayton	55		Bridge									
Near Dayton	50	Base	36100.00	4288.30	4301.25	4296.83	4301.63	0.000990	5.55	7772.74	3142.82	0.30
Near Dayton	40	Base	36100.00	4287.50	4300.69		4300.91	0.000886	4.91	11605.89	2346.87	0.28
Near Dayton	30	Base	36100.00	4286.00	4299.44		4299.75	0.001375	6.17	10235.45	2340.30	0.35
Near Dayton	20	Base	36100.00	4286.10	4298.72		4298.96	0.001110	5.81	11276.98	2339.19	0.32
Near Dayton	10	Base	36100.00	4285.10	4297.22		4297.51	0.001580	5.41	9509.04	2334.91	0.36
Near Dayton	0	Base	36100.00	4285.00	4294.93	4292.64	4295.17	0.001372	4.92	10373.52	2621.86	0.33


Carson River Rolling A Bridge Plan: 100y-Scenario#3 7/8/2008 10:47:54 AM
Geom: Base with Bridge Scenario #3 Flow: 100-Y Flood
Carson Near Dayton
Legend
EG Base
WS Base
Crit Base
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 100Y-S#3 Carson Near Dayton RS: 55 BR U Profile: Base

E.G. Elev (ft)	4302.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4301.89	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4297.48	Flow Area (sq ft)	1631.13	4188.91	1923.43
E.G. Slope (ft/ft)	0.001267	Area (sq ft)	1631.13	4188.91	1923.43
Q Total (cfs)	36100.00	Flow (cfs)	5212.42	24705.01	6182.57
Top Width (ft)	1033.55	Top Width (ft)	278.77	382.00	372.77
Vel Total (ft/s)	4.66	Avg. Vel. (ft/s)	3.20	5.90	3.21
Max Chl Dpth (ft)	13.08	Hydr. Depth (ft)	5.85	10.97	5.16
Conv. Total (cfs)	1014387.0	Conv. (cfs)	146465.7	694195.1	173726.3
Length Wtd. (ft)	100.00	Wetted Per. (ft)	311.06	444.56	415.80
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.41	0.75	0.37
Alpha	1.24	Stream Power (lb/ft s)	1.32	4.39	1.18
Frctn Loss (ft)		Cum Volume (acre-ft)	433.61	372.31	414.57
C & E Loss (ft)		Cum SA (acres)	102.96	44.38	126.33

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 100Y-S#3 Carson Near Dayton RS: 55 Profile: Base

E.G. US. (ft)	4302.33	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4301.97	E.G. Elev (ft)	4302.31	4301.57
Q Total (cfs)	36100.00	W.S. Elev (ft)	4301.89	4301.20
Q Bridge (cfs)	36100.00	Crit W.S. (ft)	4297.48	4296.99
Q Weir (cfs)		Max Chl Dpth (ft)	13.08	12.90
Weir Sta Lft (ft)		Vel Total (ft/s)	4.66	4.54
Weir Sta Rgt (ft)		Flow Area (sq ft)	7743.46	7944.11
Weir Submerg		Froude # Chl	0.31	0.31
Weir Max Depth (ft)		Specif Force (cu ft)	40527.80	39526.36
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	7.49	7.70
Min El Prs (ft)	4305.00	W.P. Total (ft)	1171.42	1174.47
Delta EG (ft)	0.78	Conv. Total (cfs)	1014387.0	1020369.0
Delta WS (ft)	0.73	Top Width (ft)	1033.55	1031.42
BR Open Area (sq ft)	10981.08	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.66	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.52	0.53
Br Sel Method	Momentum	Power Total (lb/ft s)	2.44	2.40

Errors Warnings and Notes

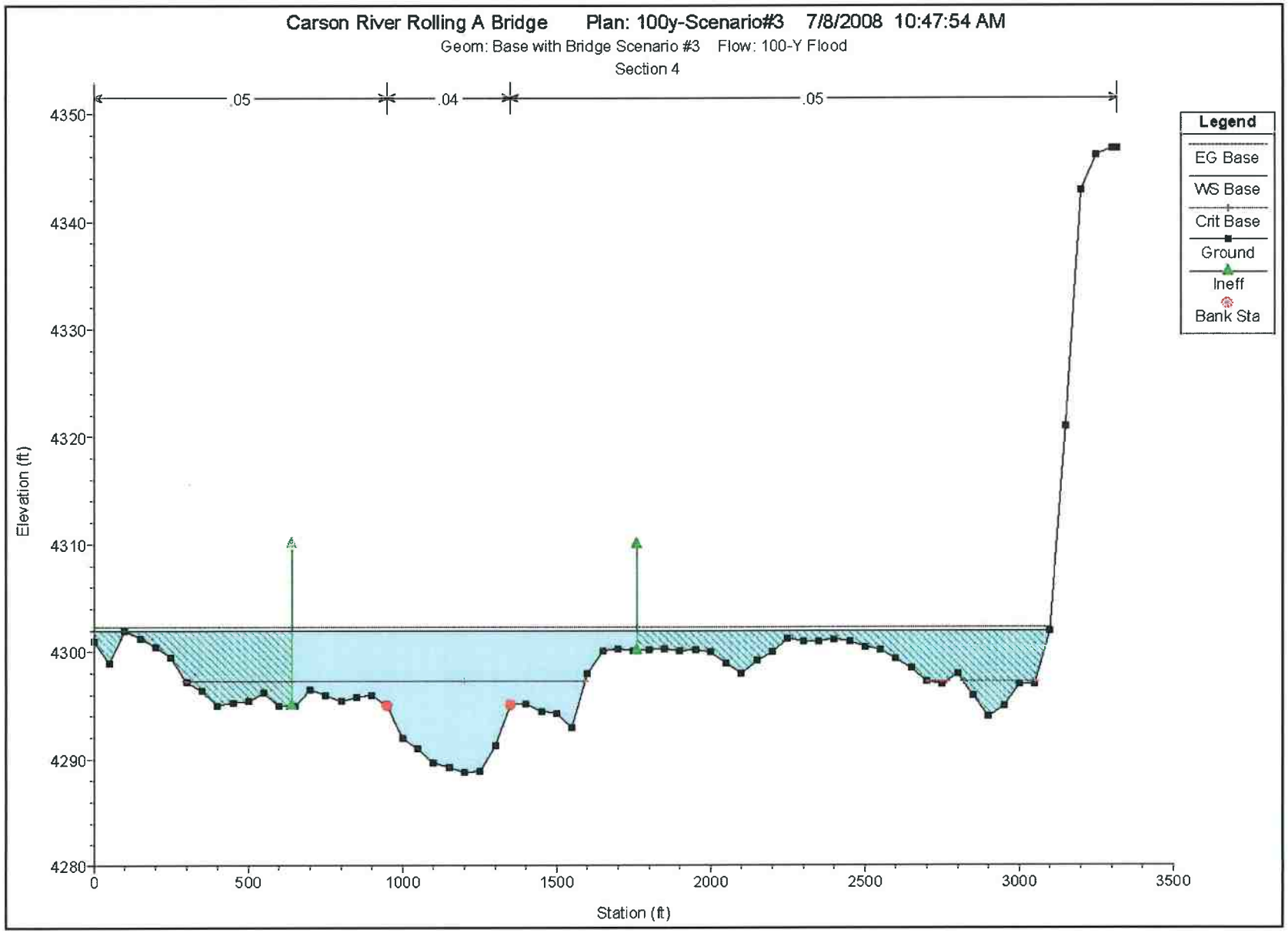
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 100Y-S#3 Carson Near Dayton RS: 55 BR D Profile: Base

E.G. Elev (ft)	4301.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4301.20	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4296.99	Flow Area (sq ft)	2130.42	3882.36	1931.34
E.G. Slope (ft/ft)	0.001252	Area (sq ft)	2130.42	3882.36	1931.34
Q Total (cfs)	36100.00	Flow (cfs)	7746.39	21801.39	6552.22
Top Width (ft)	1031.42	Top Width (ft)	350.03	382.00	299.39
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)	3.64	5.62	3.39
Max Chl Dpth (ft)	12.90	Hydr. Depth (ft)	6.09	10.16	6.45
Conv. Total (cfs)	1020369.0	Conv. (cfs)	218952.3	616217.6	185198.8
Length Wtd. (ft)	9.74	Wetted Per. (ft)	389.83	439.58	345.06
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.43	0.69	0.44
Alpha	1.16	Stream Power (lb/ft s)	1.55	3.88	1.48
Frctn Loss (ft)		Cum Volume (acre-ft)	429.29	363.05	410.15
C & E Loss (ft)		Cum SA (acres)	102.24	43.50	125.56

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 100y-Scenario#3 7/8/2008 10:47:54 AM
Geom: Base with Bridge Scenario #3 Flow: 100-Y Flood
Section 4
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Legend
EG Base
WS Base
Crit Base
Ground
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Elevation (ft)
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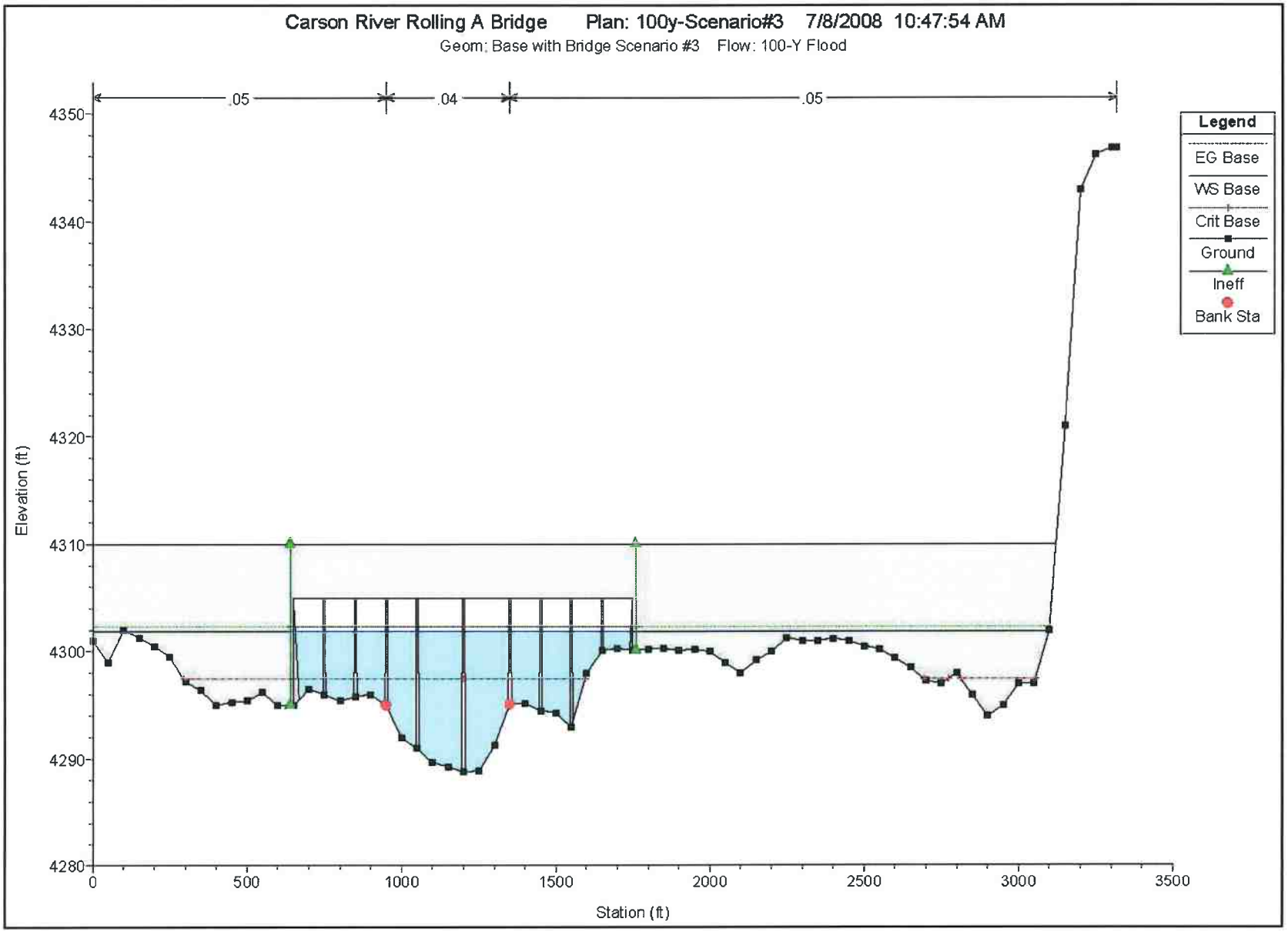
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#3 7/8/2008 10:47:54 AM
Geom: Base with Bridge Scenario #3 Flow: 100-Y Flood
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
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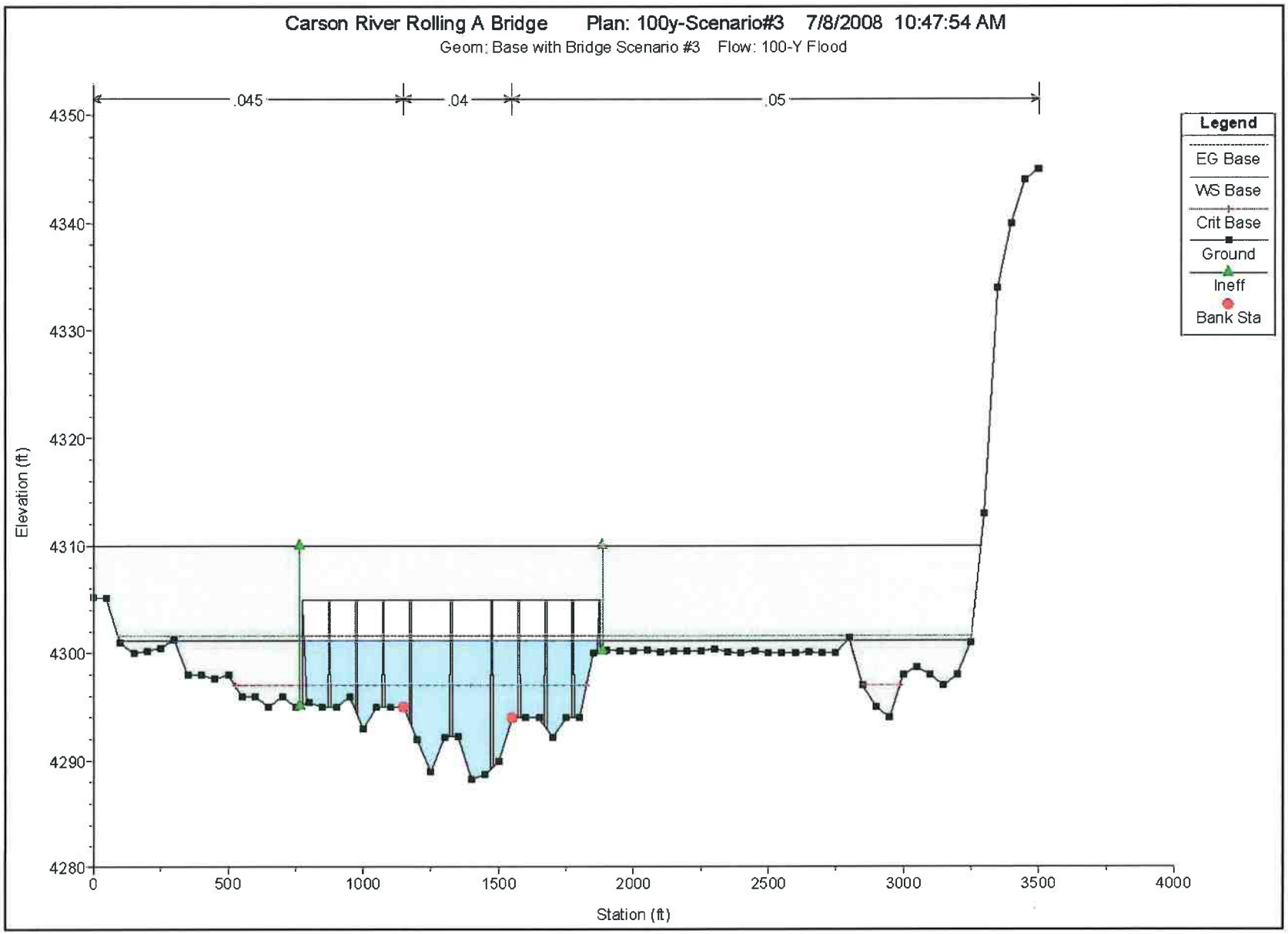
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#3 7/8/2008 10:47:54 AM
Geom: Base with Bridge Scenario #3 Flow: 100-Y Flood
.045
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Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
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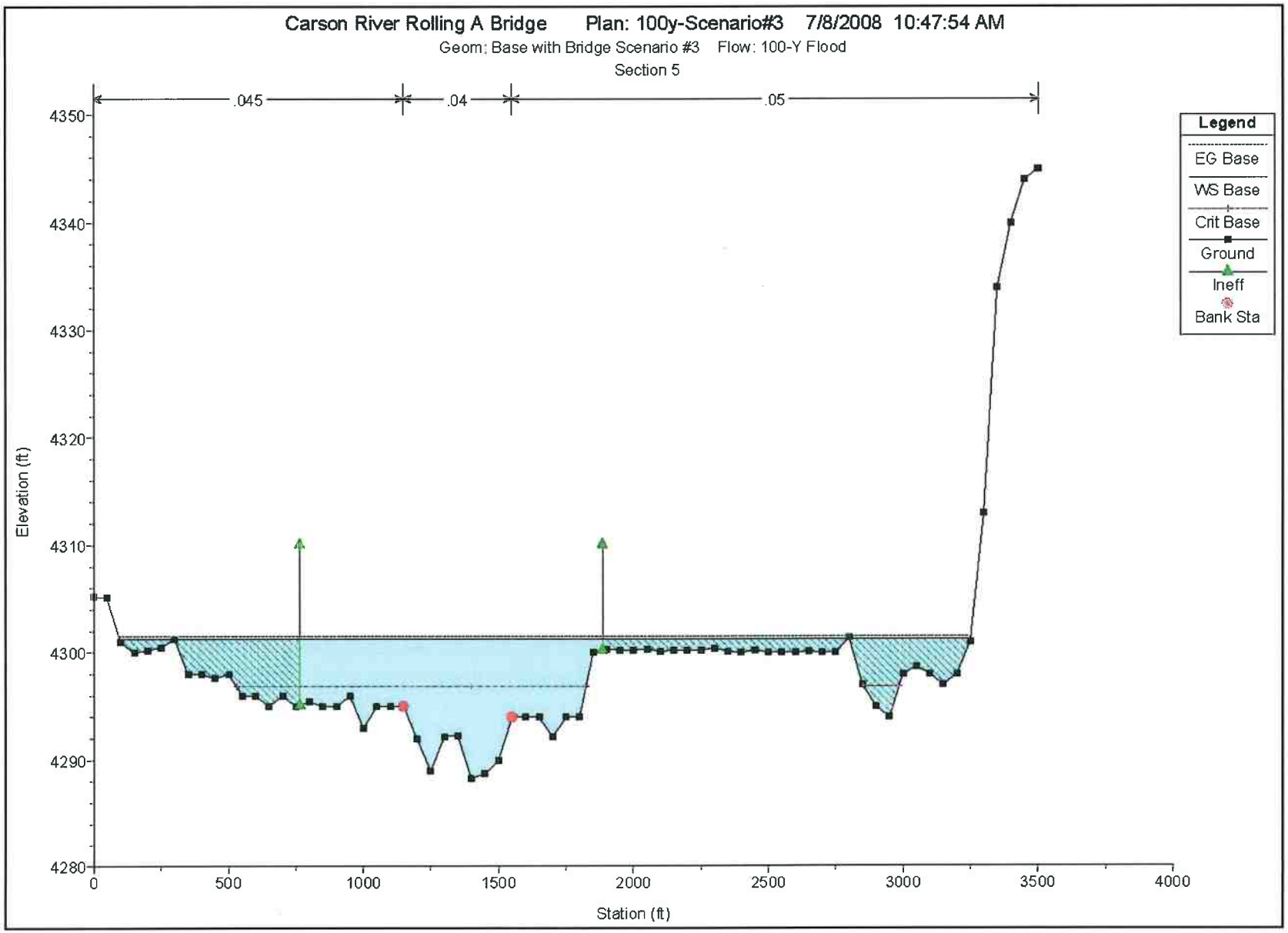
4000
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#3 7/8/2008 10:47:54 AM
Geom: Base with Bridge Scenario #3 Flow: 100-Y Flood
Section 5
.045
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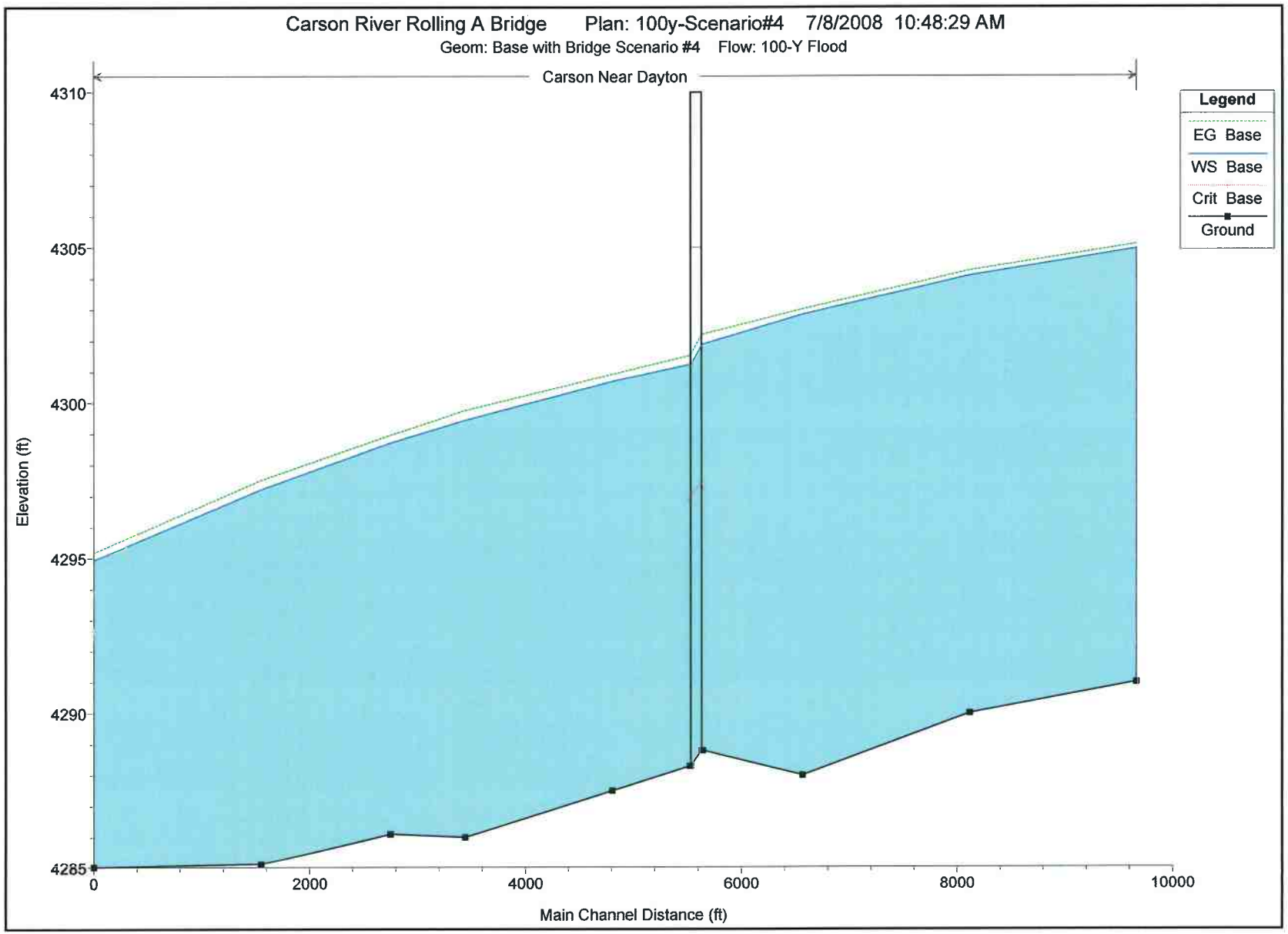
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 100Y-S#3 River: Carson Reach: Near Dayton Profile: Base

Reach	River Sta	Profile	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)	
Near Dayton	90	Base	36100.00	4291.00	4305.01		4305.16	0.000520	4.50	13716.94	2428.55	0.23
Near Dayton	80	Base	36100.00	4290.00	4304.16		4304.32	0.001130	5.29	13657.98	2720.72	0.31
Near Dayton	70	Base	36100.00	4288.00	4302.98		4303.15	0.000806	4.50	14490.57	2251.17	0.24
Near Dayton	60	Base	36100.00	4288.80	4301.97	4297.26	4302.33	0.000874	5.50	8566.44	3096.94	0.29
Near Dayton	55		Bridge									
Near Dayton	50	Base	36100.00	4288.30	4301.24	4296.83	4301.55	0.000867	5.19	8728.00	3141.37	0.28
Near Dayton	40	Base	36100.00	4287.50	4300.69		4300.91	0.000886	4.91	11605.89	2346.87	0.28
Near Dayton	30	Base	36100.00	4286.00	4299.44		4299.75	0.001375	6.17	10235.45	2340.30	0.35
Near Dayton	20	Base	36100.00	4286.10	4298.72		4298.96	0.001110	5.81	11276.98	2339.19	0.32
Near Dayton	10	Base	36100.00	4285.10	4297.22		4297.51	0.001580	5.41	9509.04	2334.91	0.36
Near Dayton	0	Base	36100.00	4285.00	4294.93	4292.64	4295.17	0.001372	4.92	10373.52	2621.86	0.33


Carson River Rolling A Bridge Plan: 100y-Scenario#4 7/8/2008 10:48:29 AM
Geom: Base with Bridge Scenario #4 Flow: 100-Y Flood
Carson Near Dayton
Legend
EG Base
WS Base
Crit Base
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 100Y-S#4 Carson Near Dayton RS: 55 BR U Profile: Base

E.G. Elev (ft)	4302.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4301.82	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4297.44	Flow Area (sq ft)	2225.61	4164.10	2052.70
E.G. Slope (ft/ft)	0.001146	Area (sq ft)	2225.61	4164.10	2052.70
Q Total (cfs)	36100.00	Flow (cfs)	6832.28	23281.10	5986.62
Top Width (ft)	1221.29	Top Width (ft)	372.64	382.00	466.64
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)	3.07	5.59	2.92
Max Chl Dpth (ft)	13.01	Hydr. Depth (ft)	5.97	10.90	4.40
Conv. Total (cfs)	1066448.0	Conv. (cfs)	201835.6	687758.6	176853.7
Length Wtd. (ft)	100.00	Wetted Per. (ft)	418.05	444.17	512.59
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.38	0.67	0.29
Alpha	1.28	Stream Power (lb/ft s)	1.17	3.75	0.84
Frctn Loss (ft)		Cum Volume (acre-ft)	434.92	372.26	414.74
C & E Loss (ft)		Cum SA (acres)	103.18	44.38	126.55

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 100Y-S#4 Carson Near Dayton RS: 55 Profile: Base

E.G. US. (ft)	4302.21	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4301.89	E.G. Elev (ft)	4302.18	4301.53
Q Total (cfs)	36100.00	W.S. Elev (ft)	4301.82	4301.20
Q Bridge (cfs)	36100.00	Crit W.S. (ft)	4297.44	4296.99
Q Weir (cfs)		Max Chl Dpth (ft)	13.01	12.90
Weir Sta Lft (ft)		Vel Total (ft/s)	4.28	4.21
Weir Sta Rgt (ft)		Flow Area (sq ft)	8442.41	8572.02
Weir Submerg		Froude # Chl	0.30	0.29
Weir Max Depth (ft)		Specif Force (cu ft)	41742.62	40759.77
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	6.91	7.03
Min El Prs (ft)	4305.00	W.P. Total (ft)	1374.82	1376.50
Delta EG (ft)	0.69	Conv. Total (cfs)	1066448.0	1074925.0
Delta WS (ft)	0.65	Top Width (ft)	1221.29	1219.43
BR Open Area (sq ft)	12344.74	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.28	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.44	0.44
Br Sel Method	Momentum	Power Total (lb/ft s)	1.88	1.85

Errors Warnings and Notes

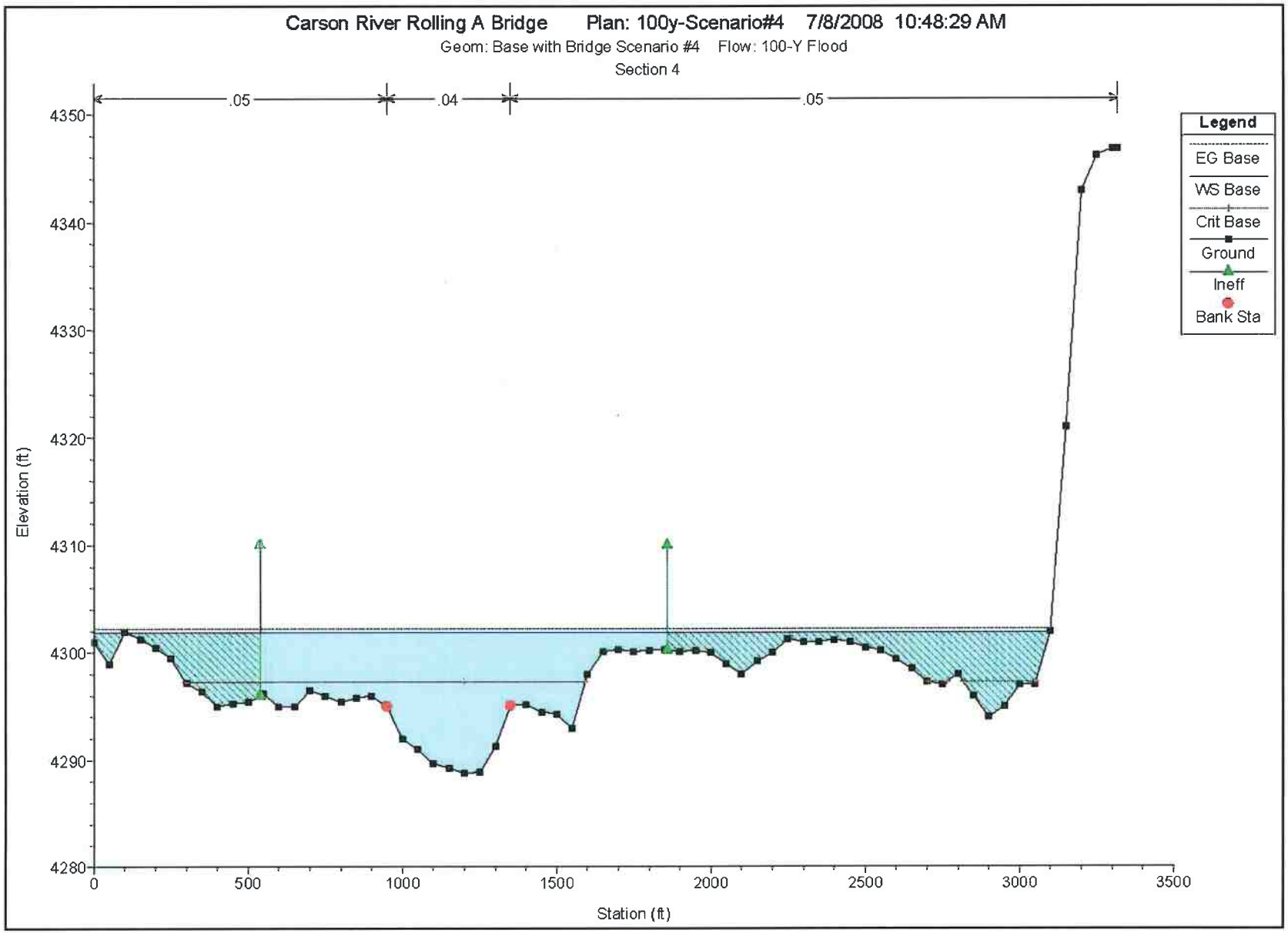
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

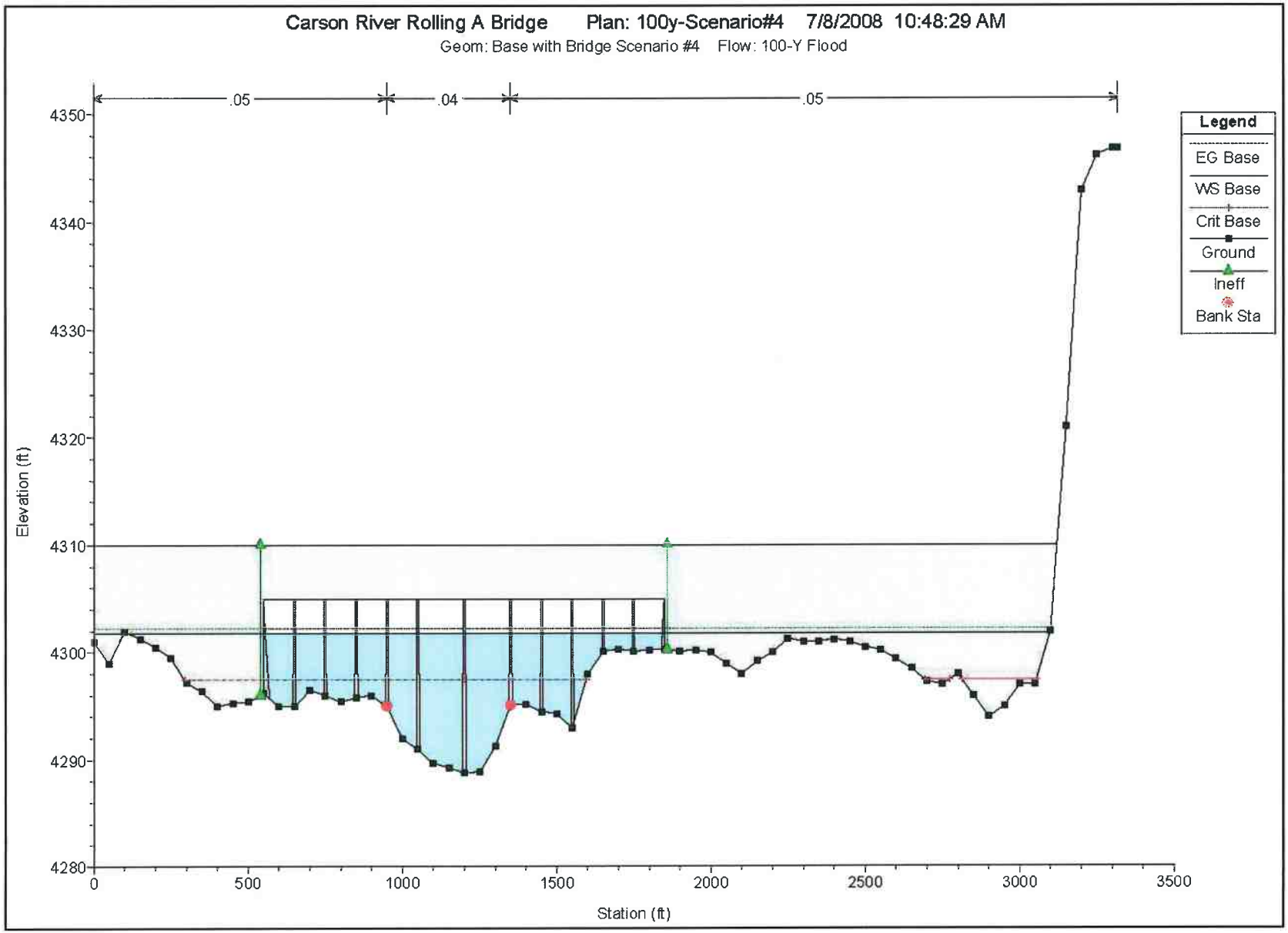
Plan: 100Y-S#4 Carson Near Dayton RS: 55 BR D Profile: Base

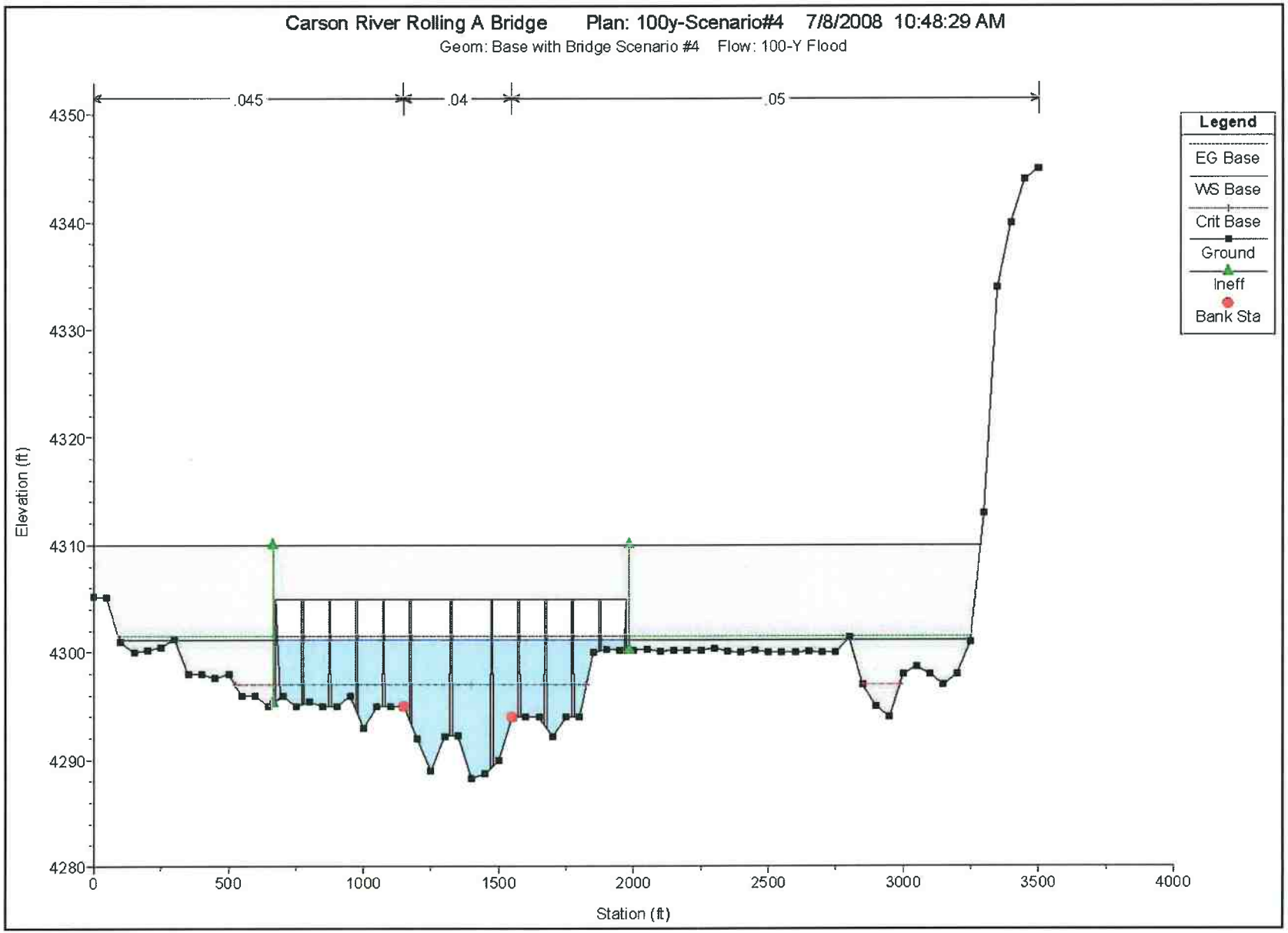
E.G. Elev (ft)	4301.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4301.20	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4296.99	Flow Area (sq ft)	2664.97	3883.48	2023.57
E.G. Slope (ft/ft)	0.001128	Area (sq ft)	2664.97	3883.48	2023.57
Q Total (cfs)	36100.00	Flow (cfs)	9098.71	20704.28	6297.02
Top Width (ft)	1219.43	Top Width (ft)	444.03	382.00	393.40
Vel Total (ft/s)	4.21	Avg. Vel. (ft/s)	3.41	5.33	3.11
Max Chl Dpth (ft)	12.90	Hydr. Depth (ft)	6.00	10.17	5.14
Conv. Total (cfs)	1074925.0	Conv. (cfs)	270926.0	616497.2	187502.0
Length Wtd. (ft)	9.74	Wetted Per. (ft)	495.74	439.60	441.16
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.38	0.62	0.32
Alpha	1.18	Stream Power (lb/ft s)	1.29	3.32	1.01
Frctn Loss (ft)		Cum Volume (acre-ft)	429.31	363.03	410.06
C & E Loss (ft)		Cum SA (acres)	102.24	43.50	125.57

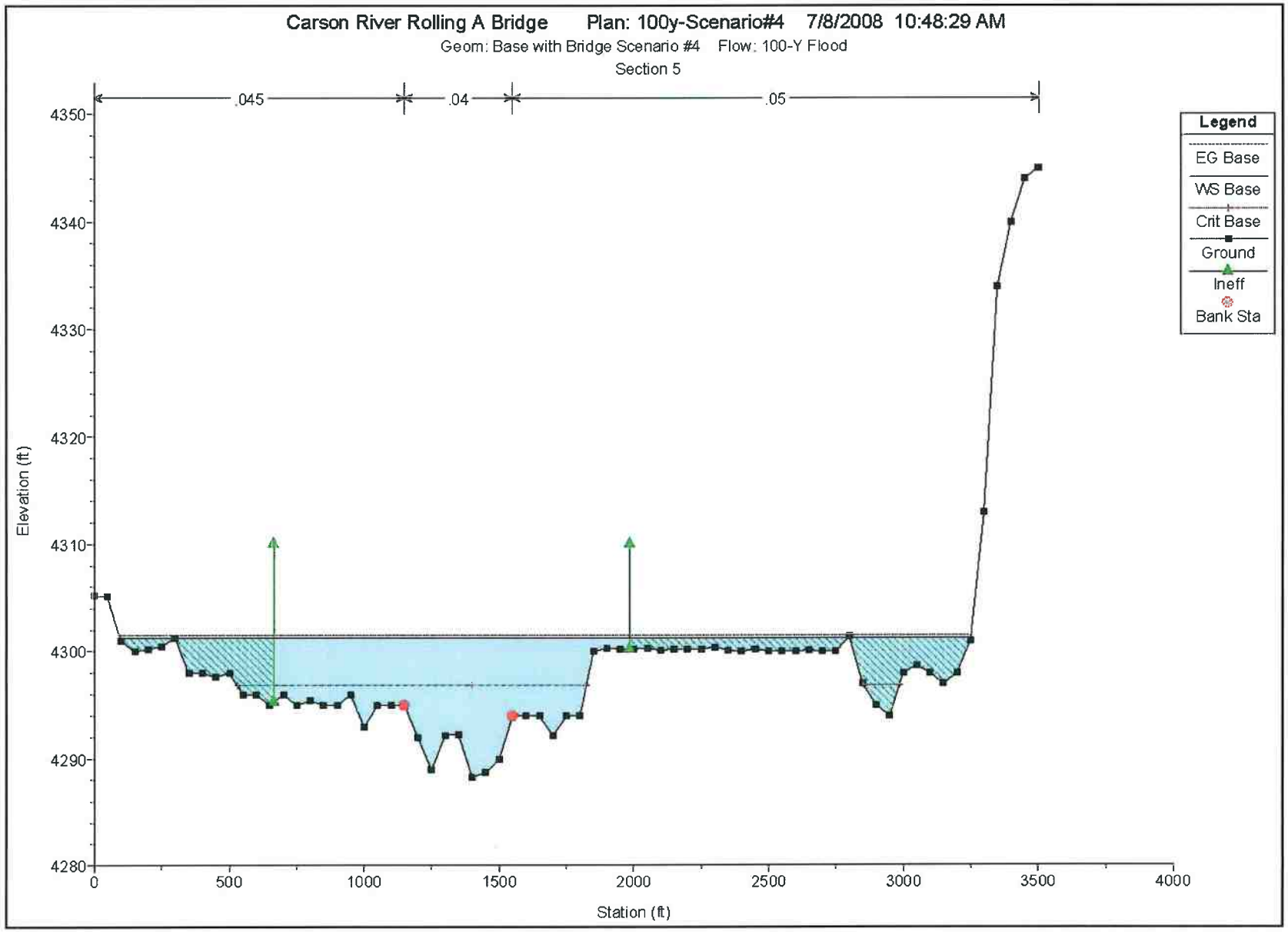
Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 100y-Scenario#4 7/8/2008 10:48:29 AM
Geom: Base with Bridge Scenario #4 Flow: 100-Y Flood
Section 4
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

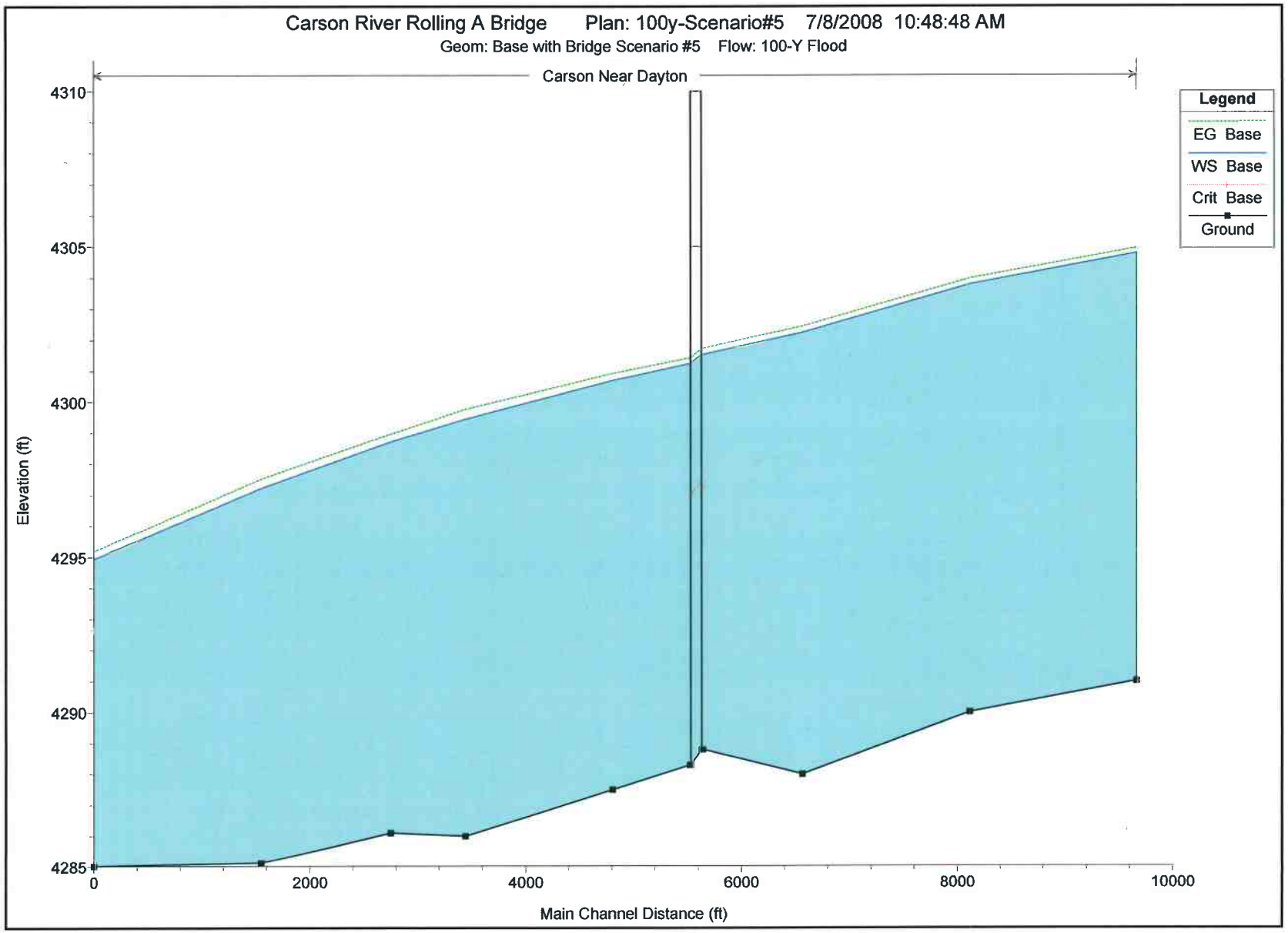

Carson River Rolling A Bridge Plan: 100y-Scenario#4 7/8/2008 10:48:29 AM
Geom: Base with Bridge Scenario #4 Flow: 100-Y Flood
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#4 7/8/2008 10:48:29 AM
Geom: Base with Bridge Scenario #4 Flow: 100-Y Flood
.045
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#4 7/8/2008 10:48:29 AM
Geom: Base with Bridge Scenario #4 Flow: 100-Y Flood
Section 5
.045
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 100Y-S#4 River: Carson Reach: Near Dayton Profile: Base

Reach	River Sta	Profile	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)	
Near Dayton	90	Base	36100.00	4291.00	4304.96		4305.10	0.000510	4.44	13575.16	2410.19	0.22
Near Dayton	80	Base	36100.00	4290.00	4304.09		4304.25	0.001181	5.38	13466.72	2719.60	0.32
Near Dayton	70	Base	36100.00	4288.00	4302.84		4303.01	0.000862	4.61	14167.59	2248.48	0.25
Near Dayton	60	Base	36100.00	4288.80	4301.89	4297.27	4302.21	0.000815	5.28	9287.06	3088.75	0.28
Near Dayton	55		Bridge									
Near Dayton	50	Base	36100.00	4288.30	4301.23	4296.86	4301.52	0.000815	5.03	9395.11	3140.48	0.28
Near Dayton	40	Base	36100.00	4287.50	4300.69		4300.91	0.000886	4.91	11605.89	2346.87	0.28
Near Dayton	30	Base	36100.00	4286.00	4299.44		4299.75	0.001375	6.17	10235.45	2340.30	0.35
Near Dayton	20	Base	36100.00	4286.10	4298.72		4298.96	0.001110	5.81	11276.98	2339.19	0.32
Near Dayton	10	Base	36100.00	4285.10	4297.22		4297.51	0.001580	5.41	9509.04	2334.91	0.36
Near Dayton	0	Base	36100.00	4285.00	4294.93	4292.64	4295.17	0.001372	4.92	10373.52	2621.86	0.33


Carson River Rolling A Bridge Plan: 100y-Scenario#5 7/8/2008 10:48:48 AM
Geom: Base with Bridge Scenario #5 Flow: 100-Y Flood
Carson Near Dayton
Legend
EG Base
WS Base
Crit Base
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 100Y-S#5 Carson Near Dayton RS: 55 BR U Profile: Base

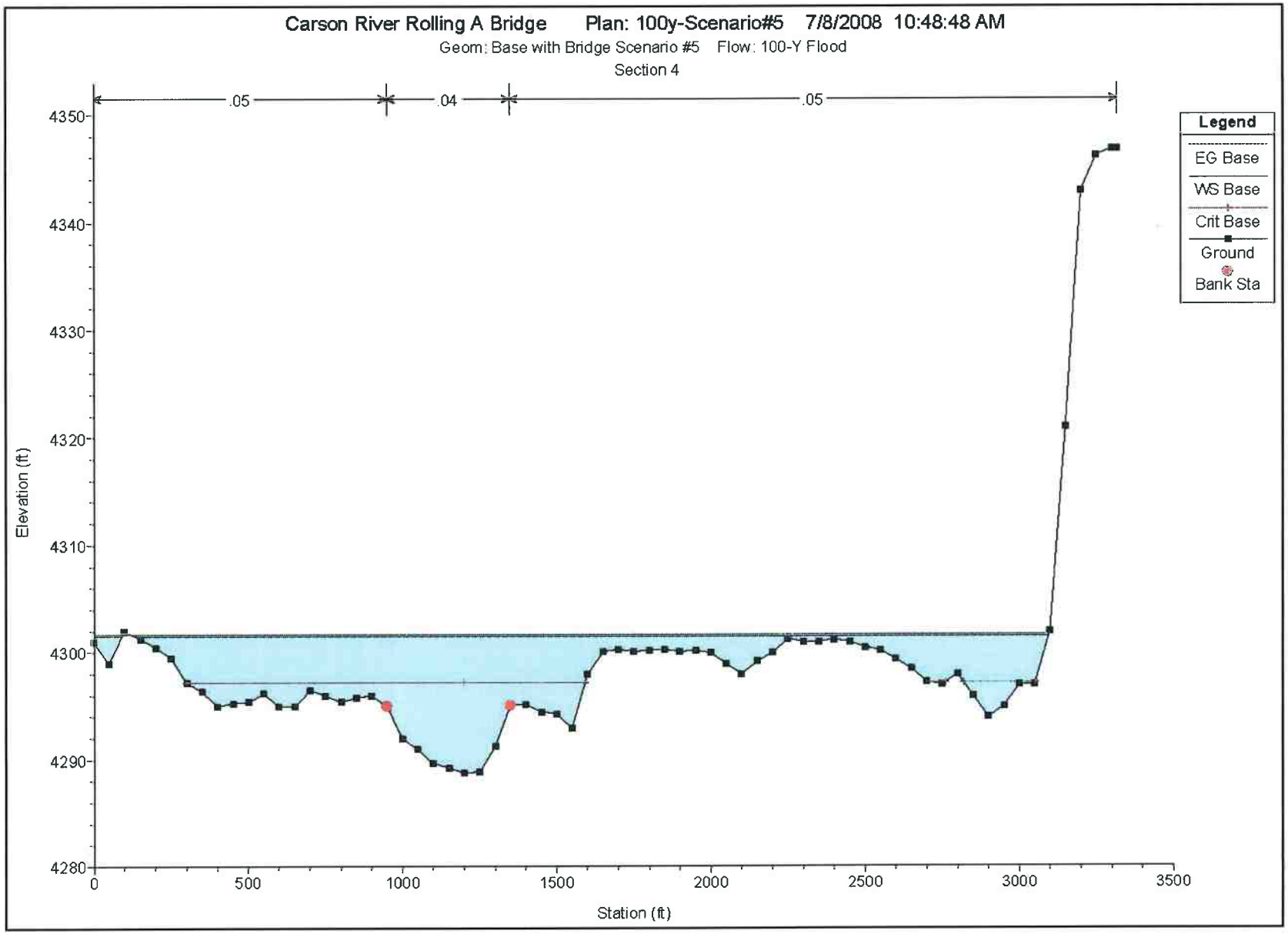
E.G. Elev (ft)	4301.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4301.51	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4297.43	Flow Area (sq ft)	3857.62	4045.48	4924.85
E.G. Slope (ft/ft)	0.000721	Area (sq ft)	3857.62	4045.48	4924.85
Q Total (cfs)	36100.00	Flow (cfs)	8695.08	17643.92	9760.99
Top Width (ft)	2872.02	Top Width (ft)	849.91	382.00	1640.11
Vel Total (ft/s)	2.81	Avg. Vel. (ft/s)	2.25	4.36	1.98
Max Chl Dpth (ft)	12.70	Hydr. Depth (ft)	4.54	10.59	3.00
Conv. Total (cfs)	1344761.0	Conv. (cfs)	323900.5	657253.8	363606.8
Length Wtd. (ft)	100.00	Wetted Per. (ft)	935.22	442.31	1750.67
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.19	0.41	0.13
Alpha	1.46	Stream Power (lb/ft s)	0.42	1.79	0.25
Frctn Loss (ft)		Cum Volume (acre-ft)	438.81	372.15	421.13
C & E Loss (ft)		Cum SA (acres)	104.41	44.38	129.41

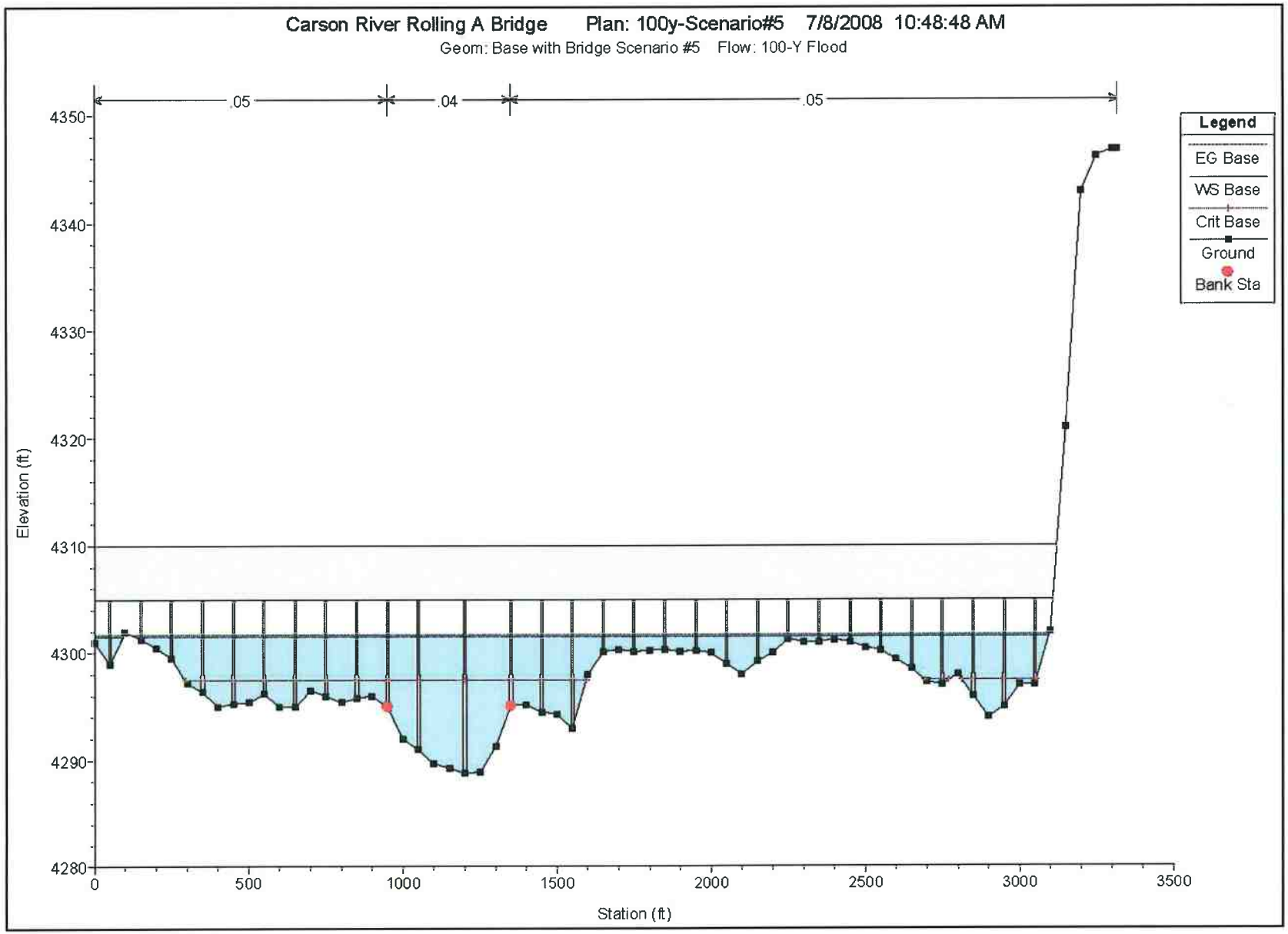
Plan: 100Y-S#5 Carson Near Dayton RS: 55 Profile: Base

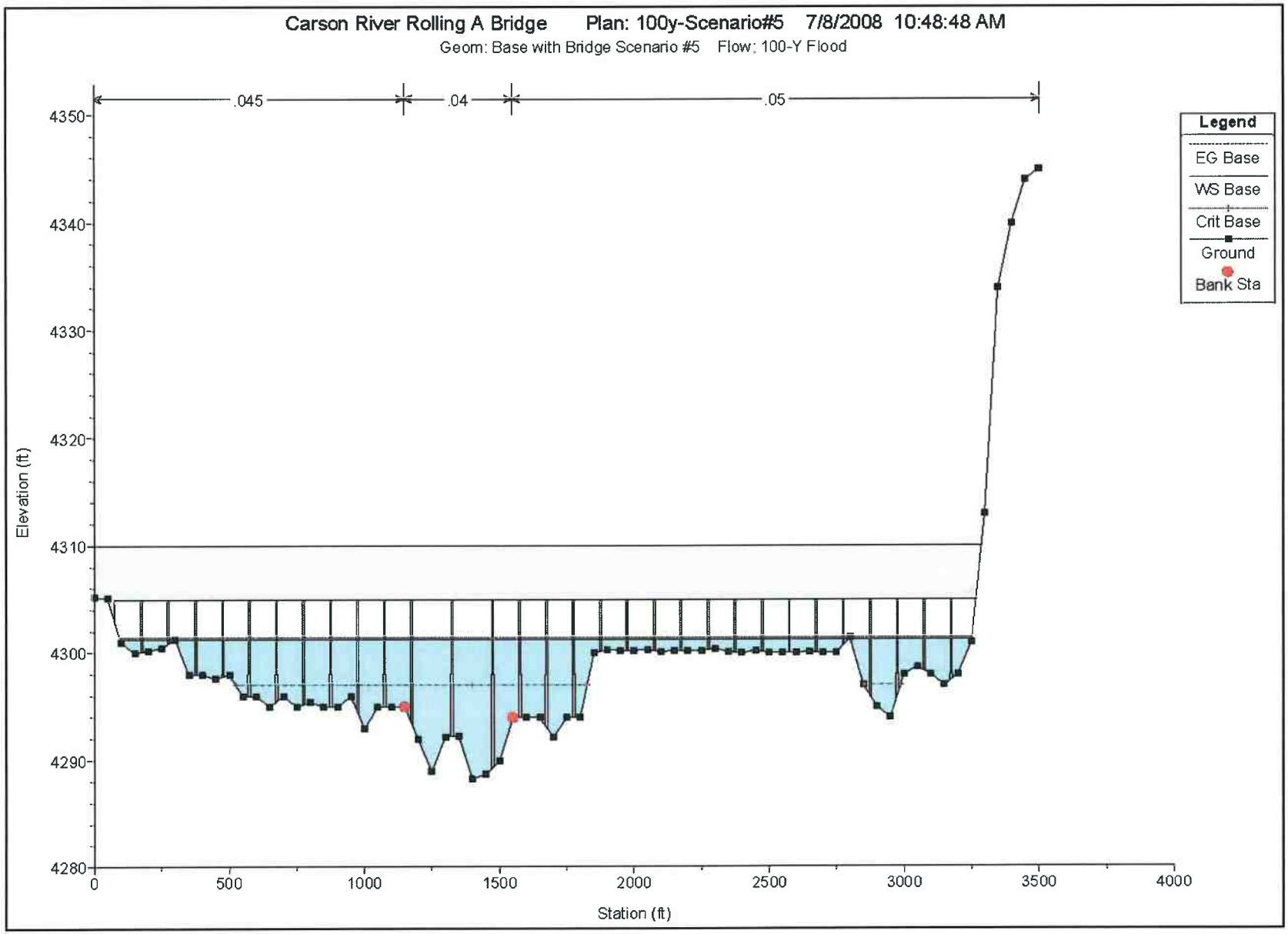
E.G. US. (ft)	4301.71	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4301.52	E.G. Elev (ft)	4301.69	4301.41
Q Total (cfs)	36100.00	W.S. Elev (ft)	4301.51	4301.24
Q Bridge (cfs)	36100.00	Crit W.S. (ft)	4297.43	4296.99
Q Weir (cfs)		Max Chl Dpth (ft)	12.70	12.94
Weir Sta Lft (ft)		Vel Total (ft/s)	2.81	2.86
Weir Sta Rgt (ft)		Flow Area (sq ft)	12827.95	12637.56
Weir Submerg		Froude # Chl	0.24	0.23
Weir Max Depth (ft)		Specif Force (cu ft)	47988.76	47041.84
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	4.47	4.27
Min El Prs (ft)	4305.00	W.P. Total (ft)	3128.20	3209.86
Delta EG (ft)	0.30	Conv. Total (cfs)	1344761.0	1348408.0
Delta WS (ft)	0.29	Top Width (ft)	2872.02	2961.64
BR Open Area (sq ft)	23016.69	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.86	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.18	0.18
Br Sel Method	Momentum	Power Total (lb/ft s)	0.52	0.50

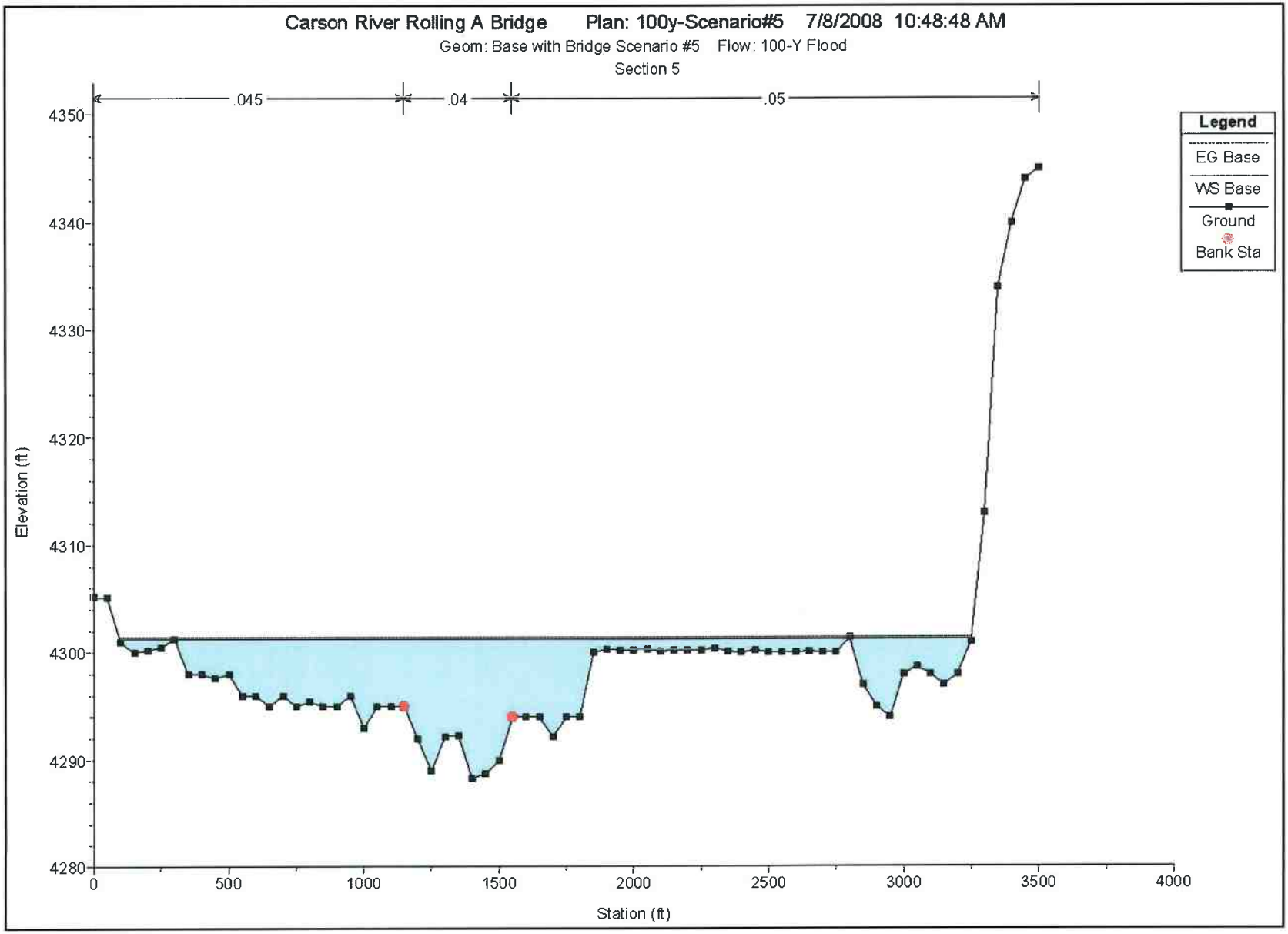
Plan: 100Y-S#5 Carson Near Dayton RS: 55 BR D Profile: Base

E.G. Elev (ft)	4301.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4301.24	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4296.99	Flow Area (sq ft)	4267.36	3898.40	4471.81
E.G. Slope (ft/ft)	0.000717	Area (sq ft)	4267.36	3898.40	4471.81
Q Total (cfs)	36100.00	Flow (cfs)	10612.58	16604.99	8882.43
Top Width (ft)	2961.64	Top Width (ft)	988.21	382.00	1591.43
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)	2.49	4.26	1.99
Max Chl Dpth (ft)	12.94	Hydr. Depth (ft)	4.32	10.21	2.81
Conv. Total (cfs)	1348408.0	Conv. (cfs)	396401.5	620229.9	331776.6
Length Wtd. (ft)	9.74	Wetted Per. (ft)	1077.33	439.83	1692.70
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.18	0.40	0.12
Alpha	1.36	Stream Power (lb/ft s)	0.44	1.69	0.23
Frctn Loss (ft)		Cum Volume (acre-ft)	429.49	363.03	410.34
C & E Loss (ft)		Cum SA (acres)	102.30	43.50	125.70


Carson River Rolling A Bridge Plan: 100y-Scenario#5 7/8/2008 10:48:48 AM
Geom: Base with Bridge Scenario #5 Flow: 100-Y Flood
Section 4
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

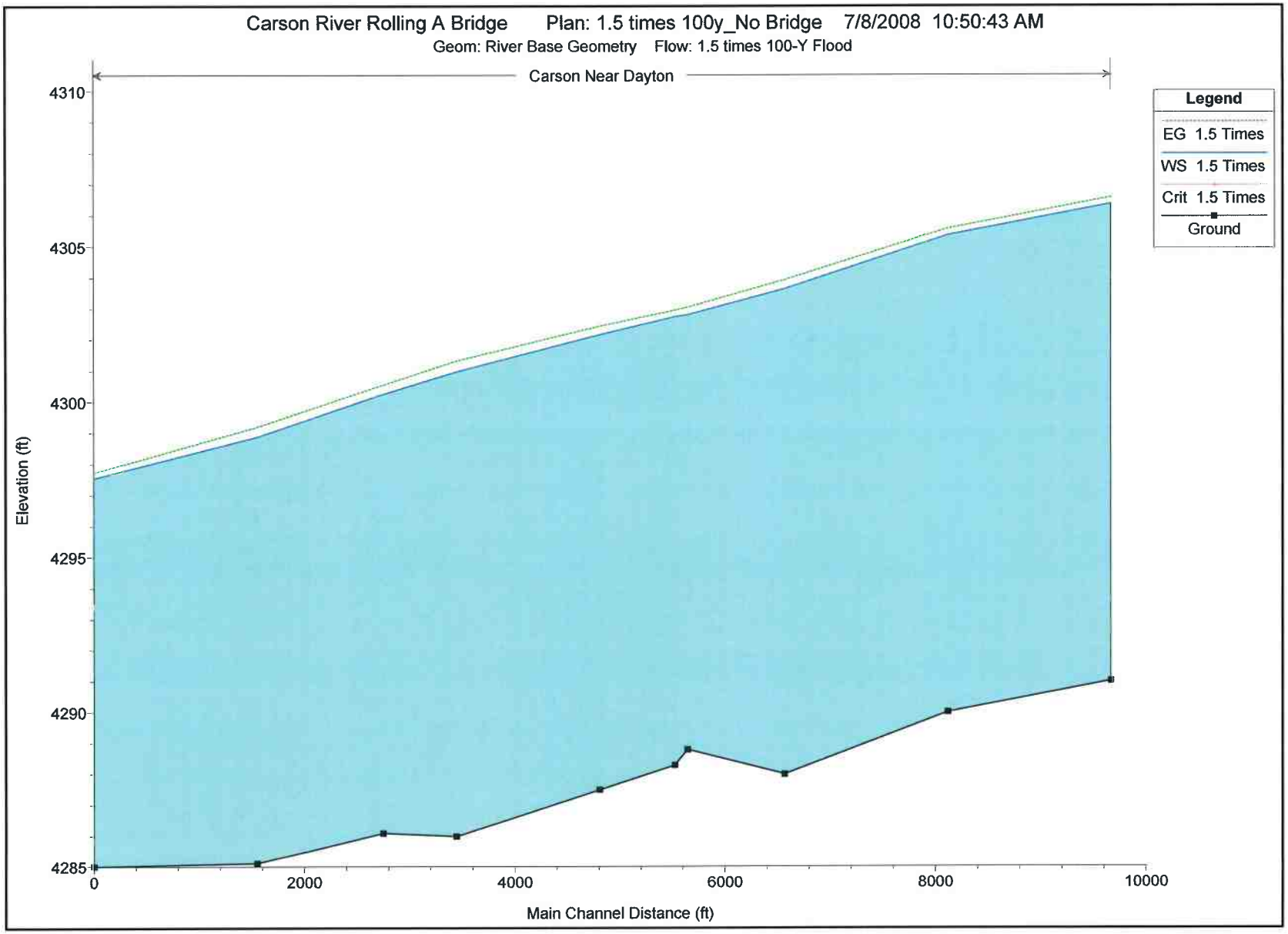

Carson River Rolling A Bridge Plan: 100y-Scenario#5 7/8/2008 10:48:48 AM
Geom: Base with Bridge Scenario #5 Flow: 100-Y Flood
.05
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#5 7/8/2008 10:48:48 AM
Geom: Base with Bridge Scenario #5 Flow: 100-Y Flood
.045
.04
.05
Legend
EG Base
WS Base
Crit Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 100y-Scenario#5 7/8/2008 10:48:48 AM
Geom: Base with Bridge Scenario #5 Flow: 100-Y Flood
Section 5
.045
.04
.05
Legend
EG Base
WS Base
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 100Y-S#5 River: Carson Reach: Near Dayton Profile: Base

Reach	River Sta	Profile	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)	
Near Dayton	90	Base	36100.00	4291.00	4304.78		4304.94	0.000550	4.57	13157.74	2352.31	0.23
Near Dayton	80	Base	36100.00	4290.00	4303.78		4303.97	0.001448	5.84	12614.97	2714.60	0.35
Near Dayton	70	Base	36100.00	4288.00	4302.23		4302.43	0.001077	4.95	12798.70	2224.31	0.28
Near Dayton	60	Base	36100.00	4288.80	4301.52	4297.25	4301.71	0.000803	4.45	13833.82	3053.28	0.24
Near Dayton	55		Bridge									
Near Dayton	50	Base	36100.00	4288.30	4301.23		4301.41	0.000802	4.33	13565.28	3140.55	0.24
Near Dayton	40	Base	36100.00	4287.50	4300.69		4300.91	0.000886	4.91	11605.89	2346.87	0.28
Near Dayton	30	Base	36100.00	4286.00	4299.44		4299.75	0.001375	6.17	10235.45	2340.30	0.35
Near Dayton	20	Base	36100.00	4286.10	4298.72		4298.96	0.001110	5.81	11276.98	2339.19	0.32
Near Dayton	10	Base	36100.00	4285.10	4297.22		4297.51	0.001580	5.41	9509.04	2334.91	0.36
Near Dayton	0	Base	36100.00	4285.00	4294.93	4292.64	4295.17	0.001372	4.92	10373.52	2621.86	0.33


Carson River Rolling A Bridge Plan: 1.5 times 100y_No Bridge 7/8/2008 10:50:43 AM
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Carson Near Dayton
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 1.5xNoBridge Carson Near Dayton RS: 90 Profile: 1.5 Times

E.G. Elev (ft)	4306.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (ft)	4306.36	Reach Len. (ft)	1528.48	1547.45	918.50
Crit W.S. (ft)		Flow Area (sq ft)	5692.41	2729.08	8779.51
E.G. Slope (ft/ft)	0.000651	Area (sq ft)	5692.41	2729.08	8779.51
Q Total (cfs)	54150.00	Flow (cfs)	13179.03	14726.92	26244.06
Top Width (ft)	2763.58	Top Width (ft)	1250.00	200.00	1313.58
Vel Total (ft/s)	3.15	Avg. Vel. (ft/s)	2.32	5.40	2.99
Max Chl Dpth (ft)	15.36	Hydr. Depth (ft)	4.55	13.65	6.68
Conv. Total (cfs)	2121616.0	Conv. (cfs)	516358.9	577005.8	1028251.0
Length Wtd. (ft)	1129.44	Wetted Per. (ft)	1250.22	200.99	1314.32
Min Ch El (ft)	4291.00	Shear (lb/sq ft)	0.19	0.55	0.27
Alpha	1.37	Stream Power (lb/ft s)	0.43	2.98	0.81
Frctn Loss (ft)	1.01	Cum Volume (acre-ft)	857.80	698.80	1394.47
C & E Loss (ft)	0.00	Cum SA (acres)	159.80	66.09	257.83

Errors Warnings and Notes

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.

Plan: 1.5xNoBridge Carson Near Dayton RS: 80 Profile: 1.5 Times

E.G. Elev (ft)	4305.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	0.060
W.S. Elev (ft)	4305.35	Reach Len. (ft)	1531.51	1552.09	1061.06
Crit W.S. (ft)		Flow Area (sq ft)		1453.39	15446.69
E.G. Slope (ft/ft)	0.001300	Area (sq ft)		1453.39	15446.69
Q Total (cfs)	54150.00	Flow (cfs)		8813.41	45336.59
Top Width (ft)	2739.66	Top Width (ft)		147.97	2591.69
Vel Total (ft/s)	3.20	Avg. Vel. (ft/s)		6.06	2.94
Max Chl Dpth (ft)	15.35	Hydr. Depth (ft)		9.82	5.96
Conv. Total (cfs)	1501723.0	Conv. (cfs)		244419.2	1257304.0
Length Wtd. (ft)	1226.27	Wetted Per. (ft)		150.89	2592.35
Min Ch El (ft)	4290.00	Shear (lb/sq ft)		0.78	0.48
Alpha	1.29	Stream Power (lb/ft s)		4.74	1.42
Frctn Loss (ft)	1.63	Cum Volume (acre-ft)	757.93	624.51	1139.06
C & E Loss (ft)	0.01	Cum SA (acres)	137.87	59.91	216.66

Errors Warnings and Notes

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

Plan: 1.5xNoBridge Carson Near Dayton RS: 70 Profile: 1.5 Times

E.G. Elev (ft)	4303.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.055	0.045	0.075
W.S. Elev (ft)	4303.63	Reach Len. (ft)	1060.67	922.96	789.91
Crit W.S. (ft)		Flow Area (sq ft)	2293.70	3356.63	10298.39
E.G. Slope (ft/ft)	0.001359	Area (sq ft)	2293.70	3356.63	10298.39
Q Total (cfs)	54150.00	Flow (cfs)	7547.92	20394.05	26208.03
Top Width (ft)	2263.26	Top Width (ft)	381.28	300.00	1581.98
Vel Total (ft/s)	3.40	Avg. Vel. (ft/s)	3.29	6.08	2.54

Plan: 1.5xNoBridge Carson Near Dayton RS: 70 Profile: 1.5 Times (Continued)

Max Chl Dpth (ft)	15.63	Hydr. Depth (ft)	6.02	11.19	6.51
Conv. Total (cfs)	1469126.0	Conv. (cfs)	204780.1	553304.3	711041.2
Length Wtd. (ft)	898.01	Wetted Per. (ft)	381.82	300.94	1583.00
Min Ch El (ft)	4288.00	Shear (lb/sq ft)	0.51	0.95	0.55
Alpha	1.61	Stream Power (lb/ft s)	1.68	5.75	1.40
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	717.61	538.81	825.50
C & E Loss (ft)	0.03	Cum SA (acres)	131.16	51.93	165.82

Plan: 1.5xNoBridge Carson Near Dayton RS: 60 Profile: 1.5 Times

E.G. Elev (ft)	4303.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4302.81	Reach Len. (ft)	119.71	119.74	119.72
Crit W.S. (ft)		Flow Area (sq ft)	5391.33	4820.18	7589.96
E.G. Slope (ft/ft)	0.000699	Area (sq ft)	5391.33	4820.18	7589.96
Q Total (cfs)	54150.00	Flow (cfs)	13452.95	24861.09	15835.96
Top Width (ft)	3102.12	Top Width (ft)	950.00	400.00	1752.12
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)	2.50	5.16	2.09
Max Chl Dpth (ft)	14.01	Hydr. Depth (ft)	5.68	12.05	4.33
Conv. Total (cfs)	2048857.0	Conv. (cfs)	509015.1	940661.6	599180.4
Length Wtd. (ft)	119.73	Wetted Per. (ft)	952.10	400.32	1753.07
Min Ch El (ft)	4288.80	Shear (lb/sq ft)	0.25	0.53	0.19
Alpha	1.62	Stream Power (lb/ft s)	0.62	2.71	0.39
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	624.05	452.19	663.31
C & E Loss (ft)	0.01	Cum SA (acres)	114.96	44.51	135.59

Errors Warnings and Notes

Warning:	The cross-section end points had to be extended vertically for the computed water surface.

Plan: 1.5xNoBridge Carson Near Dayton RS: 50 Profile: 1.5 Times

E.G. Elev (ft)	4302.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4302.74	Reach Len. (ft)	596.56	717.27	773.59
Crit W.S. (ft)		Flow Area (sq ft)	6197.80	4746.88	7402.98
E.G. Slope (ft/ft)	0.000628	Area (sq ft)	6197.80	4746.88	7402.98
Q Total (cfs)	54150.00	Flow (cfs)	16525.71	22969.17	14655.12
Top Width (ft)	3178.51	Top Width (ft)	1071.25	400.00	1707.26
Vel Total (ft/s)	2.95	Avg. Vel. (ft/s)	2.67	4.84	1.98
Max Chl Dpth (ft)	14.44	Hydr. Depth (ft)	5.79	11.87	4.34
Conv. Total (cfs)	2160625.0	Conv. (cfs)	659388.0	916486.8	584750.1
Length Wtd. (ft)	672.64	Wetted Per. (ft)	1071.66	400.62	1708.44
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.23	0.46	0.17
Alpha	1.51	Stream Power (lb/ft s)	0.60	2.25	0.34
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	608.12	439.04	642.71
C & E Loss (ft)	0.01	Cum SA (acres)	112.18	43.41	130.84

Plan: 1.5xNoBridge Carson Near Dayton RS: 40 Profile: 1.5 Times

E.G. Elev (ft)	4302.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4302.16	Reach Len. (ft)	683.85	1363.67	935.62
Crit W.S. (ft)		Flow Area (sq ft)	10268.17	3795.70	1032.67
E.G. Slope (ft/ft)	0.000933	Area (sq ft)	10268.17	3795.70	1032.67
Q Total (cfs)	54150.00	Flow (cfs)	31220.30	21075.99	1853.71
Top Width (ft)	2394.35	Top Width (ft)	1673.11	350.00	371.24

Plan: 1.5xNoBridge Carson Near Dayton RS: 40 Profile: 1.5 Times (Continued)

Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)	3.04	5.55	1.80
Max Chl Dpth (ft)	14.66	Hydr. Depth (ft)	6.14	10.84	2.78
Conv. Total (cfs)	1772986.0	Conv. (cfs)	1022219.0	690072.8	60694.3
Length Wtd. (ft)	1004.07	Wetted Per. (ft)	1674.77	350.58	371.30
Min Ch El (ft)	4287.50	Shear (lb/sq ft)	0.36	0.63	0.16
Alpha	1.36	Stream Power (lb/ft s)	1.09	3.50	0.29
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	495.37	368.71	567.80
C & E Loss (ft)	0.01	Cum SA (acres)	93.39	37.24	112.38

Errors Warnings and Notes

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

Plan: 1.5xNoBridge Carson Near Dayton RS: 30 Profile: 1.5 Times

E.G. Elev (ft)	4301.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4300.97	Reach Len. (ft)	705.88	692.91	543.40
Crit W.S. (ft)		Flow Area (sq ft)	2576.39	2761.57	8651.16
E.G. Slope (ft/ft)	0.001334	Area (sq ft)	2576.39	2761.57	8651.16
Q Total (cfs)	54150.00	Flow (cfs)	6659.96	18522.74	28967.30
Top Width (ft)	2546.63	Top Width (ft)	700.00	250.00	1596.63
Vel Total (ft/s)	3.87	Avg. Vel. (ft/s)	2.58	6.71	3.35
Max Chl Dpth (ft)	14.97	Hydr. Depth (ft)	3.68	11.05	5.42
Conv. Total (cfs)	1482582.0	Conv. (cfs)	182344.1	507137.1	793100.6
Length Wtd. (ft)	621.16	Wetted Per. (ft)	701.02	251.25	1596.73
Min Ch El (ft)	4286.00	Shear (lb/sq ft)	0.31	0.92	0.45
Alpha	1.48	Stream Power (lb/ft s)	0.79	6.14	1.51
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	394.55	266.07	463.80
C & E Loss (ft)	0.02	Cum SA (acres)	74.76	27.85	91.25

Errors Warnings and Notes

Warning:	The cross-section end points had to be extended vertically for the computed water surface.

Plan: 1.5xNoBridge Carson Near Dayton RS: 20 Profile: 1.5 Times

E.G. Elev (ft)	4300.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4300.25	Reach Len. (ft)	1046.45	1201.27	1036.27
Crit W.S. (ft)		Flow Area (sq ft)	4490.07	2347.30	8081.25
E.G. Slope (ft/ft)	0.001123	Area (sq ft)	4490.07	2347.30	8081.25
Q Total (cfs)	54150.00	Flow (cfs)	14282.49	15045.05	24822.46
Top Width (ft)	2477.80	Top Width (ft)	786.27	200.00	1491.53
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	3.18	6.41	3.07
Max Chl Dpth (ft)	14.15	Hydr. Depth (ft)	5.71	11.74	5.42
Conv. Total (cfs)	1616063.0	Conv. (cfs)	426249.5	449007.4	740806.4
Length Wtd. (ft)	1094.02	Wetted Per. (ft)	786.46	200.88	1491.68
Min Ch El (ft)	4286.10	Shear (lb/sq ft)	0.40	0.82	0.38
Alpha	1.40	Stream Power (lb/ft s)	1.27	5.25	1.17
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	337.29	225.43	359.44
C & E Loss (ft)	0.00	Cum SA (acres)	62.72	24.27	71.99

Errors Warnings and Notes

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

Plan: 1.5xNoBridge Carson Near Dayton RS: 10 Profile: 1.5 Times

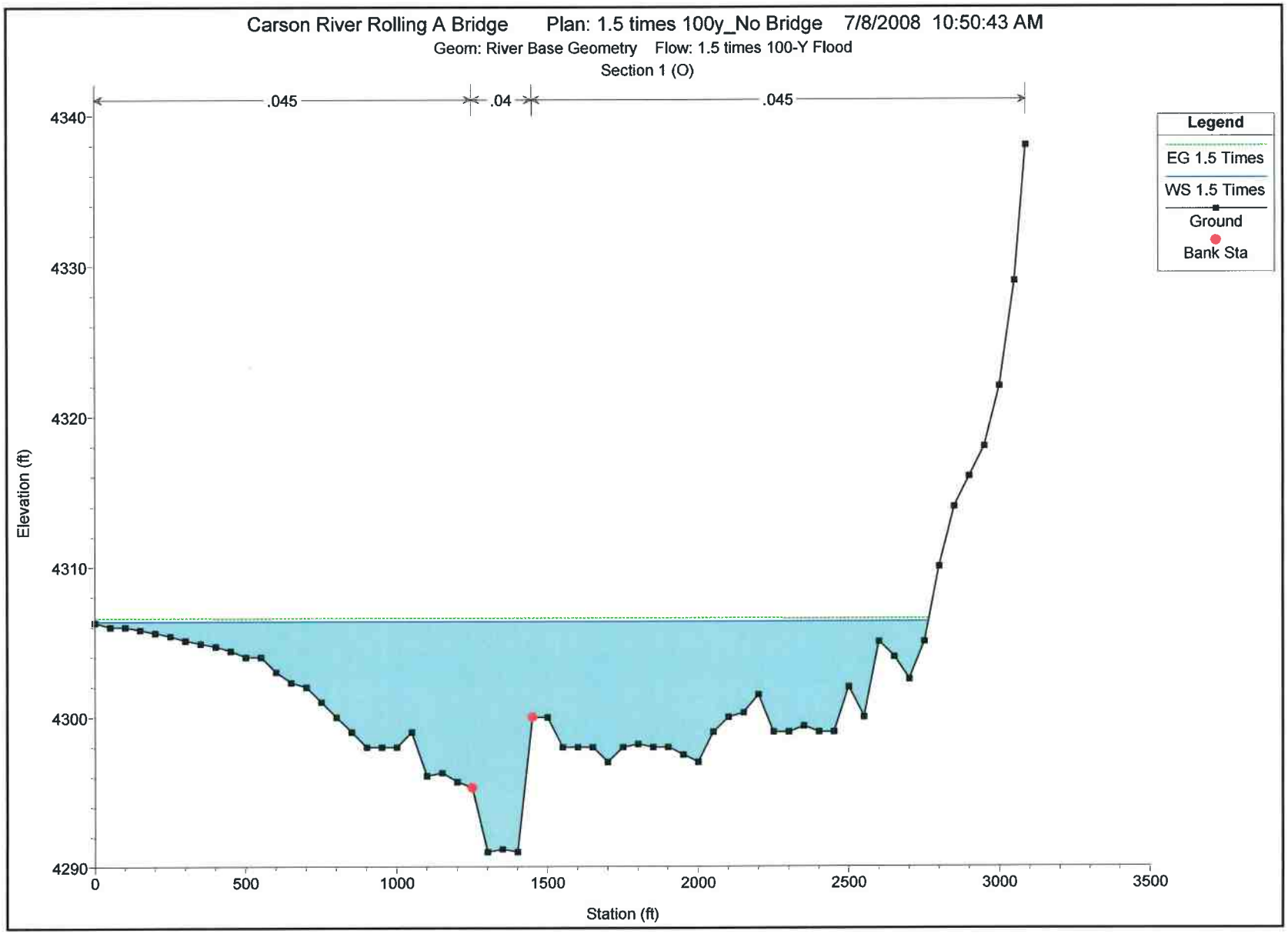
E.G. Elev (ft)	4299.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4298.87	Reach Len. (ft)	1468.91	1548.39	1751.32
Crit W.S. (ft)		Flow Area (sq ft)	8392.06	3477.27	1522.72
E.G. Slope (ft/ft)	0.001356	Area (sq ft)	8392.06	3477.27	1522.72
Q Total (cfs)	54150.00	Flow (cfs)	31063.35	20064.59	3022.06
Top Width (ft)	2372.03	Top Width (ft)	1348.68	400.00	623.35
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)	3.70	5.77	1.98
Max Chl Dpth (ft)	13.77	Hydr. Depth (ft)	6.22	8.69	2.44
Conv. Total (cfs)	1470599.0	Conv. (cfs)	843614.6	544911.6	82072.8
Length Wtd. (ft)	1585.17	Wetted Per. (ft)	1348.94	401.34	623.43
Min Ch El (ft)	4285.10	Shear (lb/sq ft)	0.53	0.73	0.21
Alpha	1.25	Stream Power (lb/ft s)	1.95	4.23	0.41
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	182.56	145.12	245.20
C & E Loss (ft)	0.04	Cum SA (acres)	37.07	16.00	46.83

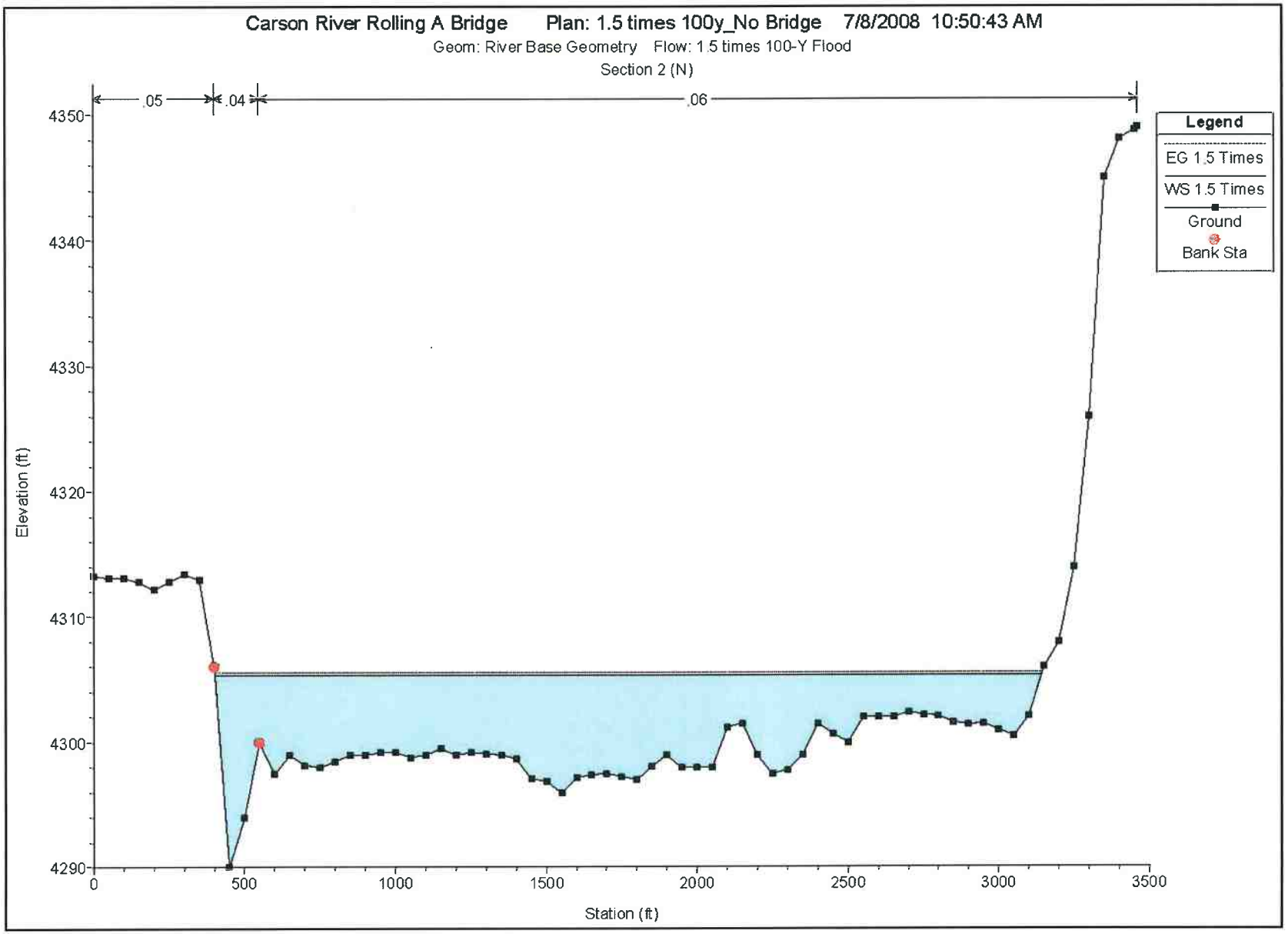
Errors Warnings and Notes

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.

Plan: 1.5xNoBridge Carson Near Dayton RS: 0 Profile: 1.5 Times

E.G. Elev (ft)	4297.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (ft)	4297.54	Reach Len. (ft)			
Crit W.S. (ft)	4293.39	Flow Area (sq ft)	2435.28	4687.82	10674.80
E.G. Slope (ft/ft)	0.000646	Area (sq ft)	2435.28	4687.82	10674.80
Q Total (cfs)	54150.00	Flow (cfs)	4117.27	19648.70	30384.03
Top Width (ft)	3056.32	Top Width (ft)	850.00	500.00	1706.32
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)	1.69	4.19	2.85
Max Chl Dpth (ft)	12.54	Hydr. Depth (ft)	2.87	9.38	6.26
Conv. Total (cfs)	2130588.0	Conv. (cfs)	161998.2	773098.4	1195491.0
Length Wtd. (ft)		Wetted Per. (ft)	851.69	501.16	1709.05
Min Ch El (ft)	4285.00	Shear (lb/sq ft)	0.12	0.38	0.25
Alpha	1.20	Stream Power (lb/ft s)	0.19	1.58	0.72
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			


Carson River Rolling A Bridge Plan: 1.5 times 100y_No Bridge 7/8/2008 10:50:43 AM
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 1 (O)
.045
.04
.045
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4340
4330
4320
4310
4300
4290
0
500
1000
1500
2000
2500
3000
3500
Station (ft)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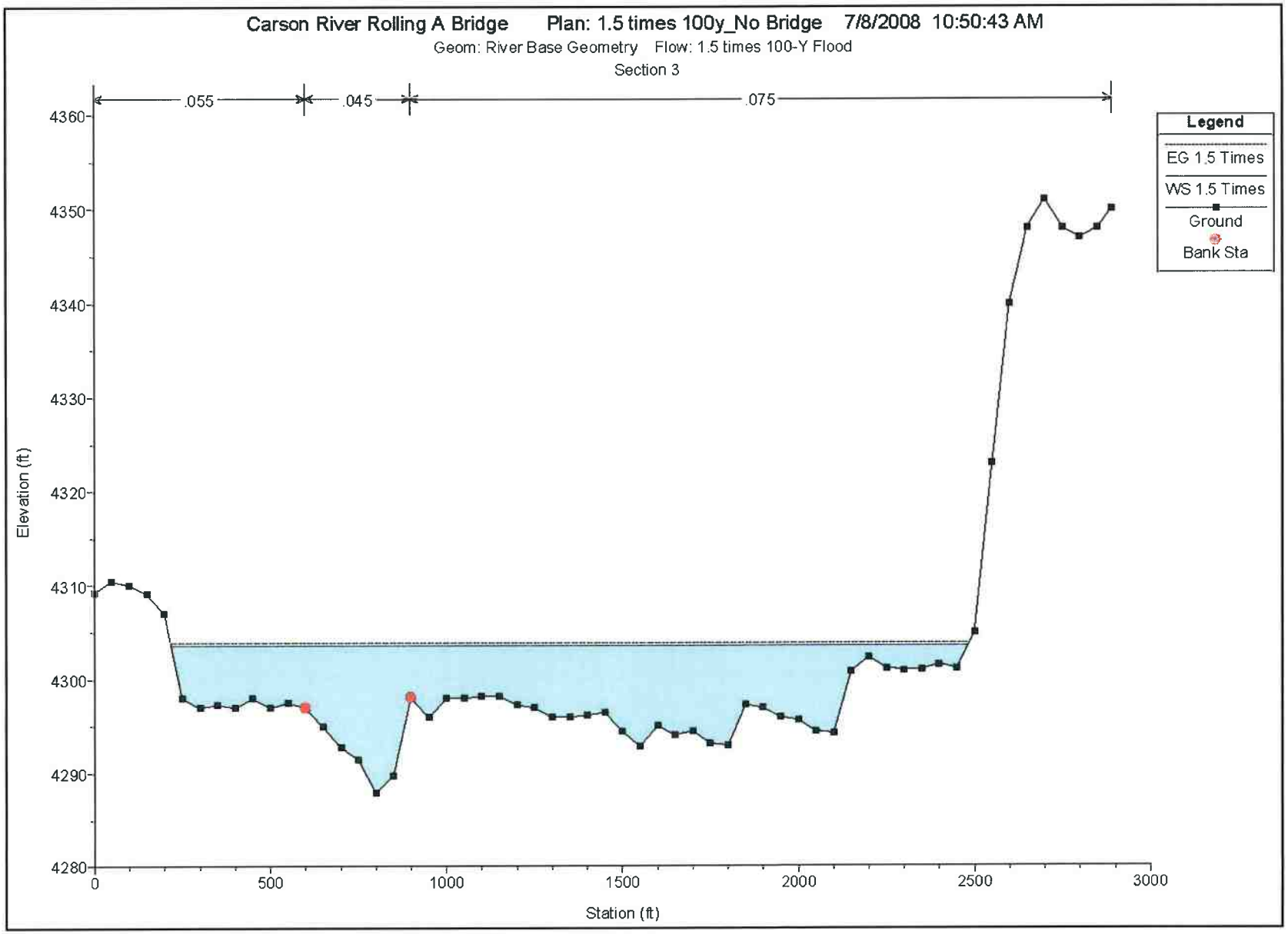
Section 2 (N)
.05
.04
.06
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
0
500
1000
1500
2000
2500
3000
3500
Station (ft)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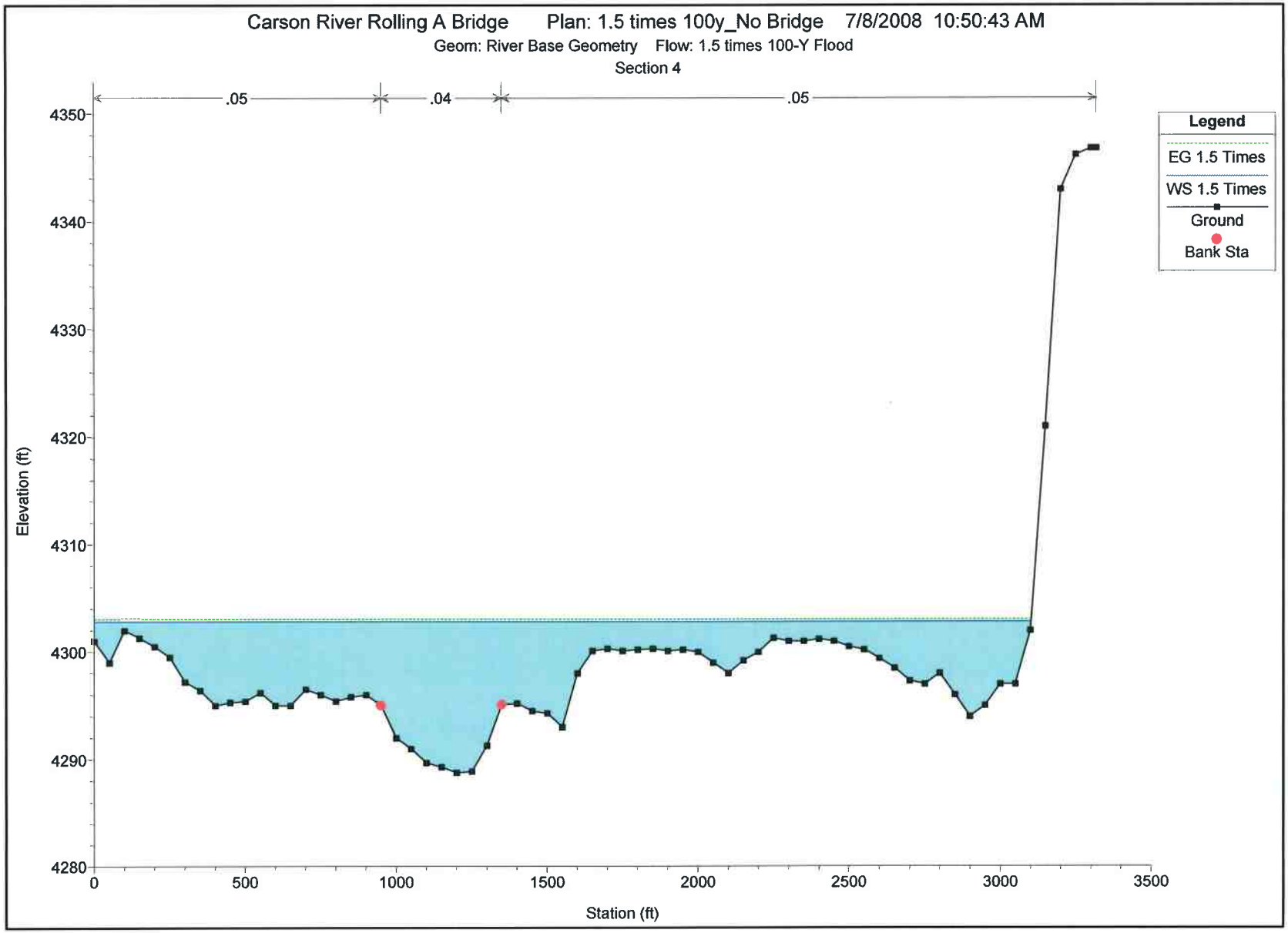
Section 3
.055
.045
.075
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4360
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
Station (ft)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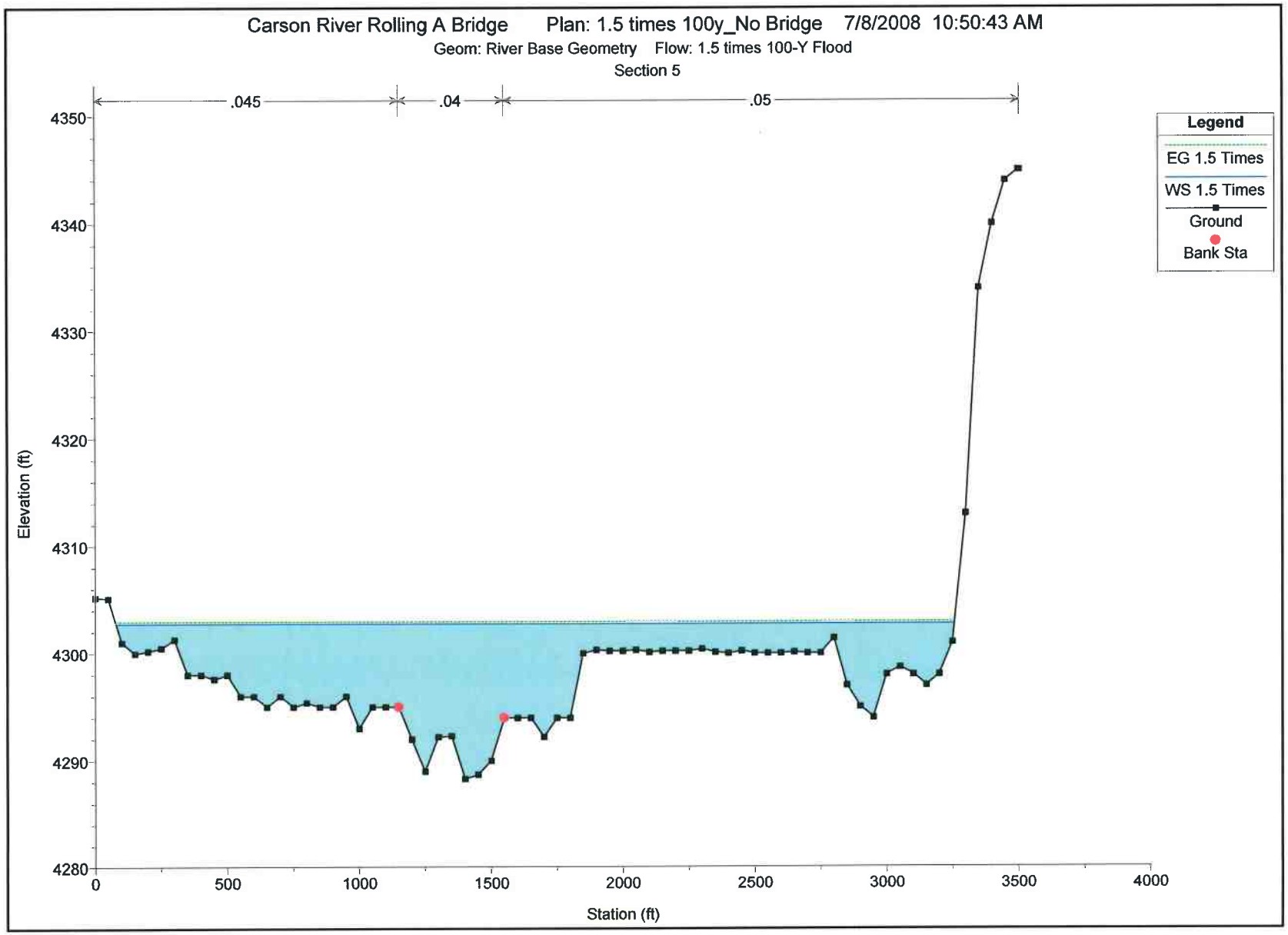
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 4
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)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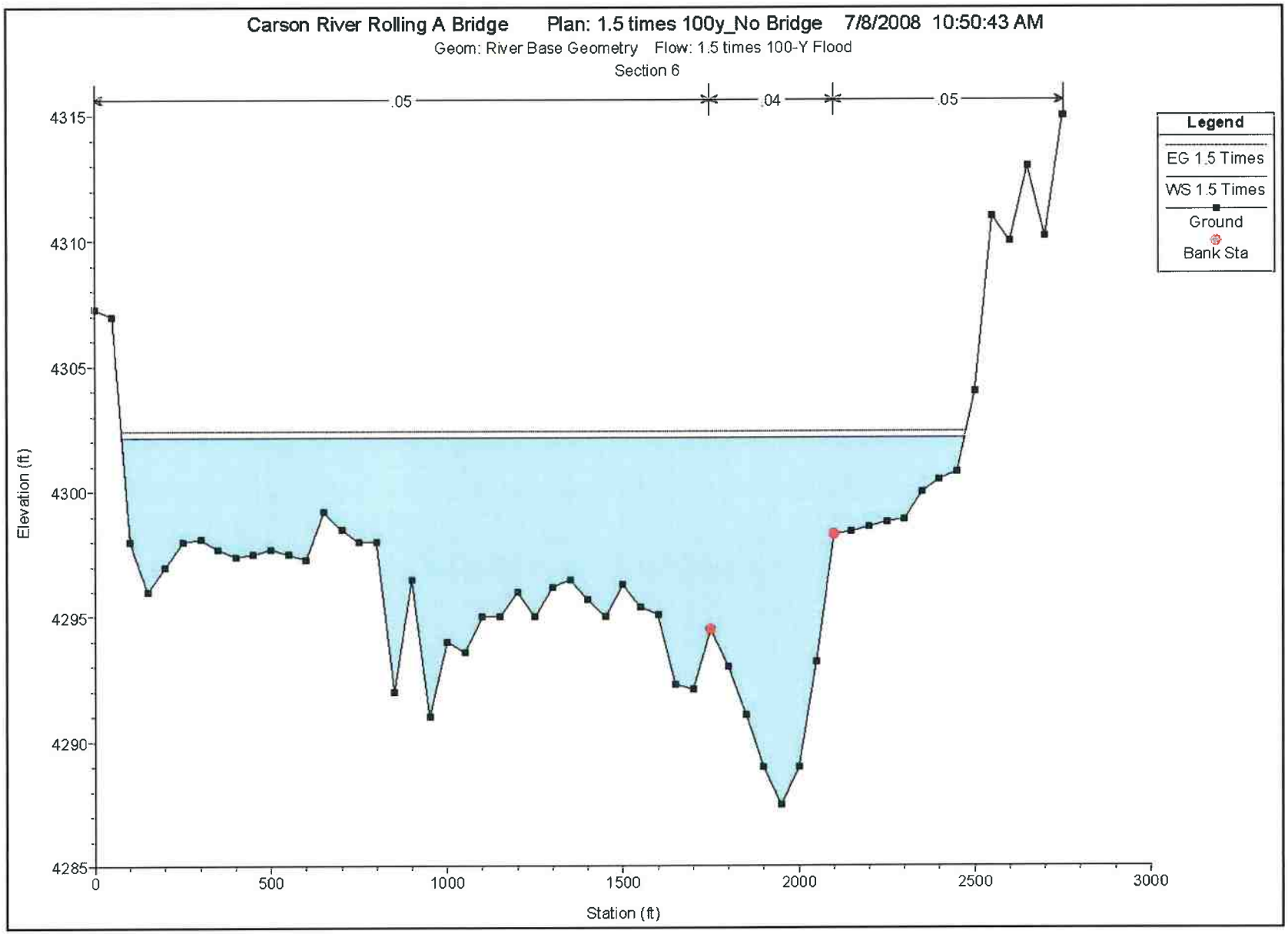
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 5
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)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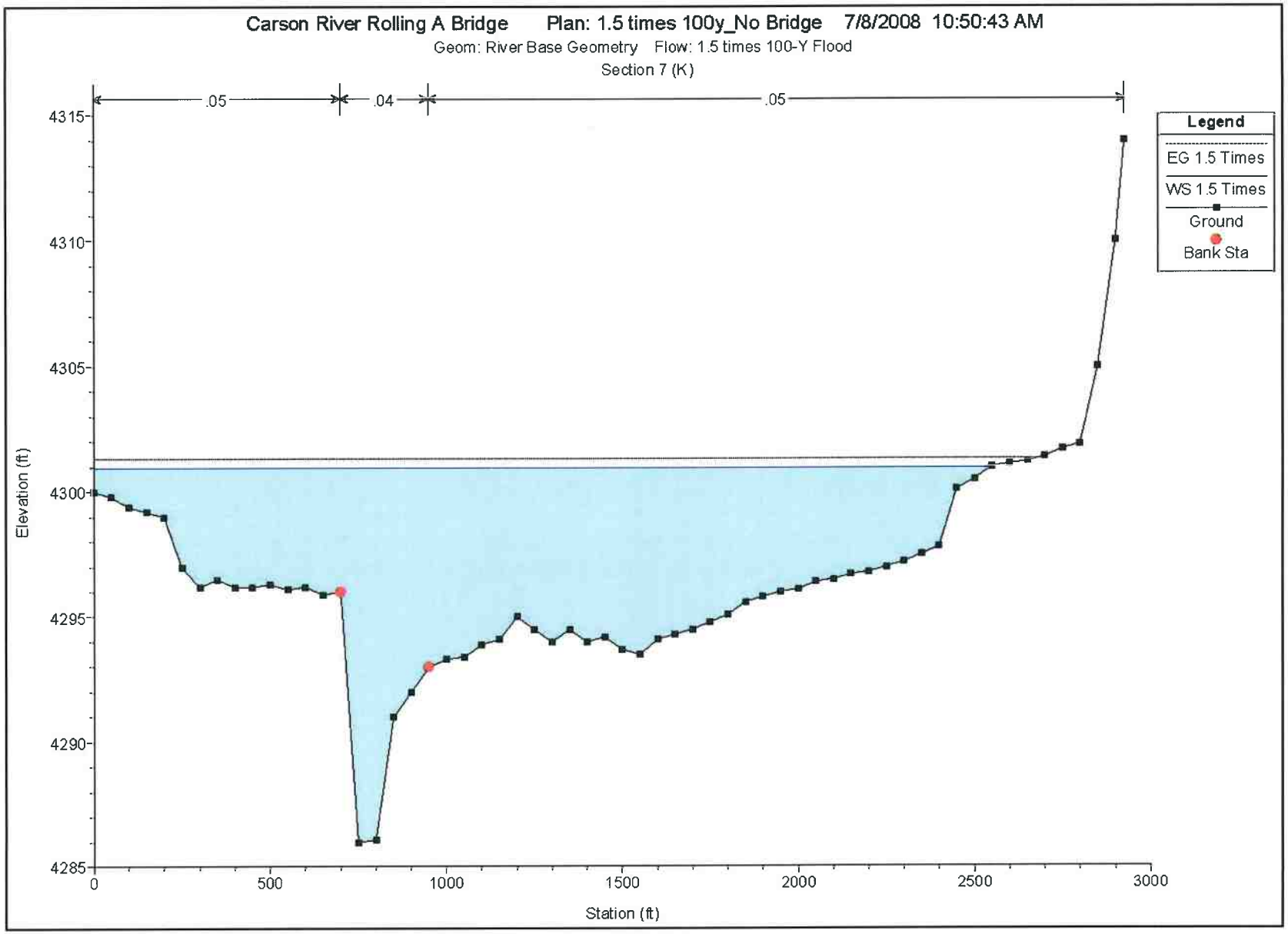
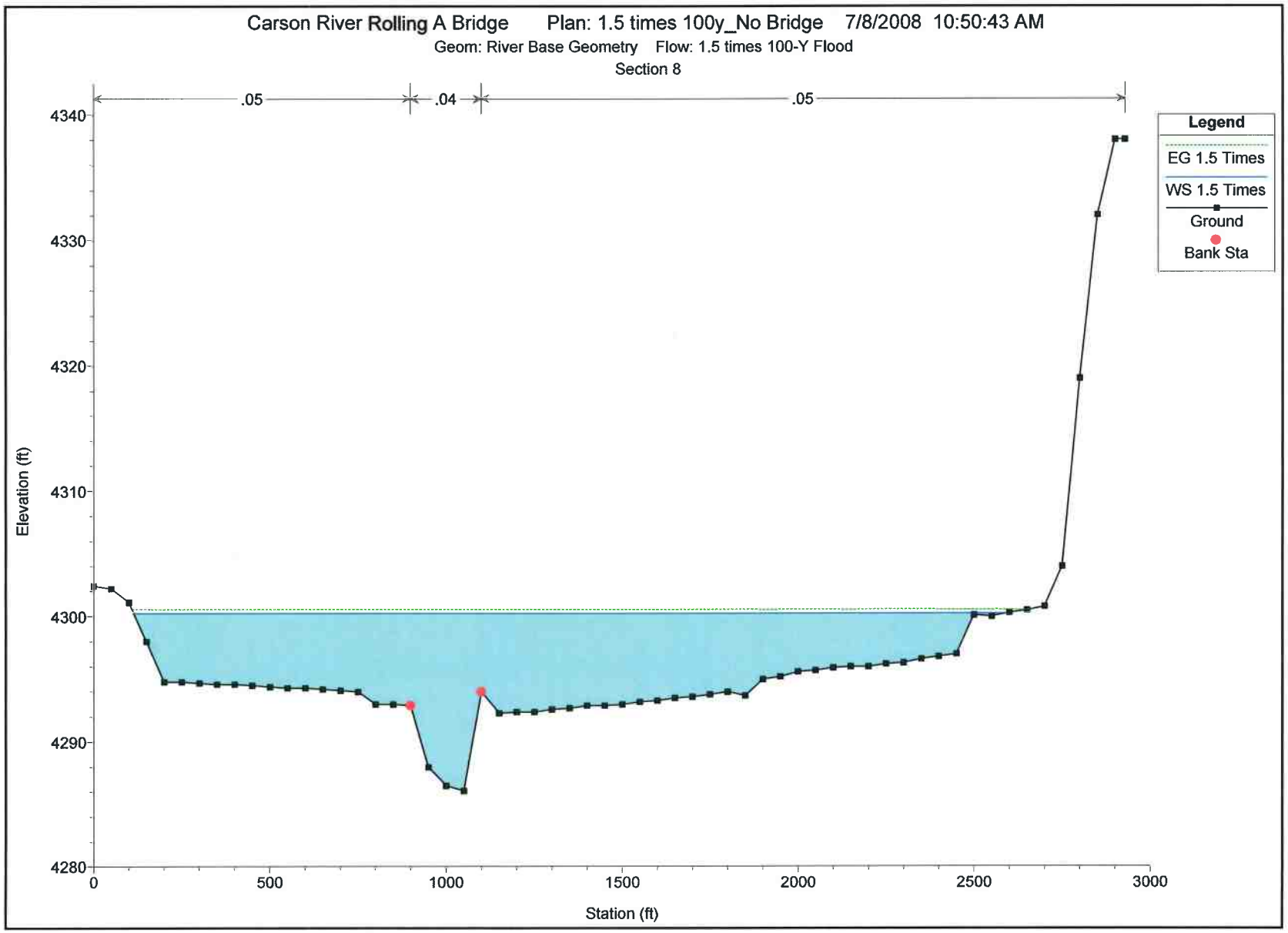
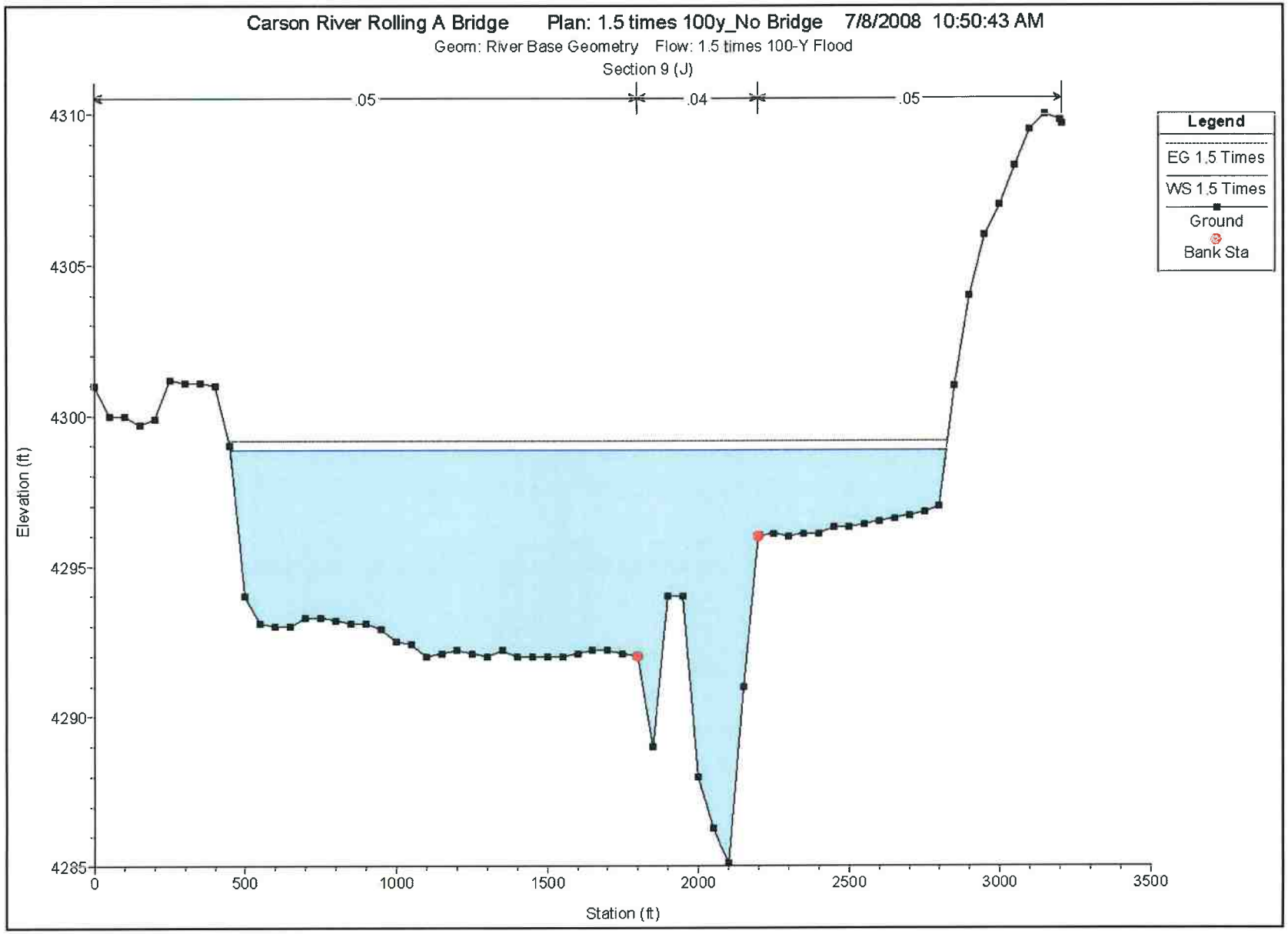
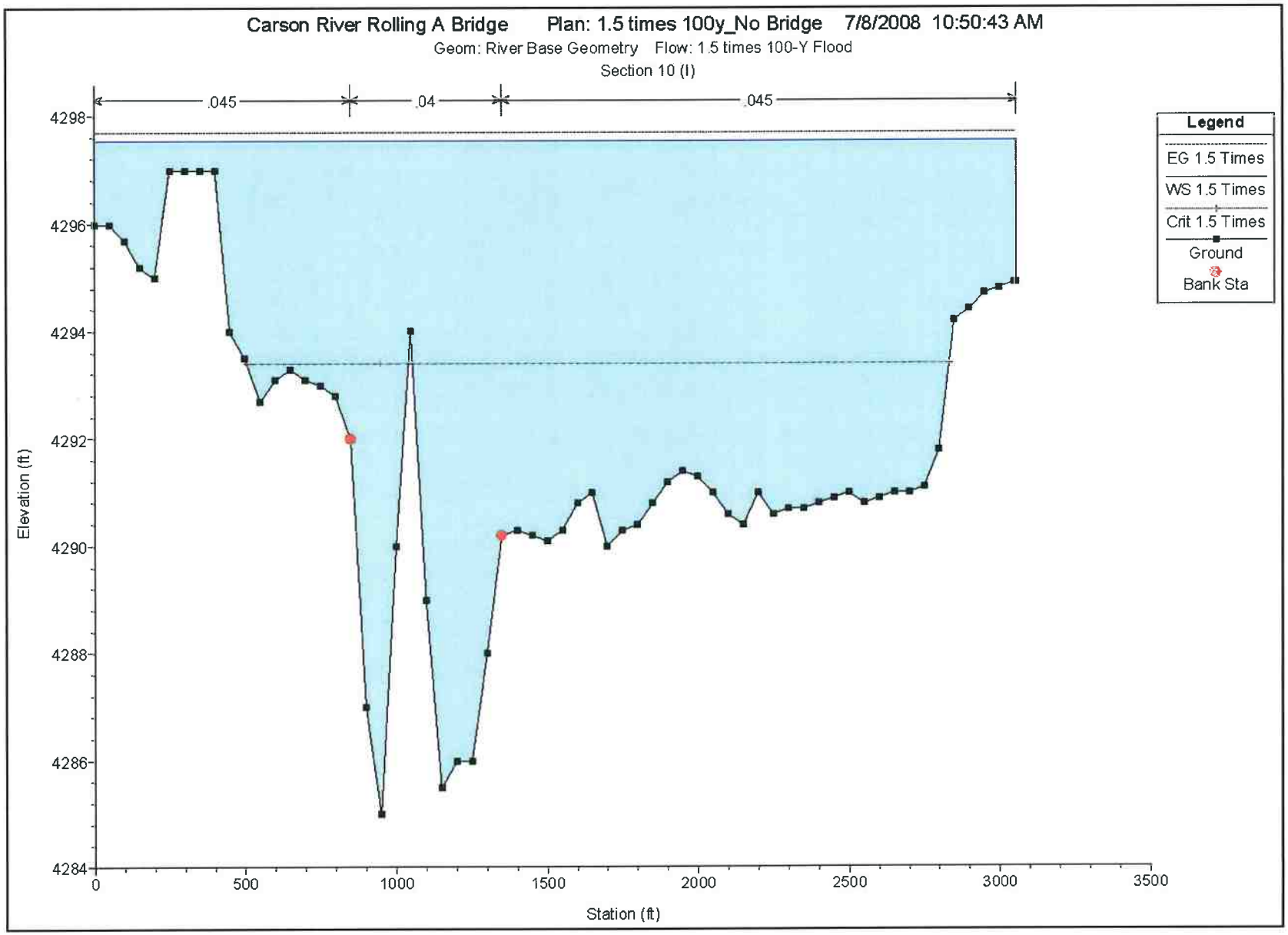
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 6
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4315
4310
4305
4300
4295
4290
4285
0
500
1000
1500
2000
2500
3000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5 times 100y_No Bridge 7/8/2008 10:50:43 AM
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 7 (K)
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4315
4310
4305
4300
4295
4290
4285
0
500
1000
1500
2000
2500
3000
Station (ft)

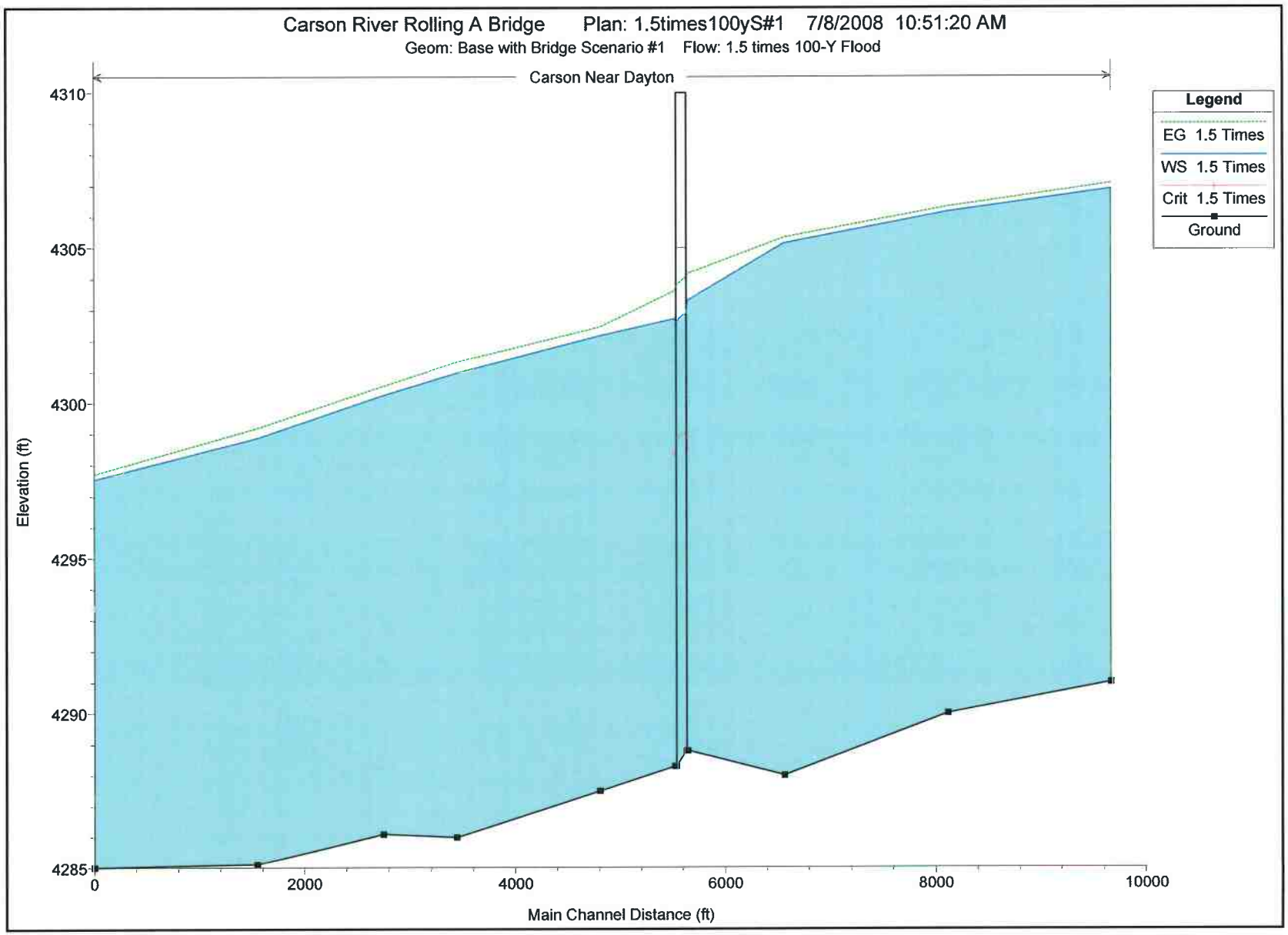

Carson River Rolling A Bridge Plan: 1.5 times 100y_No Bridge 7/8/2008 10:50:43 AM
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 8
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5 times 100y_No Bridge 7/8/2008 10:50:43 AM
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 9 (J)
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5 times 100y_No Bridge 7/8/2008 10:50:43 AM
Geom: River Base Geometry Flow: 1.5 times 100-Y Flood
Section 10 (I)
.045
.04
.045
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Bank Sta
Elevation (ft)
4298
4296
4294
4292
4290
4288
4286
4284
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

HEC-RAS Plan: 1.5xNoBridge River: Carson Reach: Near Dayton Profile: 1.5 Times

Reach	River Sta	Profile	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)	
Near Dayton	90	1.5 Times	54150.00	4291.00	4306.36		4306.57	0.000651	5.40	17200.99	2763.58	0.26
Near Dayton	80	1.5 Times	54150.00	4290.00	4305.35		4305.56	0.001300	6.06	16900.08	2739.66	0.34
Near Dayton	70	1.5 Times	54150.00	4288.00	4303.63		4303.92	0.001359	6.08	15948.71	2263.26	0.32
Near Dayton	60	1.5 Times	54150.00	4288.80	4302.81		4303.04	0.000699	5.16	17801.47	3102.12	0.26
Near Dayton	50	1.5 Times	54150.00	4288.30	4302.74		4302.95	0.000628	4.84	18347.66	3178.51	0.25
Near Dayton	40	1.5 Times	54150.00	4287.50	4302.16		4302.43	0.000933	5.55	15096.55	2394.35	0.30
Near Dayton	30	1.5 Times	54150.00	4286.00	4300.97		4301.31	0.001334	6.71	13989.12	2546.63	0.36
Near Dayton	20	1.5 Times	54150.00	4286.10	4300.25		4300.54	0.001123	6.41	14918.62	2477.80	0.33
Near Dayton	10	1.5 Times	54150.00	4285.10	4298.87		4299.19	0.001356	5.77	13392.04	2372.03	0.34
Near Dayton	0	1.5 Times	54150.00	4285.00	4297.54	4293.39	4297.71	0.000646	4.19	17797.90	3056.32	0.24


Carson River Rolling A Bridge Plan: 1.5times100yS#1 7/8/2008 10:51:20 AM
Geom: Base with Bridge Scenario #1 Flow: 1.5 times 100-Y Flood
Carson Near Dayton
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 1.5X100Y-S#1 Carson Near Dayton RS: 55 BR U Profile: 1.5 Times

E.G. Elev (ft)	4304.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.17	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4302.89	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4299.06	Flow Area (sq ft)	610.16	4572.78	1449.93
E.G. Slope (ft/ft)	0.002872	Area (sq ft)	610.16	4572.78	1449.93
Q Total (cfs)	54150.00	Flow (cfs)	3197.09	42668.84	8284.07
Top Width (ft)	661.56	Top Width (ft)	92.78	382.00	186.78
Vel Total (ft/s)	8.16	Avg. Vel. (ft/s)	5.24	9.33	5.71
Max Chl Dpth (ft)	14.08	Hydr. Depth (ft)	6.58	11.97	7.76
Conv. Total (cfs)	1010494.0	Conv. (cfs)	59661.0	796243.5	154589.0
Length Wtd. (ft)	100.00	Wetted Per. (ft)	102.24	450.59	213.51
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	1.07	1.82	1.22
Alpha	1.13	Stream Power (lb/ft s)	5.61	16.98	6.96
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	611.20	450.40	646.00
C & E Loss (ft)	0.01	Cum SA (acres)	112.61	44.38	131.39

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 1.5X100Y-S#1 Carson Near Dayton RS: 55 Profile: 1.5 Times

E.G. US. (ft)	4304.17	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4303.31	E.G. Elev (ft)	4304.06	4303.76
Q Total (cfs)	54150.00	W.S. Elev (ft)	4302.89	4302.61
Q Bridge (cfs)	54150.00	Crit W.S. (ft)	4299.06	4298.86
Q Weir (cfs)		Max Chl Dpth (ft)	14.08	14.31
Weir Sta Lft (ft)		Vel Total (ft/s)	8.16	8.25
Weir Sta Rgt (ft)		Flow Area (sq ft)	6632.87	6560.80
Weir Submerg		Froude # Chl	0.48	0.48
Weir Max Depth (ft)		Specif Force (cu ft)	50530.98	49358.69
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	10.03	9.93
Min El Prs (ft)	4305.00	W.P. Total (ft)	766.34	763.80
Delta EG (ft)	0.56	Conv. Total (cfs)	1010494.0	998319.0
Delta WS (ft)	0.59	Top Width (ft)	661.56	660.83
BR Open Area (sq ft)	8036.93	Frctn Loss (ft)	0.29	0.02
BR Open Vel (ft/s)	8.25	C & E Loss (ft)	0.01	0.13
Coef of Q		Shear Total (lb/sq ft)	1.55	1.58
Br Sel Method	Energy only	Power Total (lb/ft s)	12.67	13.02

Errors Warnings and Notes

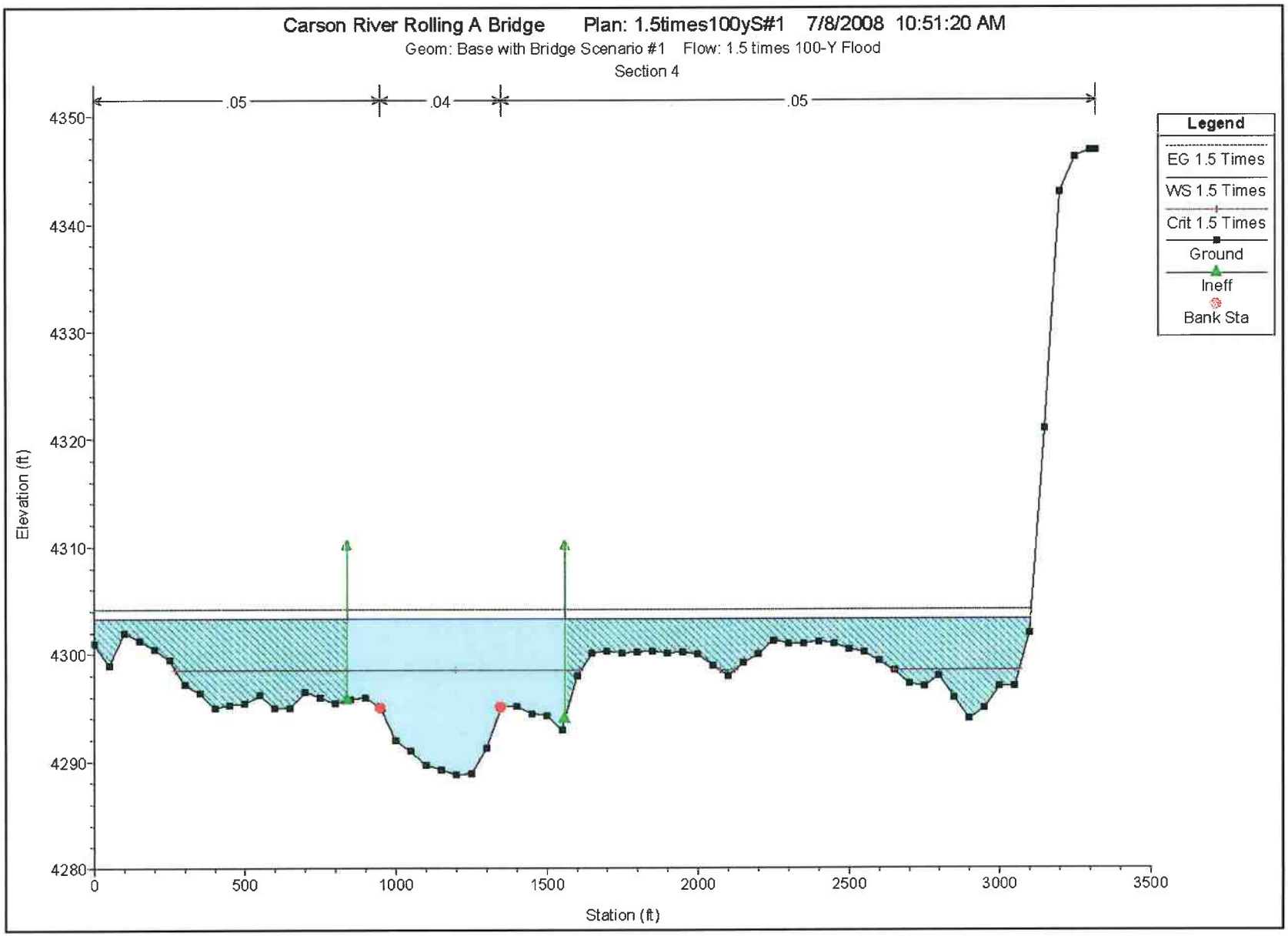
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

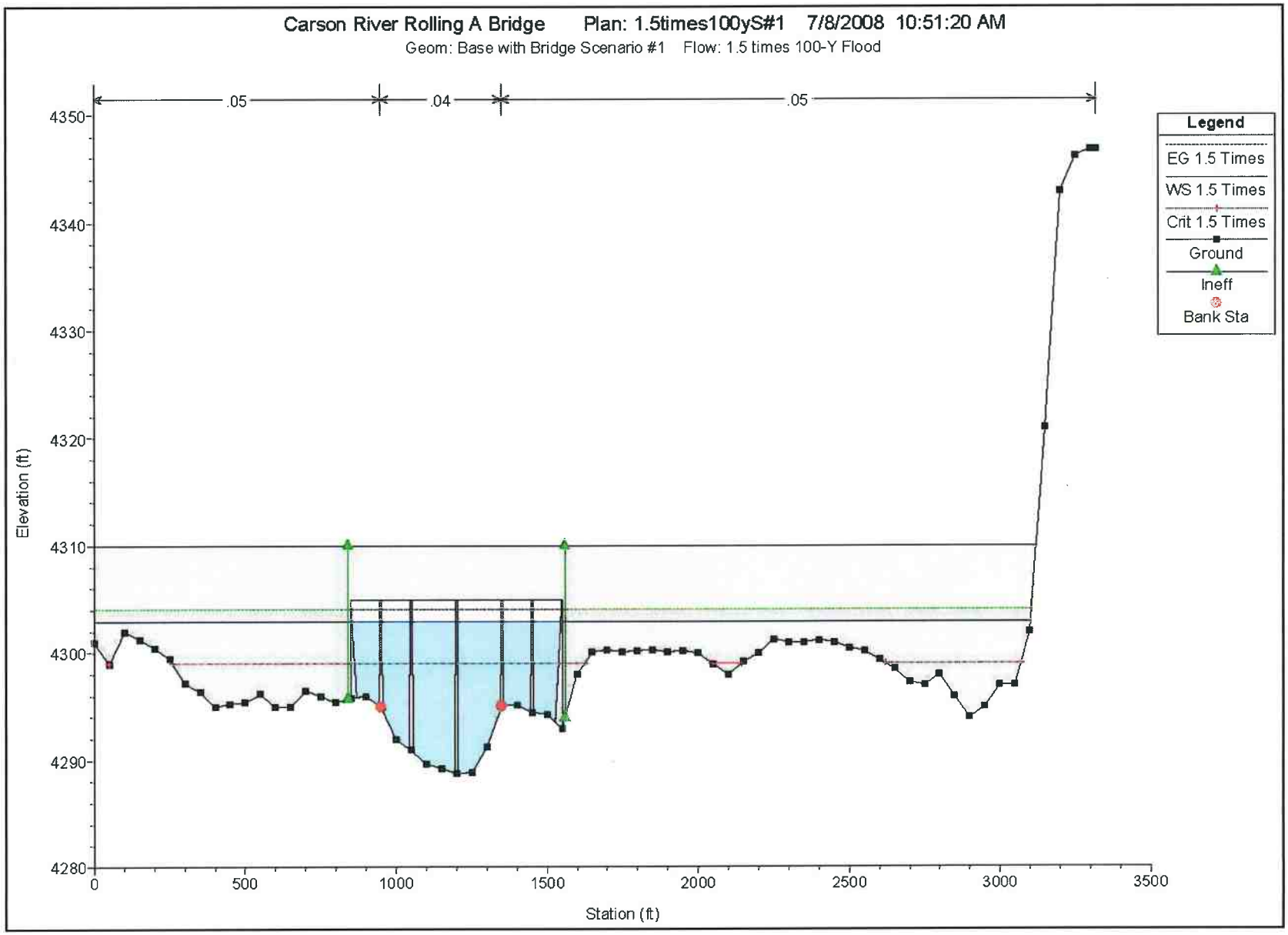
Plan: 1.5X100Y-S#1 Carson Near Dayton RS: 55 BR D Profile: 1.5 Times

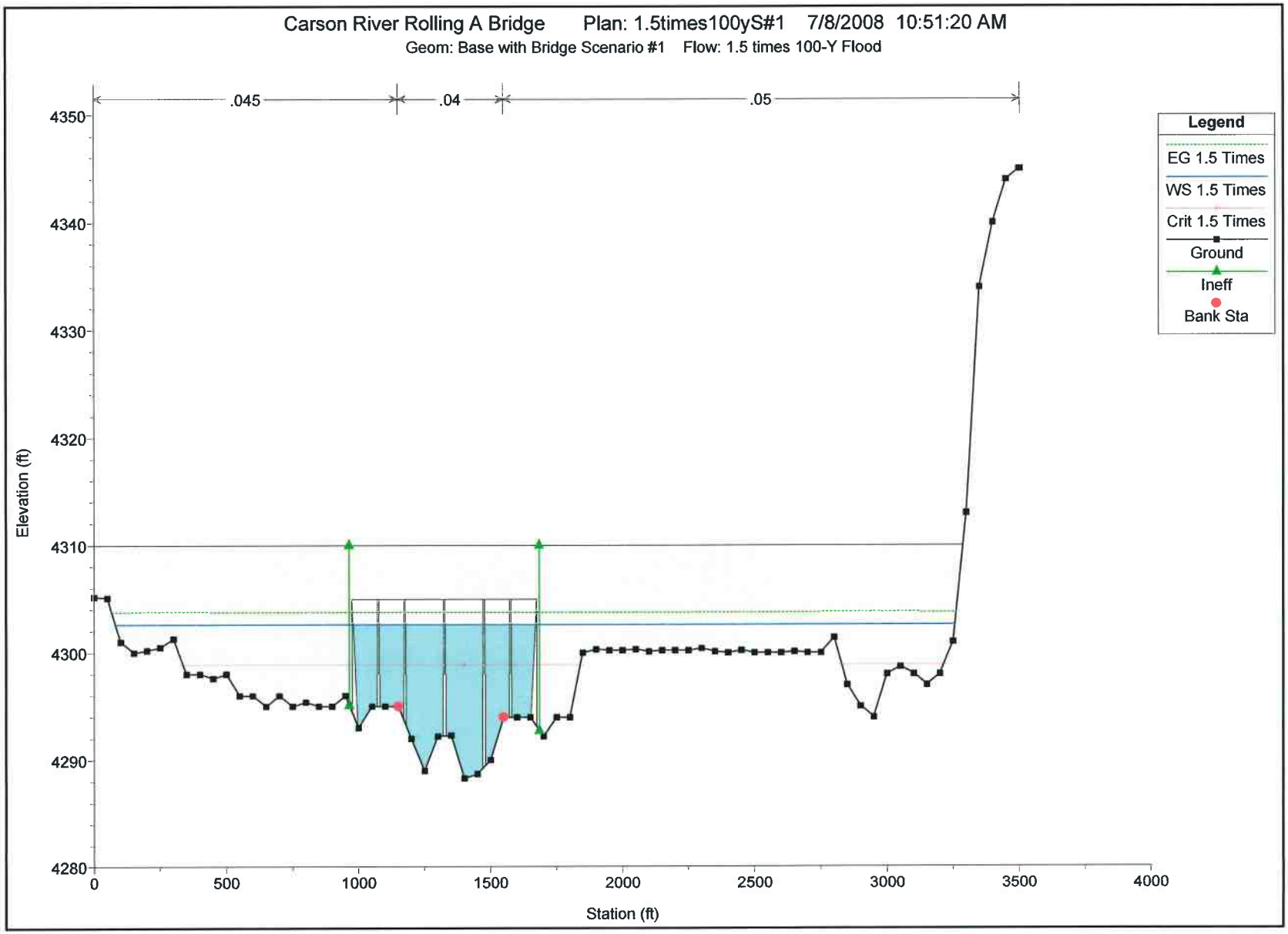
E.G. Elev (ft)	4303.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4302.61	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4298.86	Flow Area (sq ft)	1246.60	4421.04	893.17
E.G. Slope (ft/ft)	0.002942	Area (sq ft)	1246.60	4421.04	893.17
Q Total (cfs)	54150.00	Flow (cfs)	8044.77	40981.81	5123.43
Top Width (ft)	660.83	Top Width (ft)	164.61	382.00	114.22
Vel Total (ft/s)	8.25	Avg. Vel. (ft/s)	6.45	9.27	5.74
Max Chl Dpth (ft)	14.31	Hydr. Depth (ft)	7.57	11.57	7.82
Conv. Total (cfs)	998319.0	Conv. (cfs)	148314.7	755547.9	94456.4
Length Wtd. (ft)	9.74	Wetted Per. (ft)	182.27	448.04	133.49
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	1.26	1.81	1.23
Alpha	1.09	Stream Power (lb/ft s)	8.11	16.80	7.05
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	609.07	440.08	643.31
C & E Loss (ft)	0.13	Cum SA (acres)	112.31	43.50	131.05

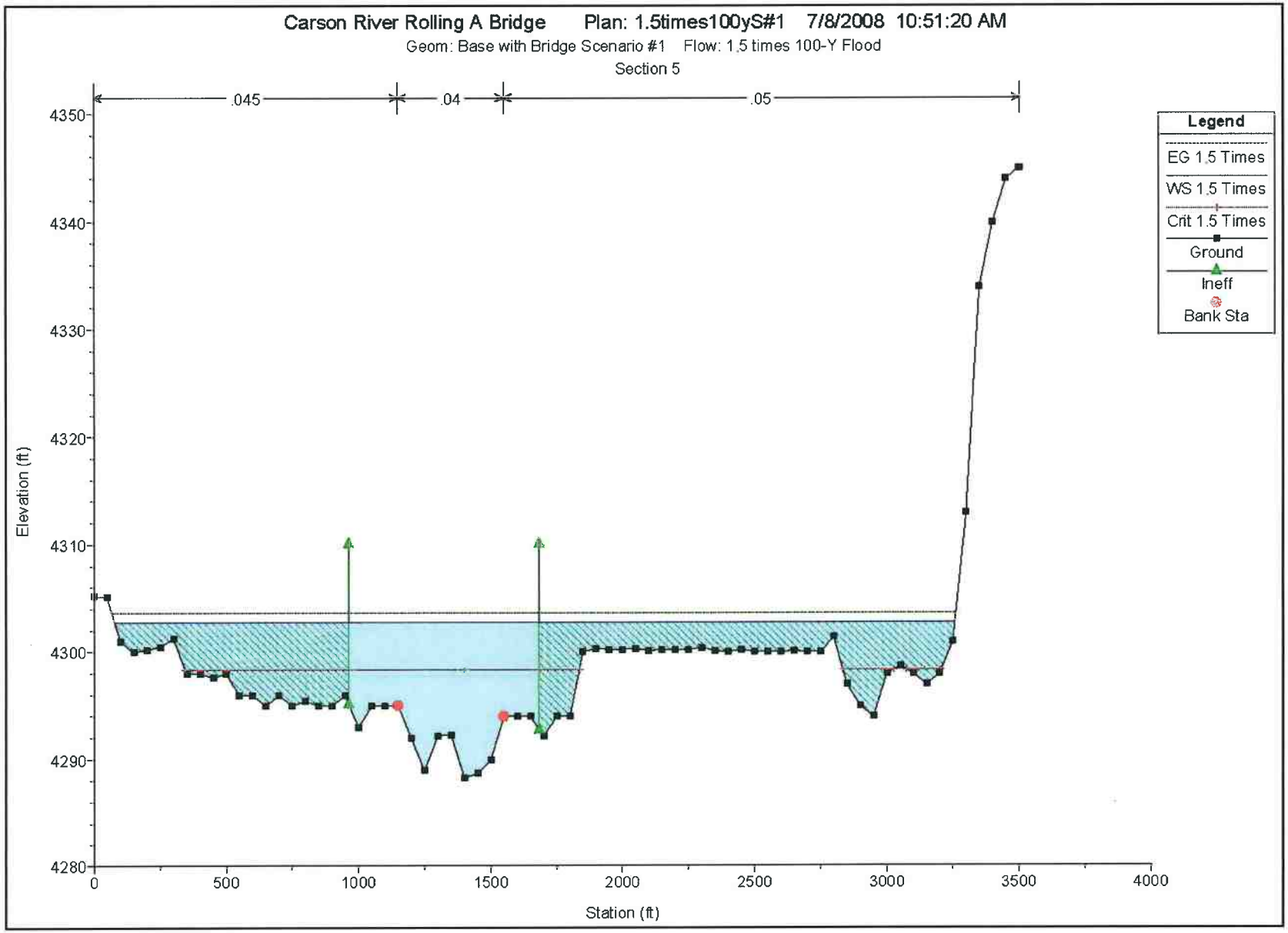
Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 1.5times100yS#1 7/8/2008 10:51:20 AM
Geom: Base with Bridge Scenario #1 Flow: 1.5 times 100-Y Flood
Section 4
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

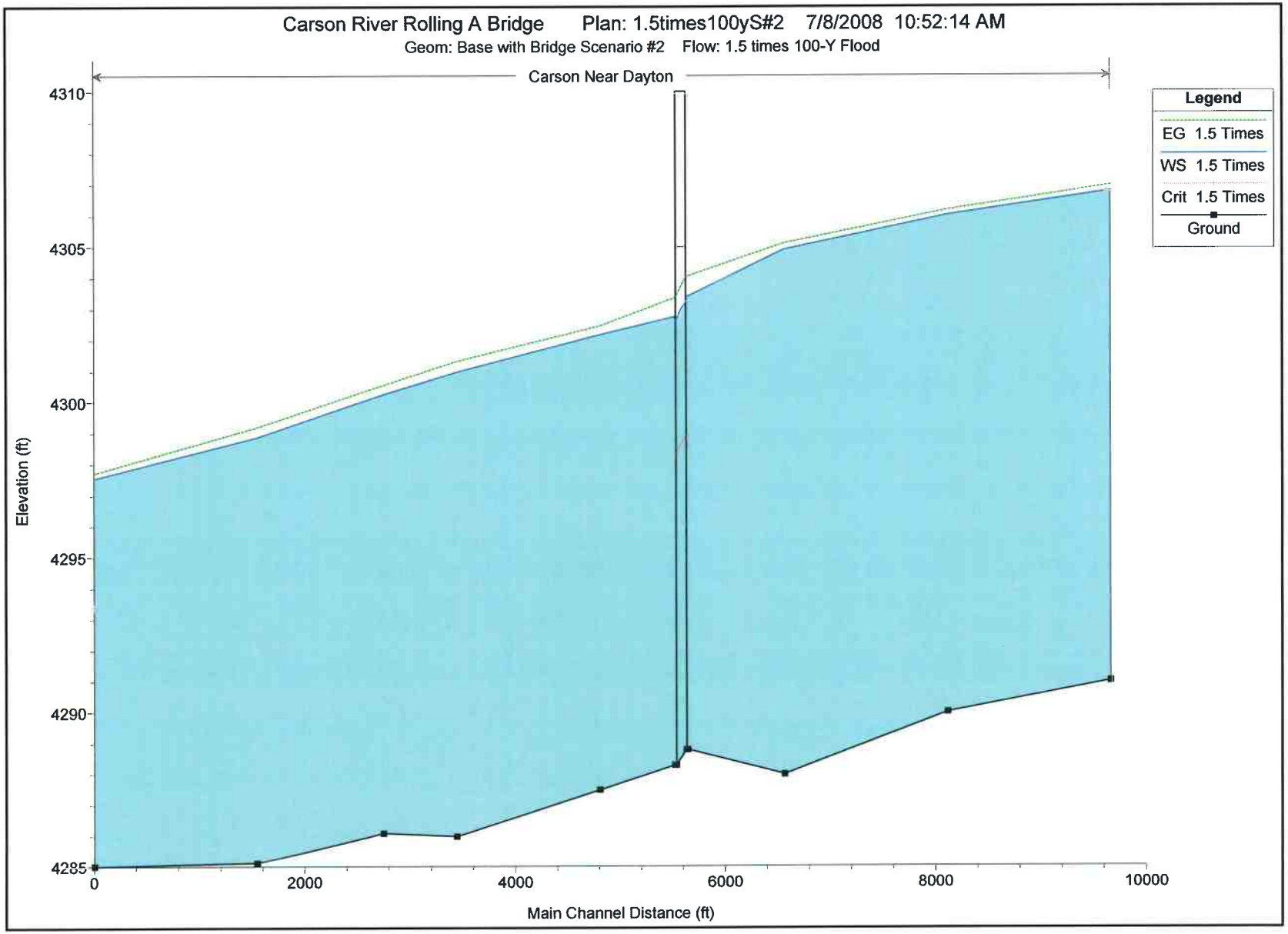

Carson River Rolling A Bridge Plan: 1.5times100yS#1 7/8/2008 10:51:20 AM
Geom: Base with Bridge Scenario #1 Flow: 1.5 times 100-Y Flood
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#1 7/8/2008 10:51:20 AM
Geom: Base with Bridge Scenario #1 Flow: 1.5 times 100-Y Flood
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#1 7/8/2008 10:51:20 AM
Geom: Base with Bridge Scenario #1 Flow: 1.5 times 100-Y Flood
Section 5
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 1.5X100Y-S#1 River: Carson Reach: Near Dayton Profile: 1.5 Times

Reach	River Sta	Profile	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)	
Near Dayton	90	1.5 Times	54150.00	4291.00	4306.89		4307.06	0.000509	4.89	18667.85	2768.88	0.23
Near Dayton	80	1.5 Times	54150.00	4290.00	4306.16		4306.32	0.000878	5.21	19126.15	2755.21	0.28
Near Dayton	70	1.5 Times	54150.00	4288.00	4305.14		4305.33	0.000748	4.91	19394.76	2290.09	0.24
Near Dayton	60	1.5 Times	54150.00	4288.80	4303.31	4298.52	4304.17	0.001636	8.11	7713.91	3103.44	0.40
Near Dayton	55		Bridge									
Near Dayton	50	1.5 Times	54150.00	4288.30	4302.72	4298.36	4303.61	0.001824	8.23	7445.33	3178.07	0.42
Near Dayton	40	1.5 Times	54150.00	4287.50	4302.17		4302.44	0.000927	5.54	15126.94	2394.61	0.30
Near Dayton	30	1.5 Times	54150.00	4286.00	4300.97		4301.31	0.001334	6.71	13989.12	2546.63	0.36
Near Dayton	20	1.5 Times	54150.00	4286.10	4300.25		4300.54	0.001123	6.41	14918.62	2477.80	0.33
Near Dayton	10	1.5 Times	54150.00	4285.10	4298.87		4299.19	0.001356	5.77	13392.04	2372.03	0.34
Near Dayton	0	1.5 Times	54150.00	4285.00	4297.54	4293.39	4297.71	0.000646	4.19	17797.90	3056.32	0.24


Carson River Rolling A Bridge Plan: 1.5times100yS#2 7/8/2008 10:52:14 AM
Geom: Base with Bridge Scenario #2 Flow: 1.5 times 100-Y Flood
Carson Near Dayton
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 1.5x100Y-S#2 Carson Near Dayton RS: 55 BR U Profile: 1.5 Times

E.G. Elev (ft)	4304.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4303.21	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4298.93	Flow Area (sq ft)	1344.26	4696.07	2135.16
E.G. Slope (ft/ft)	0.002067	Area (sq ft)	1344.26	4696.07	2135.16
Q Total (cfs)	54150.00	Flow (cfs)	6219.30	37735.34	10195.35
Top Width (ft)	850.86	Top Width (ft)	187.43	382.00	281.43
Vel Total (ft/s)	6.62	Avg. Vel. (ft/s)	4.63	8.04	4.77
Max Chl Dpth (ft)	14.40	Hydr. Depth (ft)	7.17	12.29	7.59
Conv. Total (cfs)	1191000.0	Conv. (cfs)	136790.3	829968.6	224241.3
Length Wtd. (ft)	100.00	Wetted Per. (ft)	212.16	452.53	327.83
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.82	1.34	0.84
Alpha	1.18	Stream Power (lb/ft s)	3.78	10.76	4.01
Frctn Loss (ft)		Cum Volume (acre-ft)	613.15	450.65	648.38
C & E Loss (ft)		Cum SA (acres)	112.84	44.38	131.62

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 1.5x100Y-S#2 Carson Near Dayton RS: 55 Profile: 1.5 Times

E.G. US. (ft)	4304.06	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4303.40	E.G. Elev (ft)	4304.02	4303.38
Q Total (cfs)	54150.00	W.S. Elev (ft)	4303.21	4302.62
Q Bridge (cfs)	54150.00	Crit W.S. (ft)	4298.93	4298.39
Q Weir (cfs)		Max Chl Dpth (ft)	14.40	14.32
Weir Sta Lft (ft)		Vel Total (ft/s)	6.62	6.66
Weir Sta Rgt (ft)		Flow Area (sq ft)	8175.49	8130.93
Weir Submerg		Froude # Chl	0.40	0.41
Weir Max Depth (ft)		Specif Force (cu ft)	55133.57	53421.27
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	9.61	9.58
Min El Prs (ft)	4305.00	W.P. Total (ft)	992.51	986.84
Delta EG (ft)	0.70	Conv. Total (cfs)	1191000.0	1179053.0
Delta WS (ft)	0.65	Top Width (ft)	850.86	848.86
BR Open Area (sq ft)	9701.61	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.66	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	1.06	1.08
Br Sel Method	Momentum	Power Total (lb/ft s)	7.04	7.23

Errors Warnings and Notes

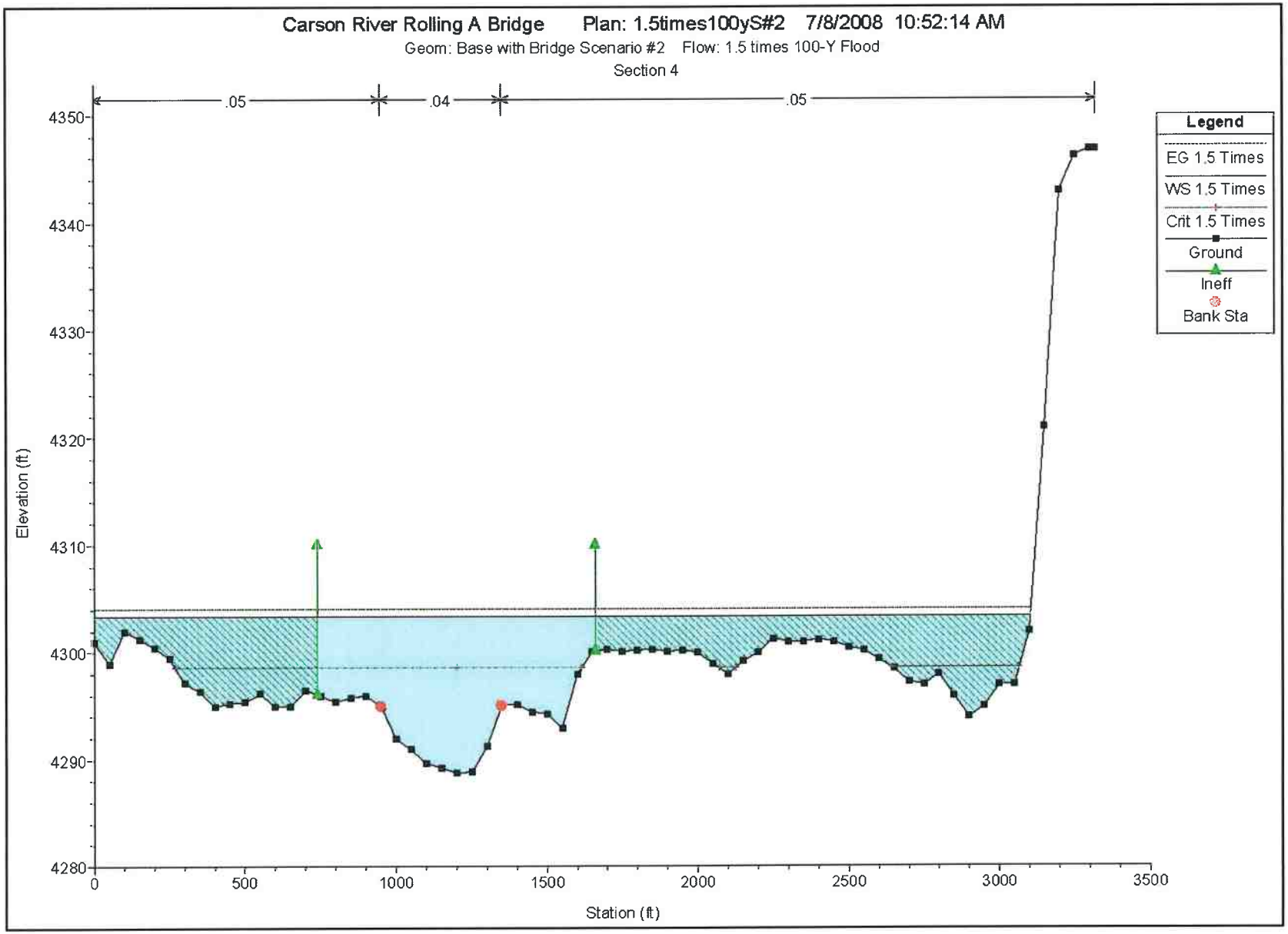
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

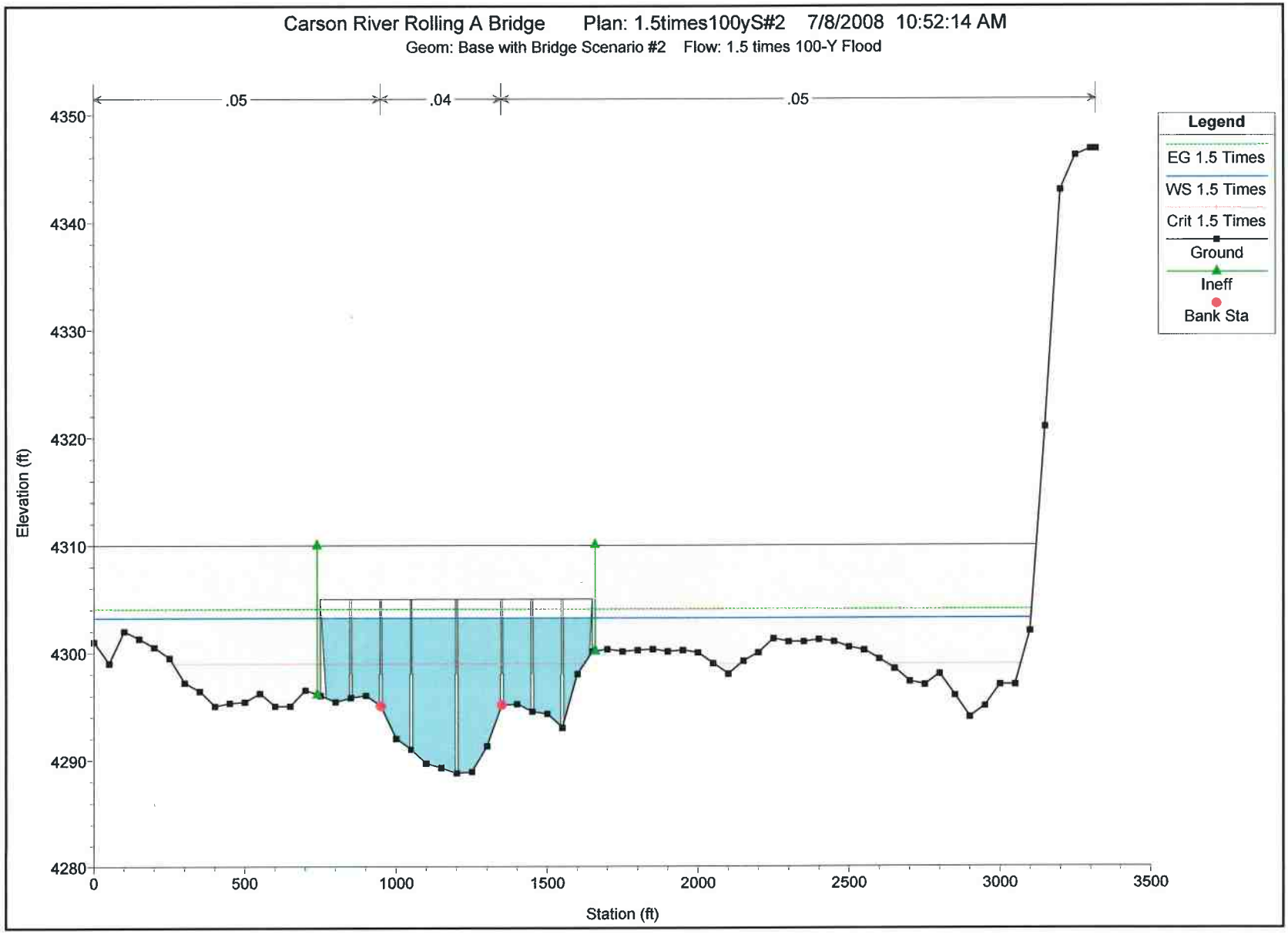
Plan: 1.5x100Y-S#2 Carson Near Dayton RS: 55 BR D Profile: 1.5 Times

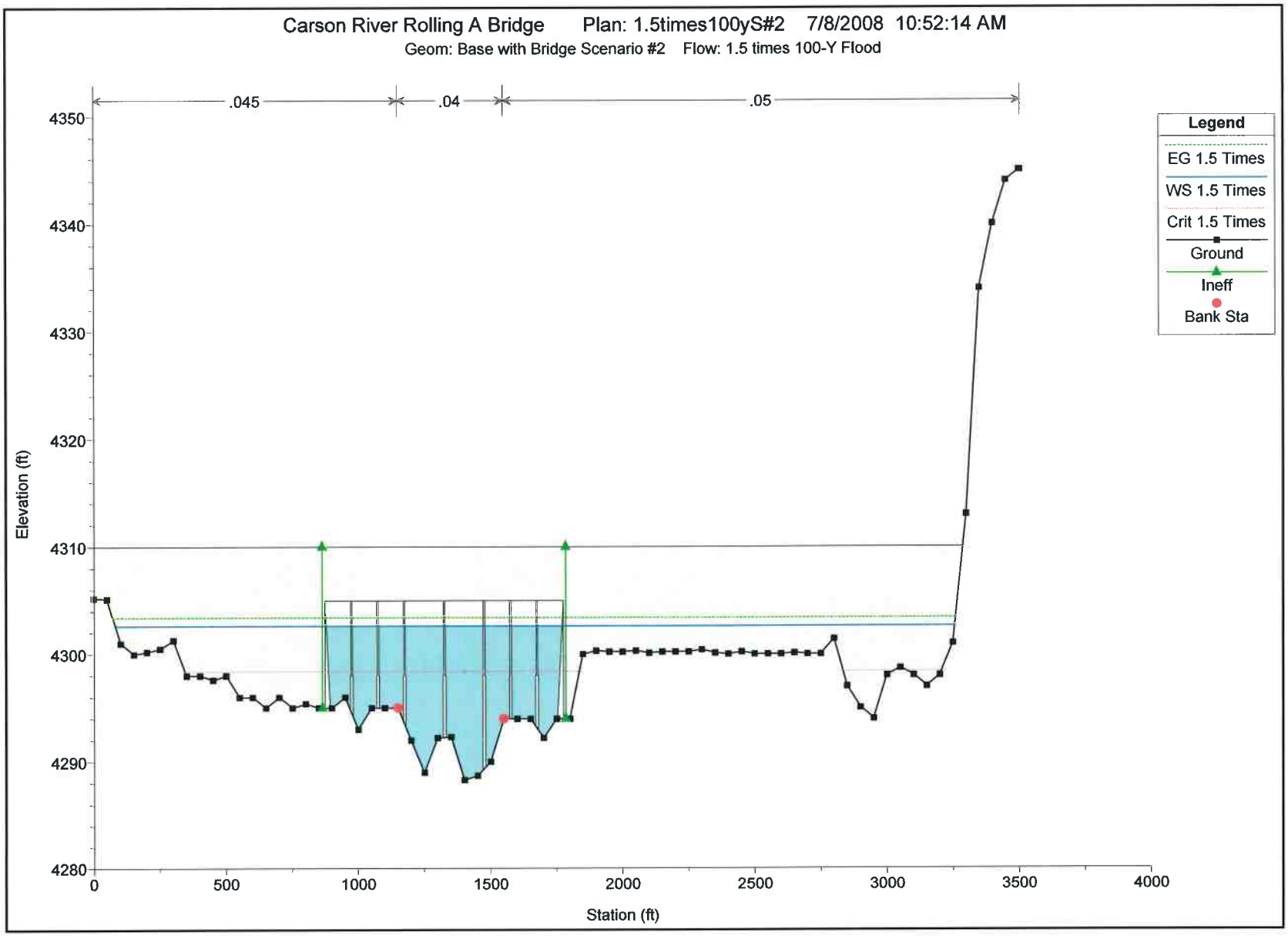
E.G. Elev (ft)	4303.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4302.62	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4298.39	Flow Area (sq ft)	1937.61	4424.39	1768.93
E.G. Slope (ft/ft)	0.002109	Area (sq ft)	1937.61	4424.39	1768.93
Q Total (cfs)	54150.00	Flow (cfs)	10403.61	34741.01	9005.38
Top Width (ft)	848.86	Top Width (ft)	258.63	382.00	208.23
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	5.37	7.85	5.09
Max Chl Dpth (ft)	14.32	Hydr. Depth (ft)	7.49	11.58	8.49
Conv. Total (cfs)	1179053.0	Conv. (cfs)	226526.5	756445.1	196081.7
Length Wtd. (ft)	9.74	Wetted Per. (ft)	292.16	448.10	246.59
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.87	1.30	0.94
Alpha	1.11	Stream Power (lb/ft s)	4.69	10.21	4.81
Frctn Loss (ft)		Cum Volume (acre-ft)	609.38	440.18	643.90
C & E Loss (ft)		Cum SA (acres)	112.33	43.50	131.06

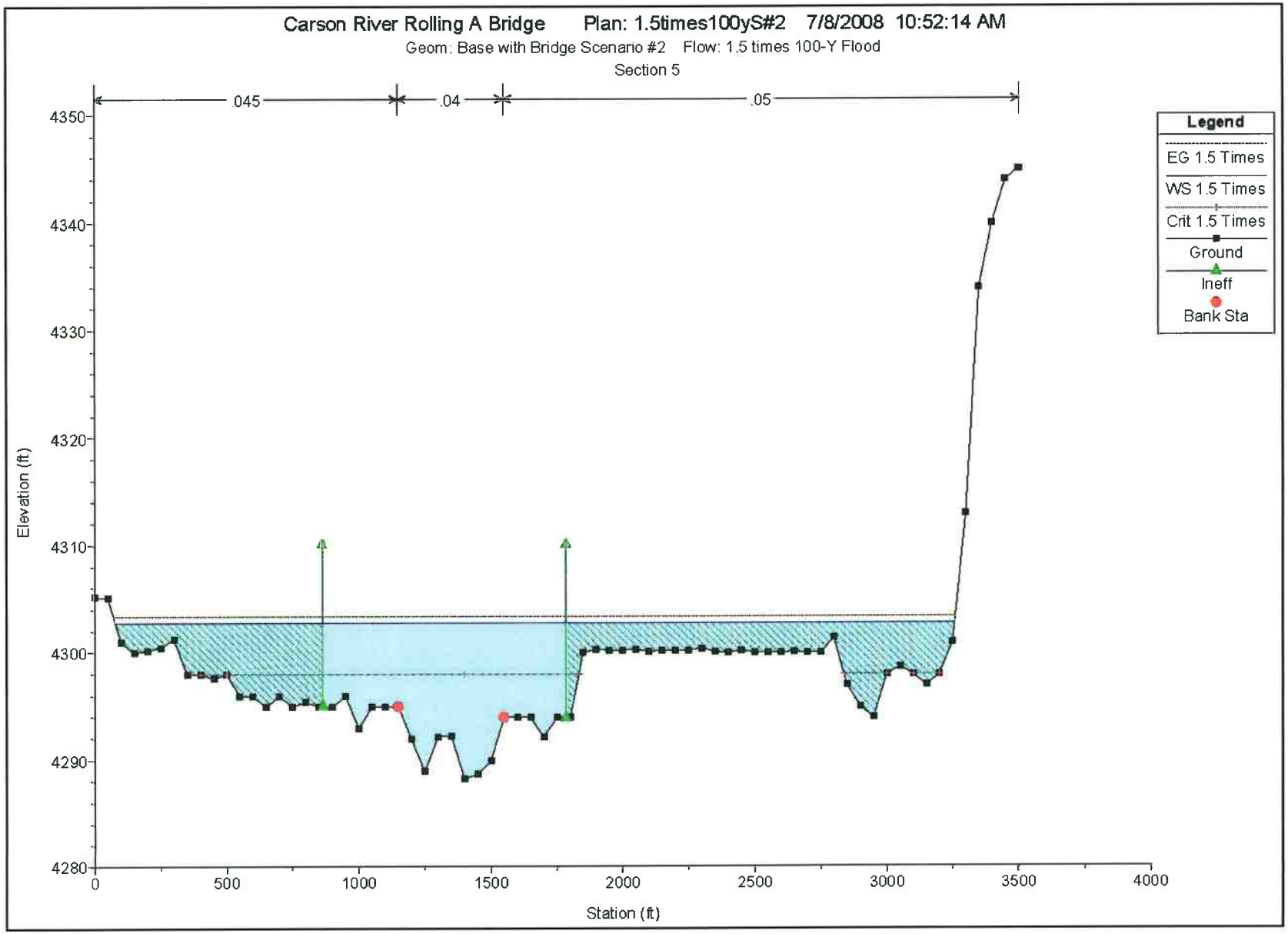
Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 1.5times100yS#2 7/8/2008 10:52:14 AM
Geom: Base with Bridge Scenario #2 Flow: 1.5 times 100-Y Flood
Section 4
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)

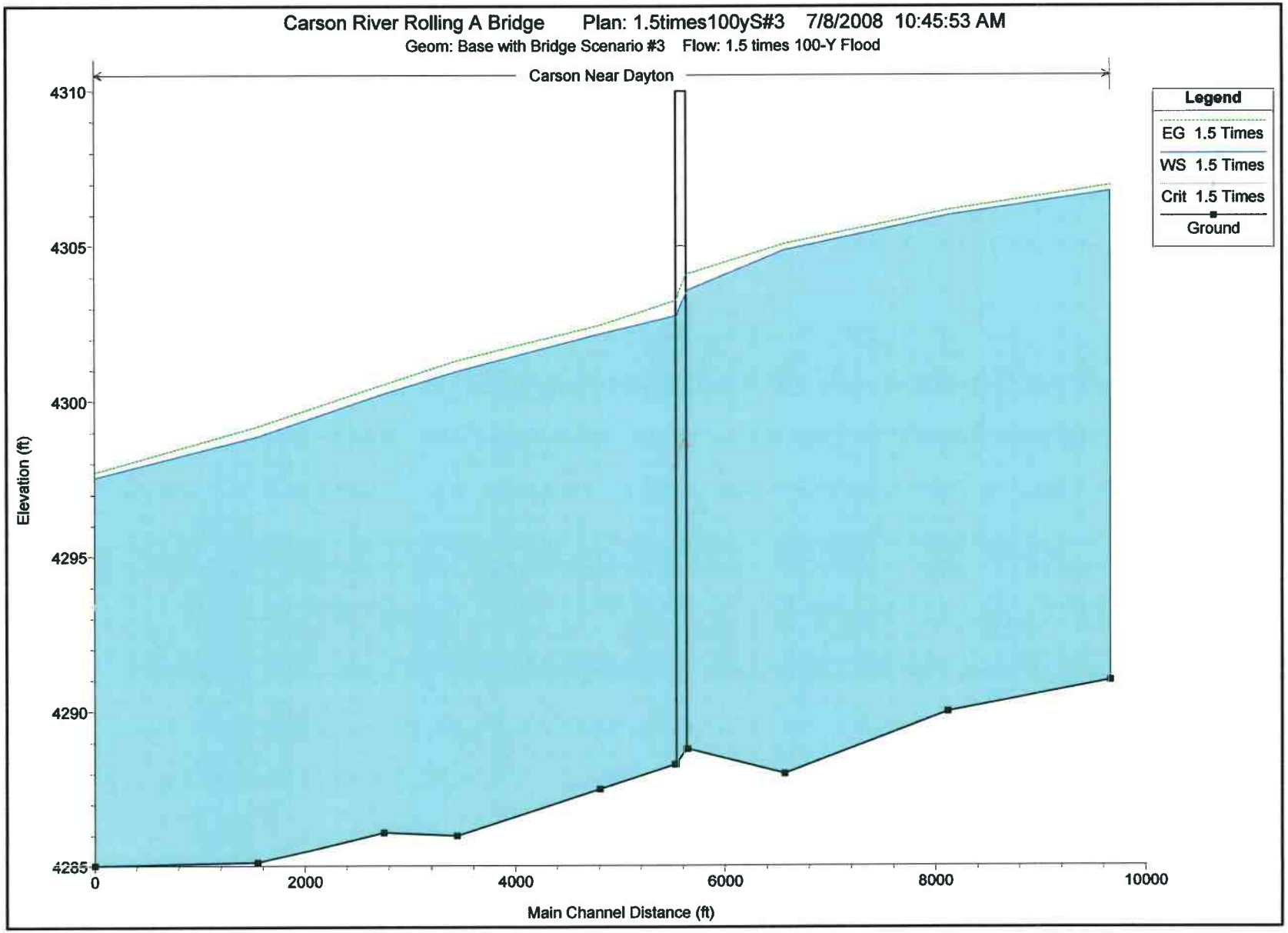

Carson River Rolling A Bridge Plan: 1.5times100yS#2 7/8/2008 10:52:14 AM
Geom: Base with Bridge Scenario #2 Flow: 1.5 times 100-Y Flood
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#2 7/8/2008 10:52:14 AM
Geom: Base with Bridge Scenario #2 Flow: 1.5 times 100-Y Flood
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#2 7/8/2008 10:52:14 AM
Geom: Base with Bridge Scenario #2 Flow: 1.5 times 100-Y Flood
Section 5
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 1.5x100Y-S#2 River: Carson Reach: Near Dayton Profile: 1.5 Times

Reach	River Sta	Profile	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)	
Near Dayton	90	1.5 Times	54150.00	4291.00	4306.79		4306.97	0.000533	4.98	18383.98	2767.86	0.23
Near Dayton	80	1.5 Times	54150.00	4290.00	4306.02		4306.18	0.000939	5.34	18725.59	2750.53	0.29
Near Dayton	70	1.5 Times	54150.00	4288.00	4304.91		4305.11	0.000815	5.06	18868.34	2287.27	0.25
Near Dayton	60	1.5 Times	54150.00	4288.80	4303.40	4298.59	4304.06	0.001322	7.32	9096.05	3103.68	0.36
Near Dayton	55		Bridge									
Near Dayton	50	1.5 Times	54150.00	4288.30	4302.75	4298.00	4303.35	0.001318	7.01	9152.30	3178.59	0.36
Near Dayton	40	1.5 Times	54150.00	4287.50	4302.17		4302.44	0.000927	5.54	15126.94	2394.61	0.30
Near Dayton	30	1.5 Times	54150.00	4286.00	4300.97		4301.31	0.001334	6.71	13989.12	2546.63	0.36
Near Dayton	20	1.5 Times	54150.00	4286.10	4300.25		4300.54	0.001123	6.41	14918.62	2477.80	0.33
Near Dayton	10	1.5 Times	54150.00	4285.10	4298.87		4299.19	0.001356	5.77	13392.04	2372.03	0.34
Near Dayton	0	1.5 Times	54150.00	4285.00	4297.54	4293.39	4297.71	0.000646	4.19	17797.90	3056.32	0.24


Carson River Rolling A Bridge Plan: 1.5times100yS#3 7/8/2008 10:45:53 AM
Geom: Base with Bridge Scenario #3 Flow: 1.5 times 100-Y Flood
Carson Near Dayton
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 1.5x100Y-S#3 Carson Near Dayton RS: 55 BR U Profile: 1.5 Times

E.G. Elev (ft)	4304.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4303.45	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4298.92	Flow Area (sq ft)	2069.29	4785.97	2508.51
E.G. Slope (ft/ft)	0.001679	Area (sq ft)	2069.29	4785.97	2508.51
Q Total (cfs)	54150.00	Flow (cfs)	8709.06	35022.89	10418.06
Top Width (ft)	1039.80	Top Width (ft)	281.90	382.00	375.90
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)	4.21	7.32	4.15
Max Chl Dpth (ft)	14.64	Hydr. Depth (ft)	7.34	12.53	6.67
Conv. Total (cfs)	1321699.0	Conv. (cfs)	212571.6	854842.2	254285.0
Length Wtd. (ft)	100.00	Wetted Per. (ft)	322.37	453.94	430.24
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.67	1.10	0.61
Alpha	1.22	Stream Power (lb/ft s)	2.83	8.08	2.54
Frctn Loss (ft)		Cum Volume (acre-ft)	614.90	450.79	649.61
C & E Loss (ft)		Cum SA (acres)	113.07	44.38	131.85

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 1.5x100Y-S#3 Carson Near Dayton RS: 55 Profile: 1.5 Times

E.G. US. (ft)	4304.11	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4303.58	E.G. Elev (ft)	4304.08	4303.26
Q Total (cfs)	54150.00	W.S. Elev (ft)	4303.45	4302.68
Q Bridge (cfs)	54150.00	Crit W.S. (ft)	4298.92	4298.24
Q Weir (cfs)		Max Chl Dpth (ft)	14.64	14.38
Weir Sta Lft (ft)		Vel Total (ft/s)	5.78	5.71
Weir Sta Rgt (ft)		Flow Area (sq ft)	9363.77	9475.81
Weir Submerg		Froude # Chl	0.36	0.36
Weir Max Depth (ft)		Specif Force (cu ft)	58677.70	57108.02
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	9.01	9.14
Min El Prs (ft)	4305.00	W.P. Total (ft)	1206.54	1207.53
Delta EG (ft)	0.88	Conv. Total (cfs)	1321699.0	1325287.0
Delta WS (ft)	0.83	Top Width (ft)	1039.80	1037.10
BR Open Area (sq ft)	10981.08	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.78	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.81	0.82
Br Sel Method	Momentum	Power Total (lb/ft s)	4.70	4.67

Errors Warnings and Notes

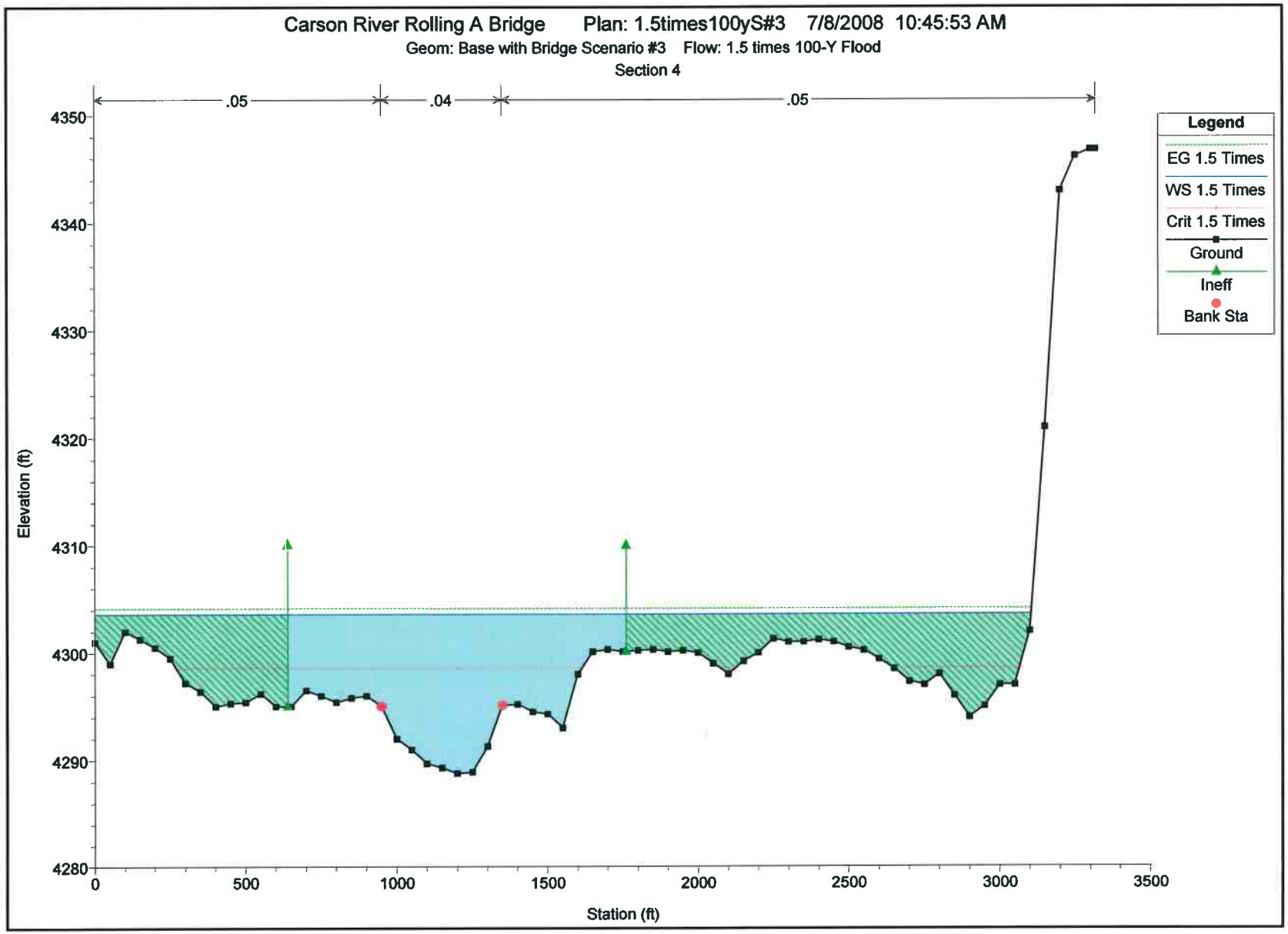
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

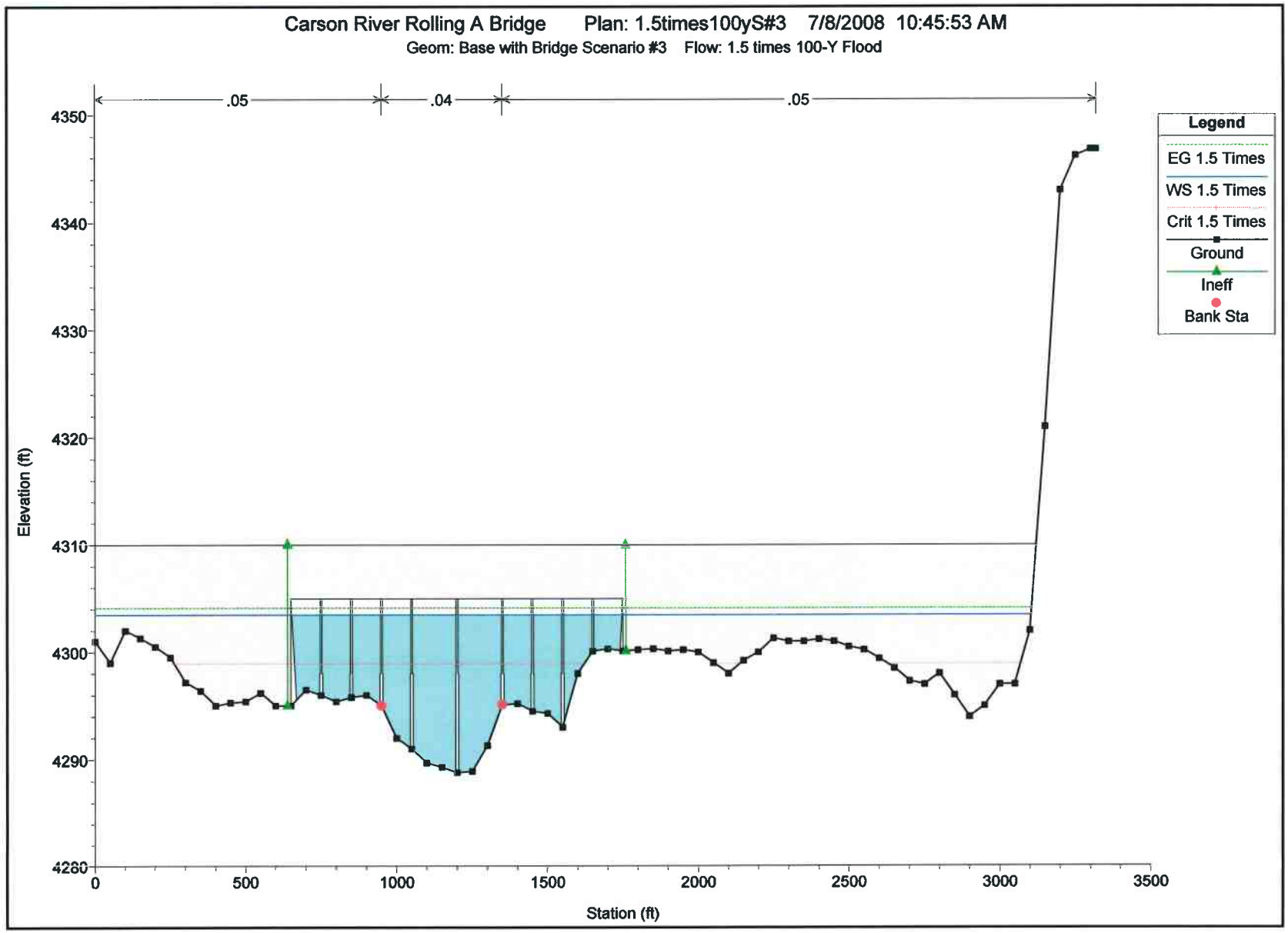
Plan: 1.5x100Y-S#3 Carson Near Dayton RS: 55 BR D Profile: 1.5 Times

E.G. Elev (ft)	4303.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4302.68	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4298.24	Flow Area (sq ft)	2650.80	4448.08	2376.92
E.G. Slope (ft/ft)	0.001669	Area (sq ft)	2650.80	4448.08	2376.92
Q Total (cfs)	54150.00	Flow (cfs)	12608.43	31166.69	10374.88
Top Width (ft)	1037.10	Top Width (ft)	352.74	382.00	302.36
Vel Total (ft/s)	5.71	Avg. Vel. (ft/s)	4.76	7.01	4.36
Max Chl Dpth (ft)	14.38	Hydr. Depth (ft)	7.51	11.64	7.86
Conv. Total (cfs)	1325287.0	Conv. (cfs)	308583.4	762785.1	253918.8
Length Wtd. (ft)	9.74	Wetted Per. (ft)	401.81	448.47	357.25
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.69	1.03	0.69
Alpha	1.14	Stream Power (lb/ft s)	3.27	7.24	3.03
Frctn Loss (ft)		Cum Volume (acre-ft)	609.48	440.20	644.00
C & E Loss (ft)		Cum SA (acres)	112.34	43.50	131.07

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 1.5times100yS#3 7/8/2008 10:45:53 AM
Geom: Base with Bridge Scenario #3 Flow: 1.5 times 100-Y Flood
Section 4
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#3 7/8/2008 10:45:53 AM
Geom: Base with Bridge Scenario #3 Flow: 1.5 times 100-Y Flood
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
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4290
4280
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500
1000
1500
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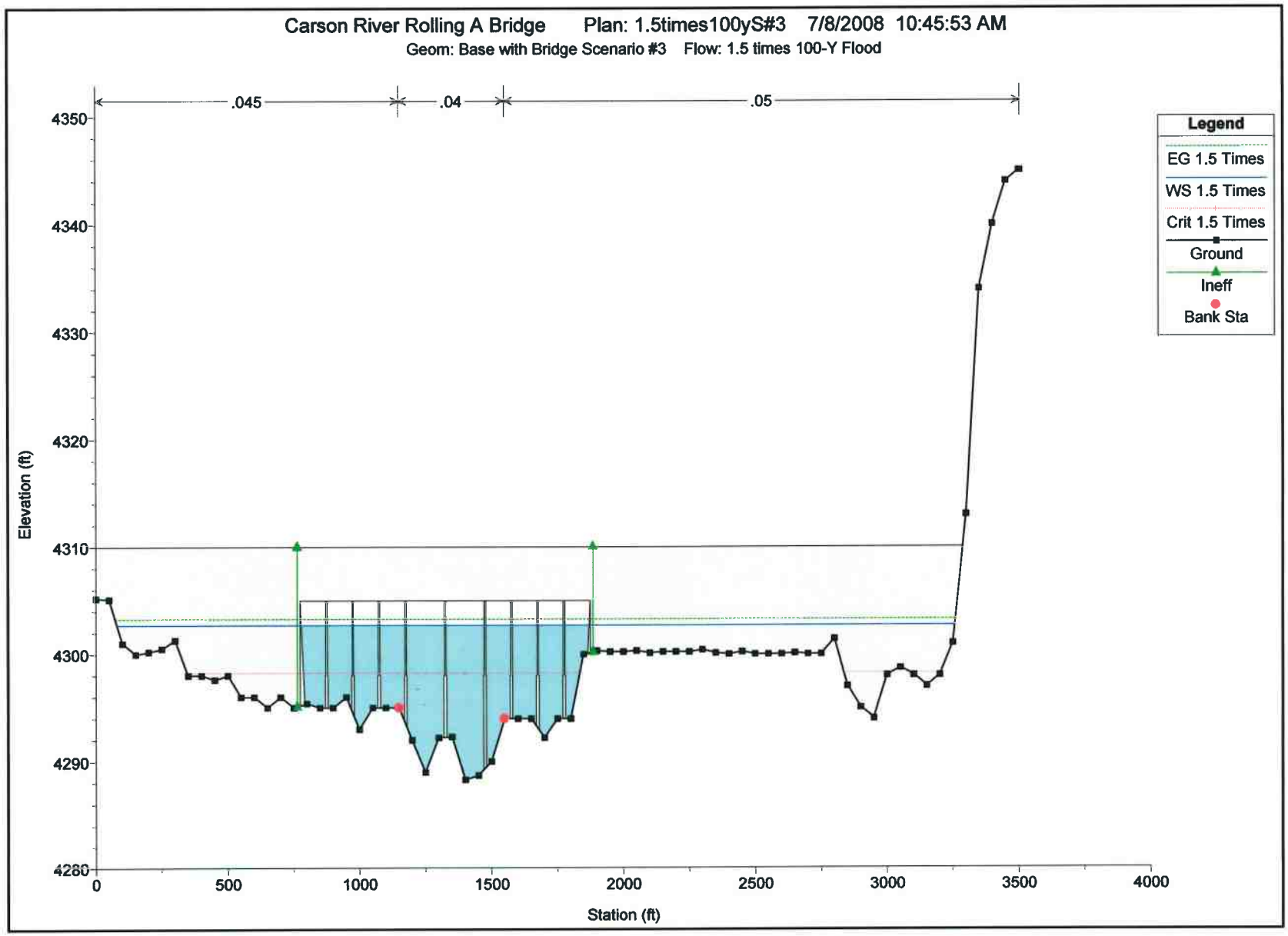
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#3 7/8/2008 10:45:53 AM
Geom: Base with Bridge Scenario #3 Flow: 1.5 times 100-Y Flood
.045
.04
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Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
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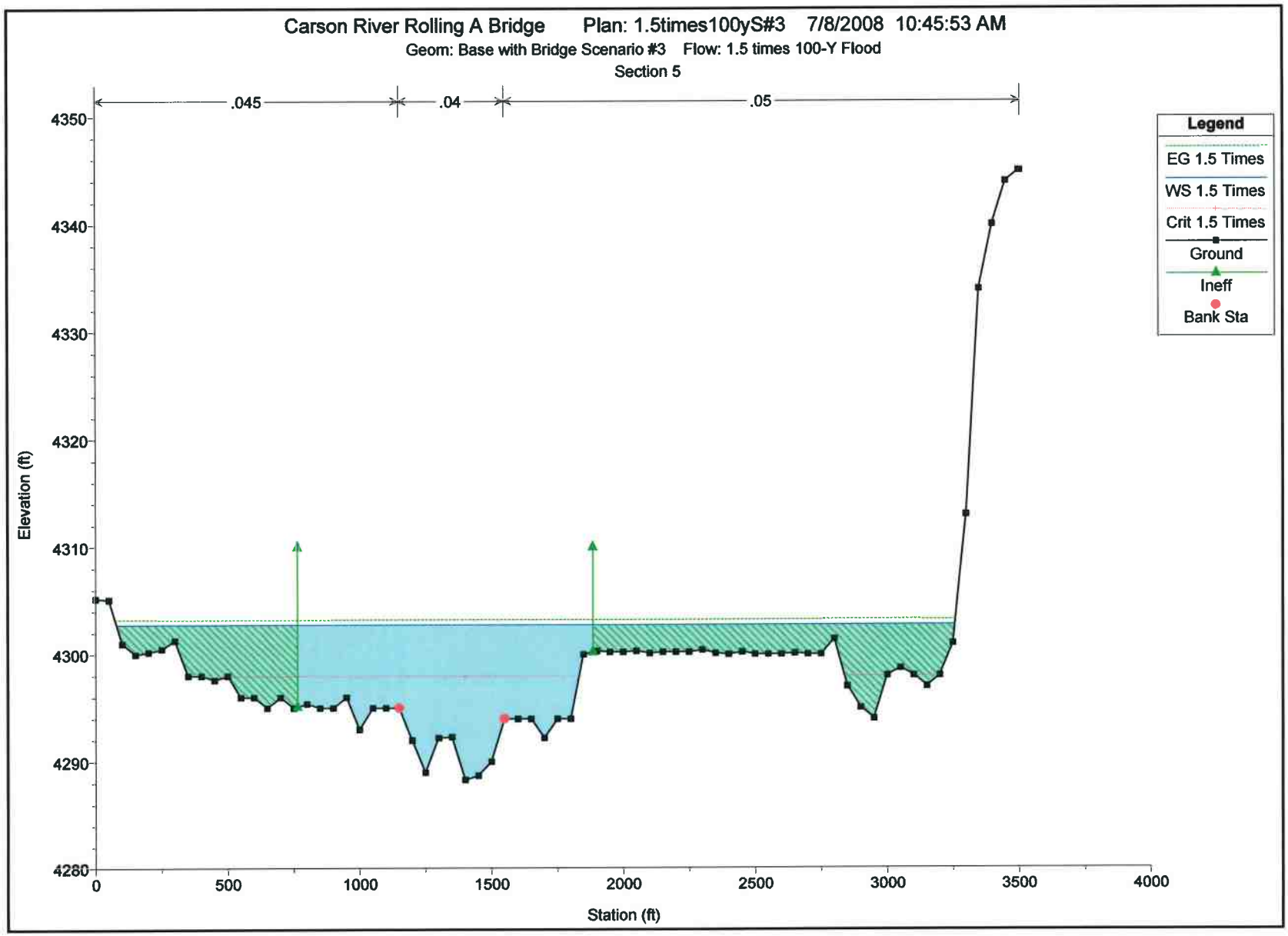
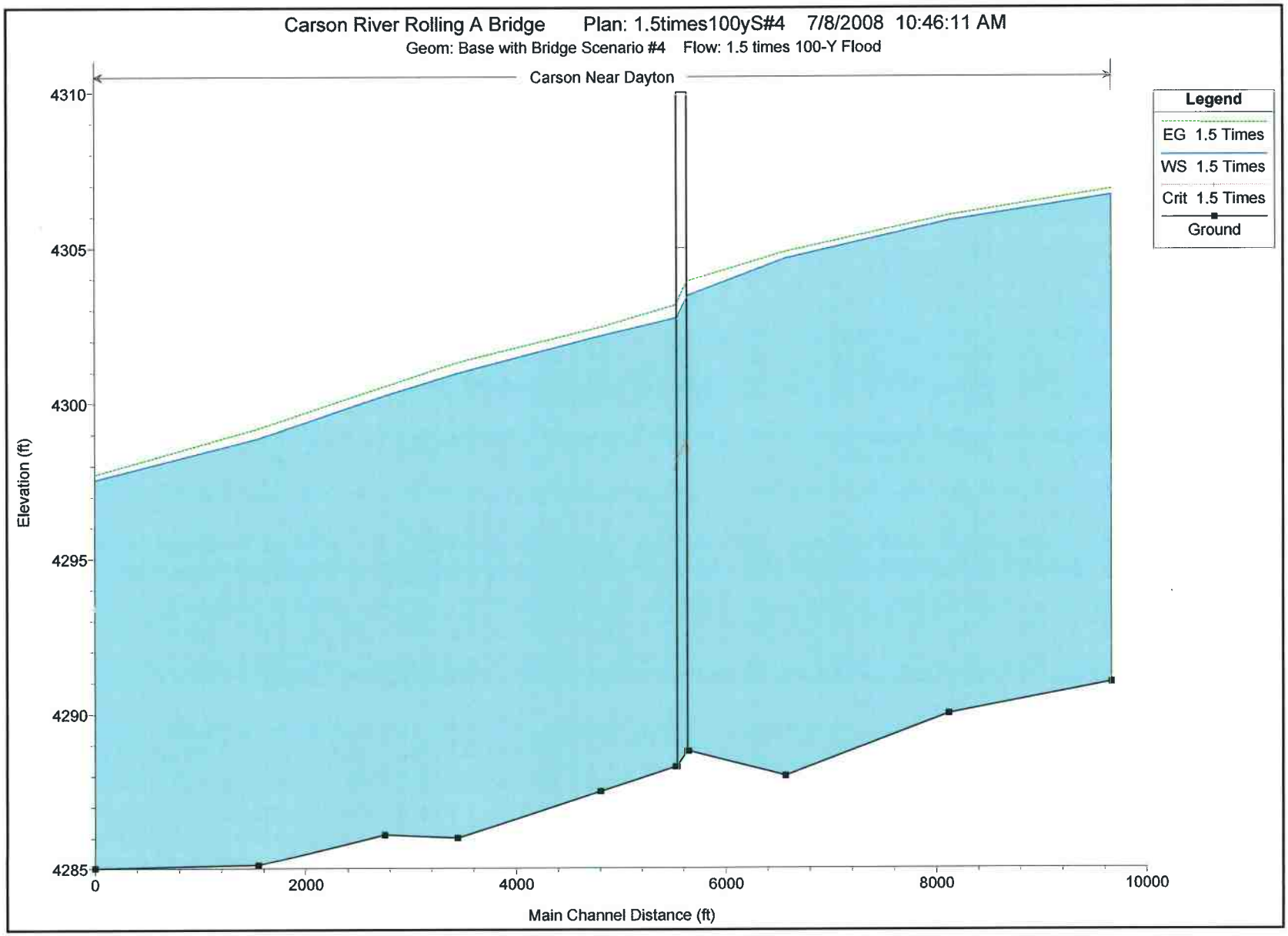
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#3 7/8/2008 10:45:53 AM
Geom: Base with Bridge Scenario #3 Flow: 1.5 times 100-Y Flood
Section 5
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 1.5x100Y-S#3 River: Carson Reach: Near Dayton Profile: 1.5 Times

Reach	River Sta	Profile	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)	
Near Dayton	90	1.5 Times	54150.00	4291.00	4306.77		4306.95	0.000538	5.00	18331.28	2767.67	0.24
Near Dayton	80	1.5 Times	54150.00	4290.00	4305.99		4306.15	0.000951	5.36	18650.39	2749.83	0.29
Near Dayton	70	1.5 Times	54150.00	4288.00	4304.87		4305.07	0.000828	5.09	18766.73	2286.44	0.25
Near Dayton	60	1.5 Times	54150.00	4288.80	4303.58	4298.57	4304.11	0.001104	6.76	10371.12	3104.16	0.33
Near Dayton	55		Bridge									
Near Dayton	50	1.5 Times	54150.00	4288.30	4302.75	4297.95	4303.23	0.001112	6.44	10421.67	3178.63	0.33
Near Dayton	40	1.5 Times	54150.00	4287.50	4302.17		4302.44	0.000927	5.54	15126.94	2394.61	0.30
Near Dayton	30	1.5 Times	54150.00	4286.00	4300.97		4301.31	0.001334	6.71	13989.12	2546.63	0.36
Near Dayton	20	1.5 Times	54150.00	4286.10	4300.25		4300.54	0.001123	6.41	14918.62	2477.80	0.33
Near Dayton	10	1.5 Times	54150.00	4285.10	4298.87		4299.19	0.001356	5.77	13392.04	2372.03	0.34
Near Dayton	0	1.5 Times	54150.00	4285.00	4297.54	4293.39	4297.71	0.000646	4.19	17797.90	3056.32	0.24


Carson River Rolling A Bridge Plan: 1.5times100yS#4 7/8/2008 10:46:11 AM
Geom: Base with Bridge Scenario #4 Flow: 1.5 times 100-Y Flood
Carson Near Dayton
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 1.5x100Y-S#4 Carson Near Dayton RS: 55 BR U Profile: 1.5 Times

E.G. Elev (ft)	4303.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4303.38	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4298.81	Flow Area (sq ft)	2809.94	4760.61	2783.81
E.G. Slope (ft/ft)	0.001479	Area (sq ft)	2809.94	4760.61	2783.81
Q Total (cfs)	54150.00	Flow (cfs)	11189.20	32609.87	10350.93
Top Width (ft)	1227.53	Top Width (ft)	375.77	382.00	469.77
Vel Total (ft/s)	5.23	Avg. Vel. (ft/s)	3.98	6.85	3.72
Max Chl Dpth (ft)	14.57	Hydr. Depth (ft)	7.48	12.46	5.93
Conv. Total (cfs)	1407806.0	Conv. (cfs)	290899.9	847800.1	269106.2
Length Wtd. (ft)	100.00	Wetted Per. (ft)	432.47	453.54	530.14
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.60	0.97	0.49
Alpha	1.25	Stream Power (lb/ft s)	2.39	6.64	1.80
Frctn Loss (ft)		Cum Volume (acre-ft)	616.58	450.76	650.17
C & E Loss (ft)		Cum SA (acres)	113.29	44.38	132.07

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 1.5x100Y-S#4 Carson Near Dayton RS: 55 Profile: 1.5 Times

E.G. US. (ft)	4303.94	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4303.49	E.G. Elev (ft)	4303.91	4303.18
Q Total (cfs)	54150.00	W.S. Elev (ft)	4303.38	4302.70
Q Bridge (cfs)	54150.00	Crit W.S. (ft)	4298.81	4298.20
Q Weir (cfs)		Max Chl Dpth (ft)	14.57	14.40
Weir Sta Lft (ft)		Vel Total (ft/s)	5.23	5.21
Weir Sta Rgt (ft)		Flow Area (sq ft)	10354.36	10400.70
Weir Submerg		Froude # Chl	0.34	0.34
Weir Max Depth (ft)		Specif Force (cu ft)	60697.36	59162.17
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	8.44	8.49
Min El Prs (ft)	4305.00	W.P. Total (ft)	1416.15	1415.88
Delta EG (ft)	0.78	Conv. Total (cfs)	1407806.0	1416329.0
Delta WS (ft)	0.74	Top Width (ft)	1227.53	1225.17
BR Open Area (sq ft)	12344.74	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.23	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.68	0.67
Br Sel Method	Momentum	Power Total (lb/ft s)	3.53	3.49

Errors Warnings and Notes

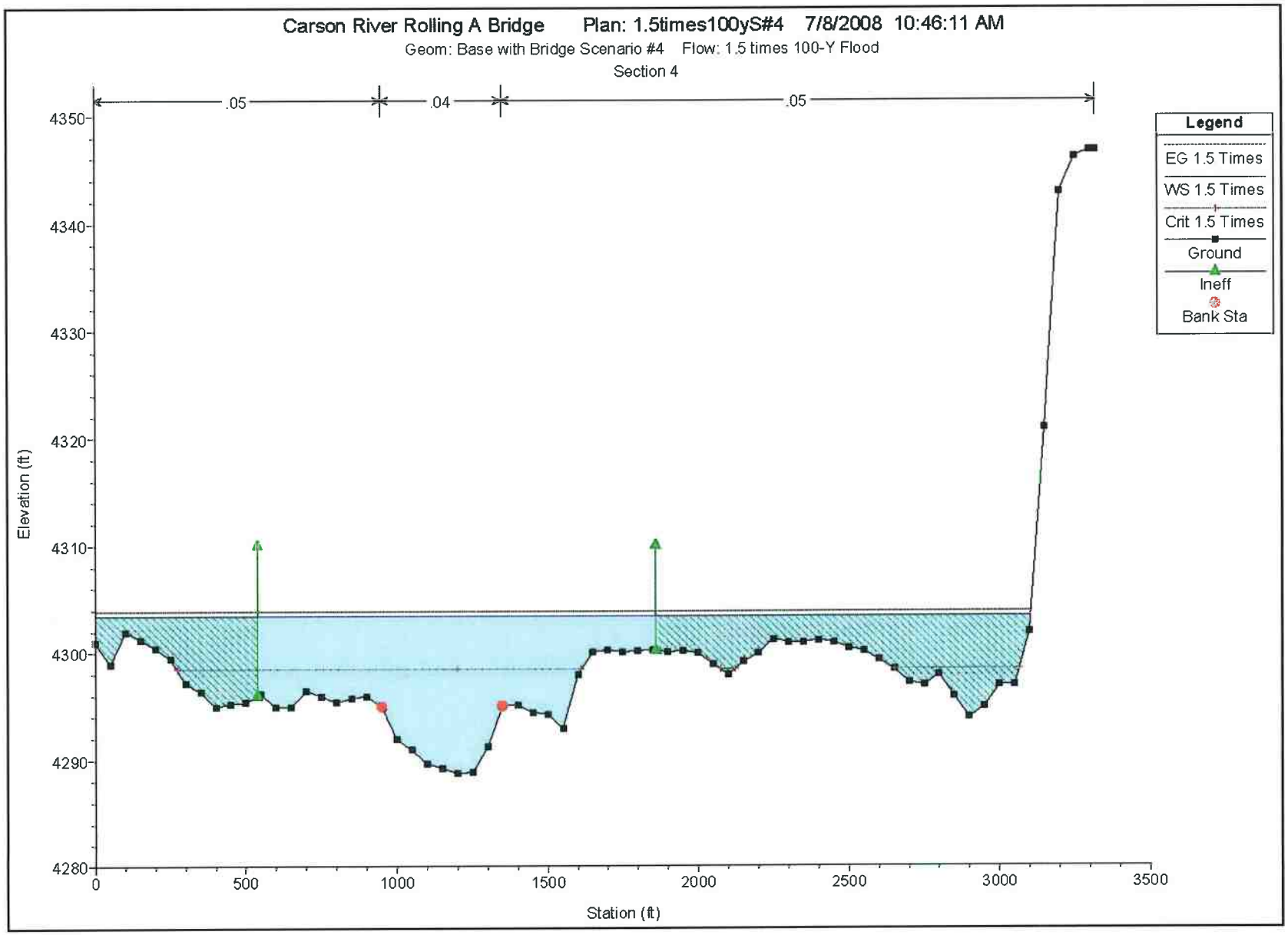
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.

Plan: 1.5x100Y-S#4 Carson Near Dayton RS: 55 BR D Profile: 1.5 Times

E.G. Elev (ft)	4303.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4302.70	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4298.20	Flow Area (sq ft)	3331.34	4454.98	2614.38
E.G. Slope (ft/ft)	0.001462	Area (sq ft)	3331.34	4454.98	2614.38
Q Total (cfs)	54150.00	Flow (cfs)	14713.77	29234.02	10202.21
Top Width (ft)	1225.17	Top Width (ft)	446.78	382.00	396.39
Vel Total (ft/s)	5.21	Avg. Vel. (ft/s)	4.42	6.56	3.90
Max Chl Dpth (ft)	14.40	Hydr. Depth (ft)	7.46	11.66	6.60
Conv. Total (cfs)	1416329.0	Conv. (cfs)	384848.4	764635.3	266845.6
Length Wtd. (ft)	9.74	Wetted Per. (ft)	510.83	448.58	456.47
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.60	0.91	0.52
Alpha	1.16	Stream Power (lb/ft s)	2.63	5.95	2.04
Frctn Loss (ft)		Cum Volume (acre-ft)	609.53	440.19	643.98
C & E Loss (ft)		Cum SA (acres)	112.35	43.50	131.08

Errors Warnings and Notes

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid,
	energy was used.


Carson River Rolling A Bridge Plan: 1.5times100yS#4 7/8/2008 10:46:11 AM
Geom: Base with Bridge Scenario #4 Flow: 1.5 times 100-Y Flood
Section 4
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
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4290
4280
0
500
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1500
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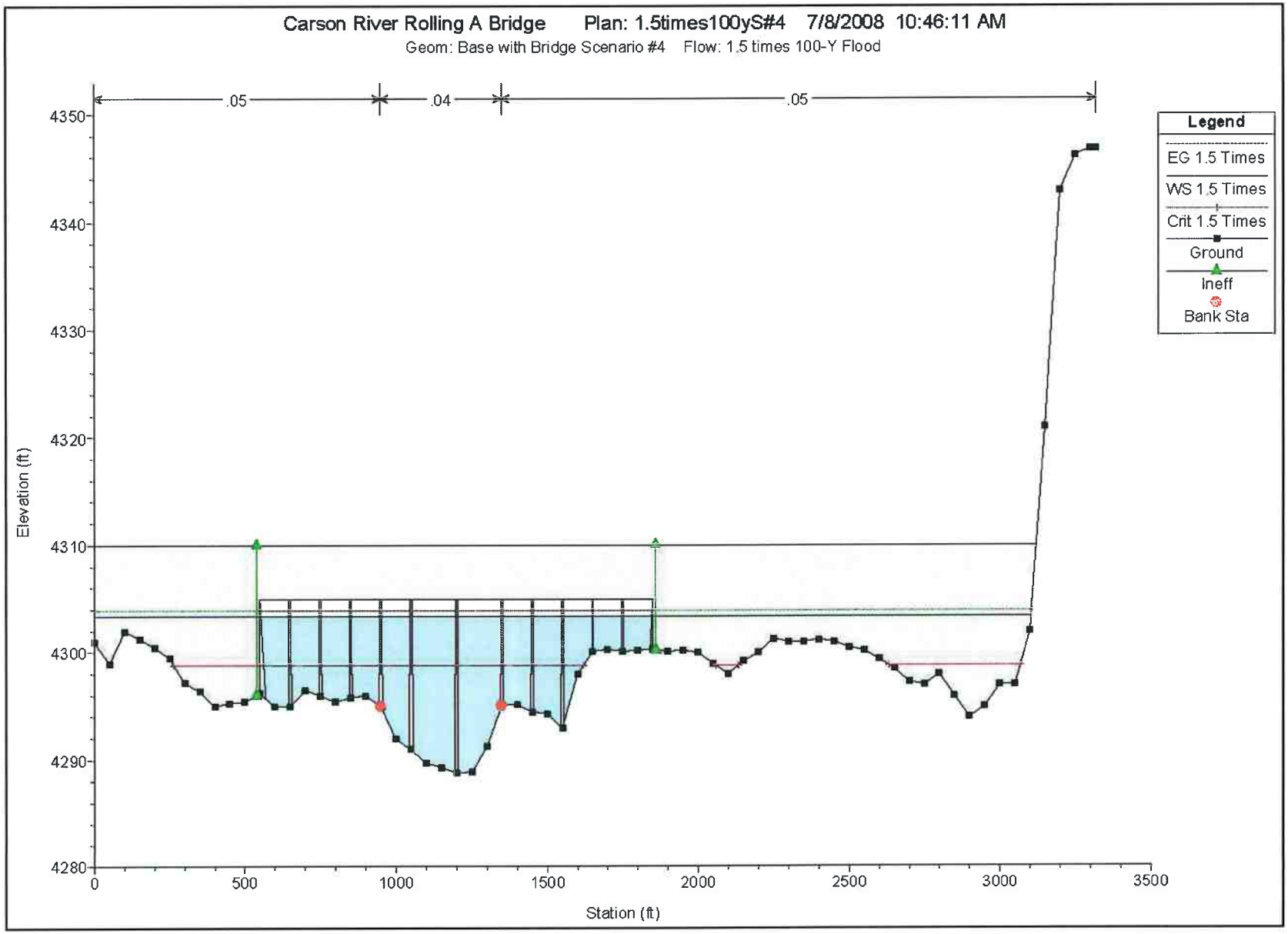
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#4 7/8/2008 10:46:11 AM
Geom: Base with Bridge Scenario #4 Flow: 1.5 times 100-Y Flood
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
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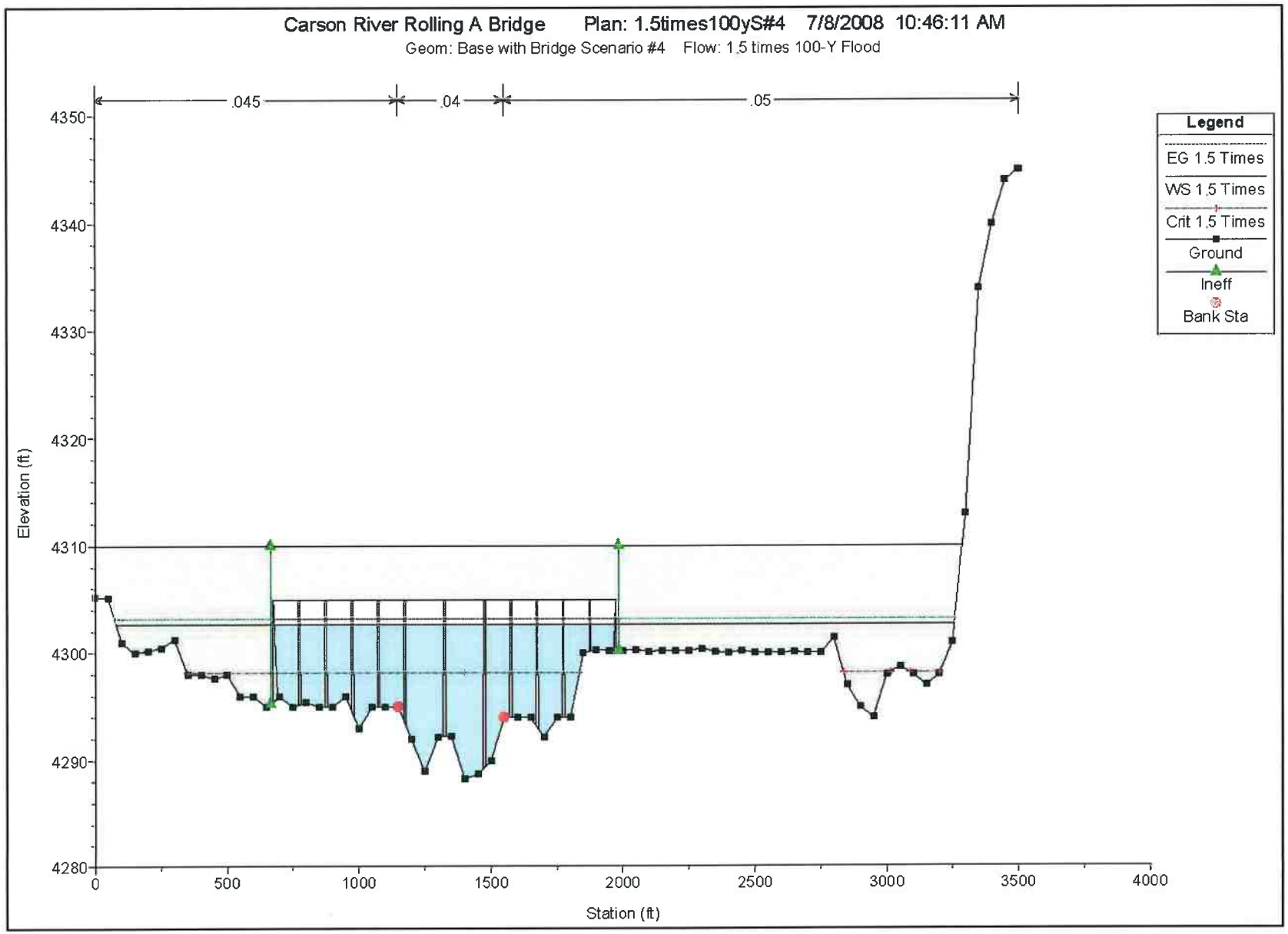
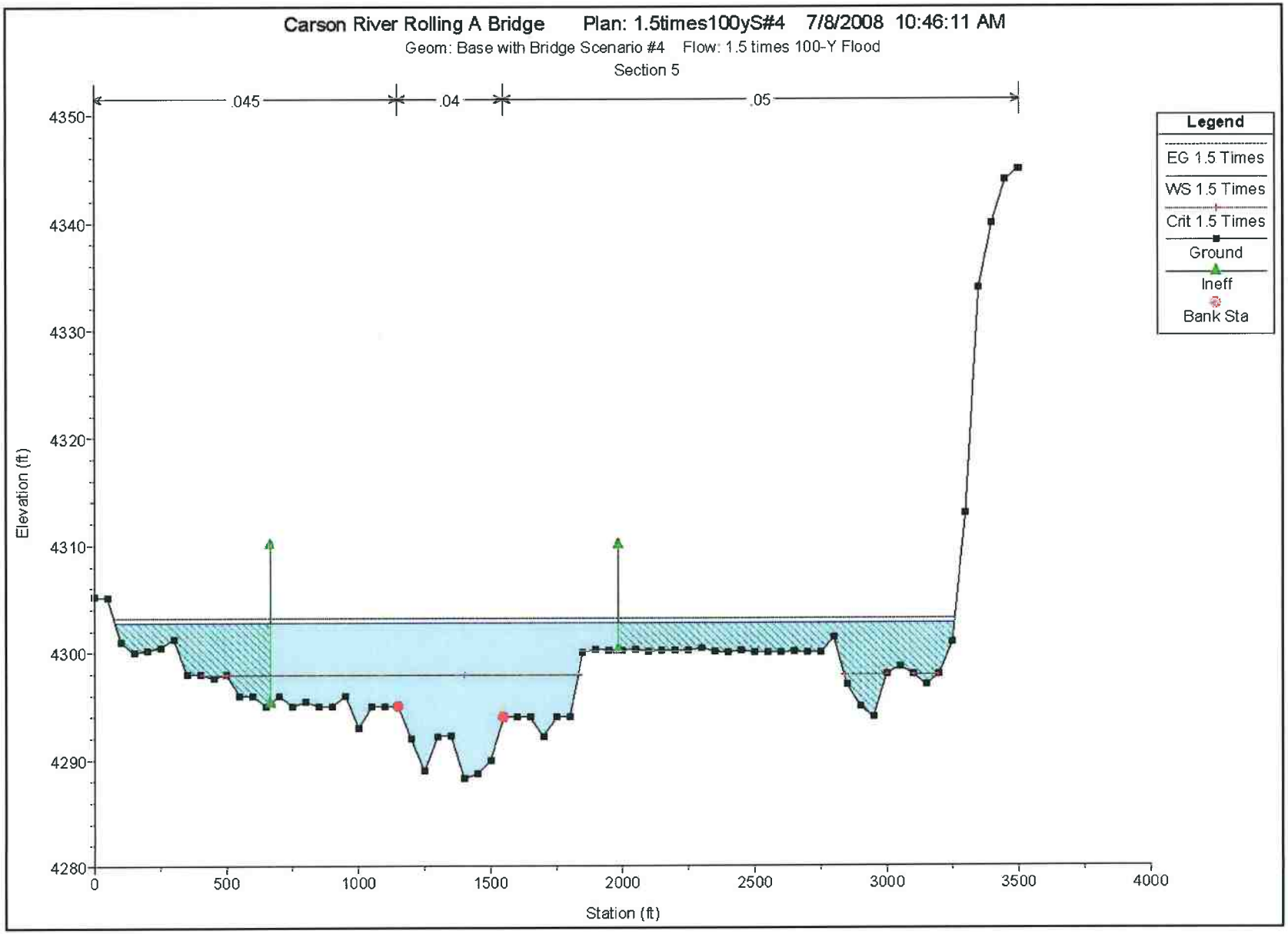
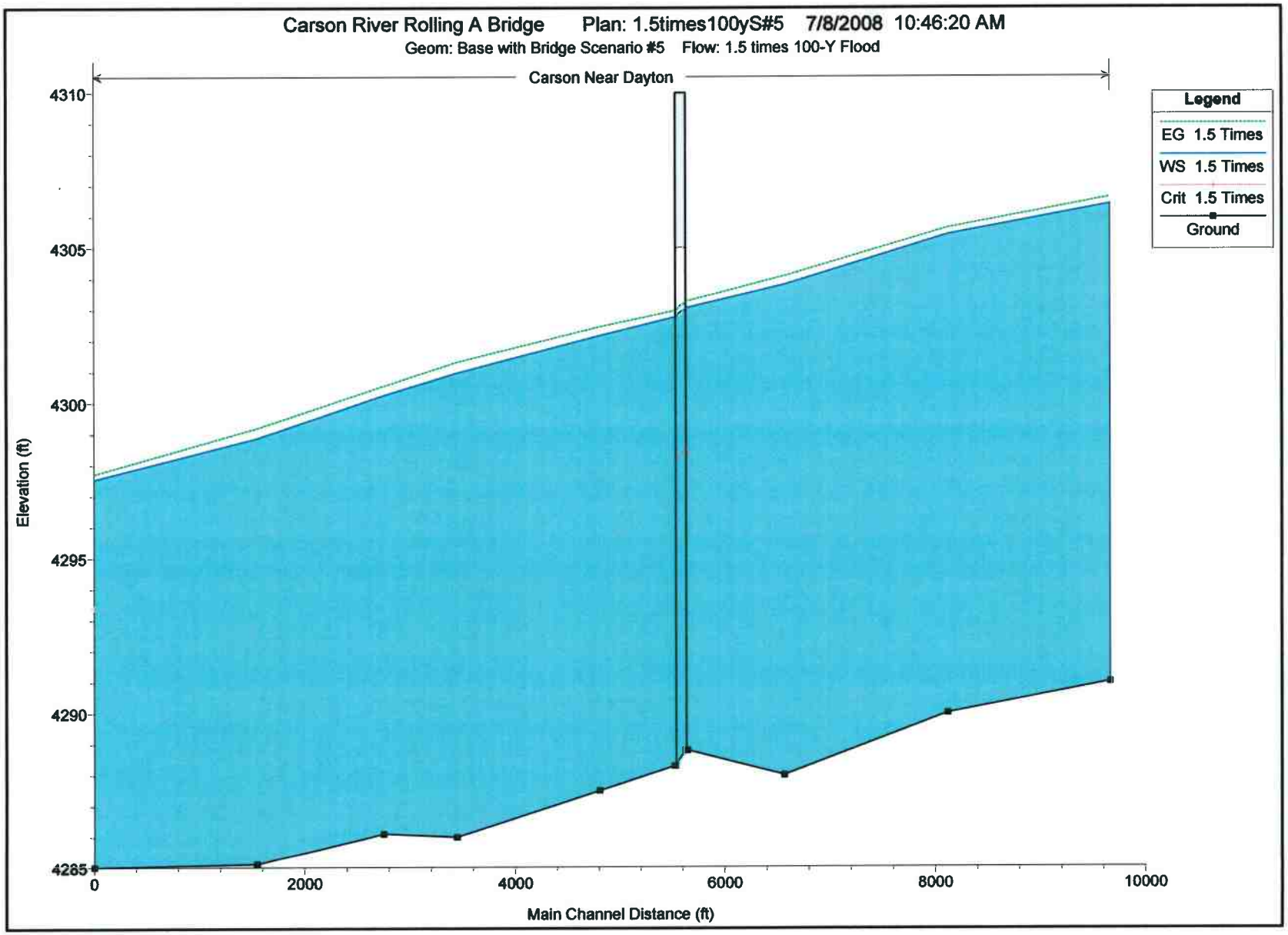
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#4 7/8/2008 10:46:11 AM
Geom: Base with Bridge Scenario #4 Flow: 1.5 times 100-Y Flood
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#4 7/8/2008 10:46:11 AM
Geom: Base with Bridge Scenario #4 Flow: 1.5 times 100-Y Flood
Section 5
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Ineff
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 1.5x100Y-S#4 River: Carson Reach: Near Dayton Profile: 1.5 Times

Reach	River Sta	Profile	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)	
Near Dayton	90	1.5 Times	54150.00	4291.00	4306.68		4306.87	0.000559	5.08	18096.17	2766.82	0.24
Near Dayton	80	1.5 Times	54150.00	4290.00	4305.86		4306.03	0.001009	5.49	18306.79	2747.84	0.30
Near Dayton	70	1.5 Times	54150.00	4288.00	4304.66		4304.87	0.000896	5.23	18289.31	2282.53	0.26
Near Dayton	60	1.5 Times	54150.00	4288.80	4303.49	4298.50	4303.94	0.000999	6.40	11400.48	3103.91	0.32
Near Dayton	55		Bridge									
Near Dayton	50	1.5 Times	54150.00	4288.30	4302.75	4297.89	4303.17	0.001009	6.13	11395.09	3178.57	0.31
Near Dayton	40	1.5 Times	54150.00	4287.50	4302.17		4302.44	0.000927	5.54	15126.94	2394.61	0.30
Near Dayton	30	1.5 Times	54150.00	4286.00	4300.97		4301.31	0.001334	6.71	13989.12	2546.63	0.36
Near Dayton	20	1.5 Times	54150.00	4286.10	4300.25		4300.54	0.001123	6.41	14918.62	2477.80	0.33
Near Dayton	10	1.5 Times	54150.00	4285.10	4298.87		4299.19	0.001356	5.77	13392.04	2372.03	0.34
Near Dayton	0	1.5 Times	54150.00	4285.00	4297.54	4293.39	4297.71	0.000646	4.19	17797.90	3056.32	0.24


Carson River Rolling A Bridge Plan: 1.5times100yS#5 7/8/2008 10:46:20 AM
Geom: Base with Bridge Scenario #5 Flow: 1.5 times 100-Y Flood
Carson Near Dayton
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Elevation (ft)
4310
4305
4300
4295
4290
4285
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

Plan: 1.5x100y-S#5 Carson Near Dayton RS: 55 BR U Profile: 1.5 Times

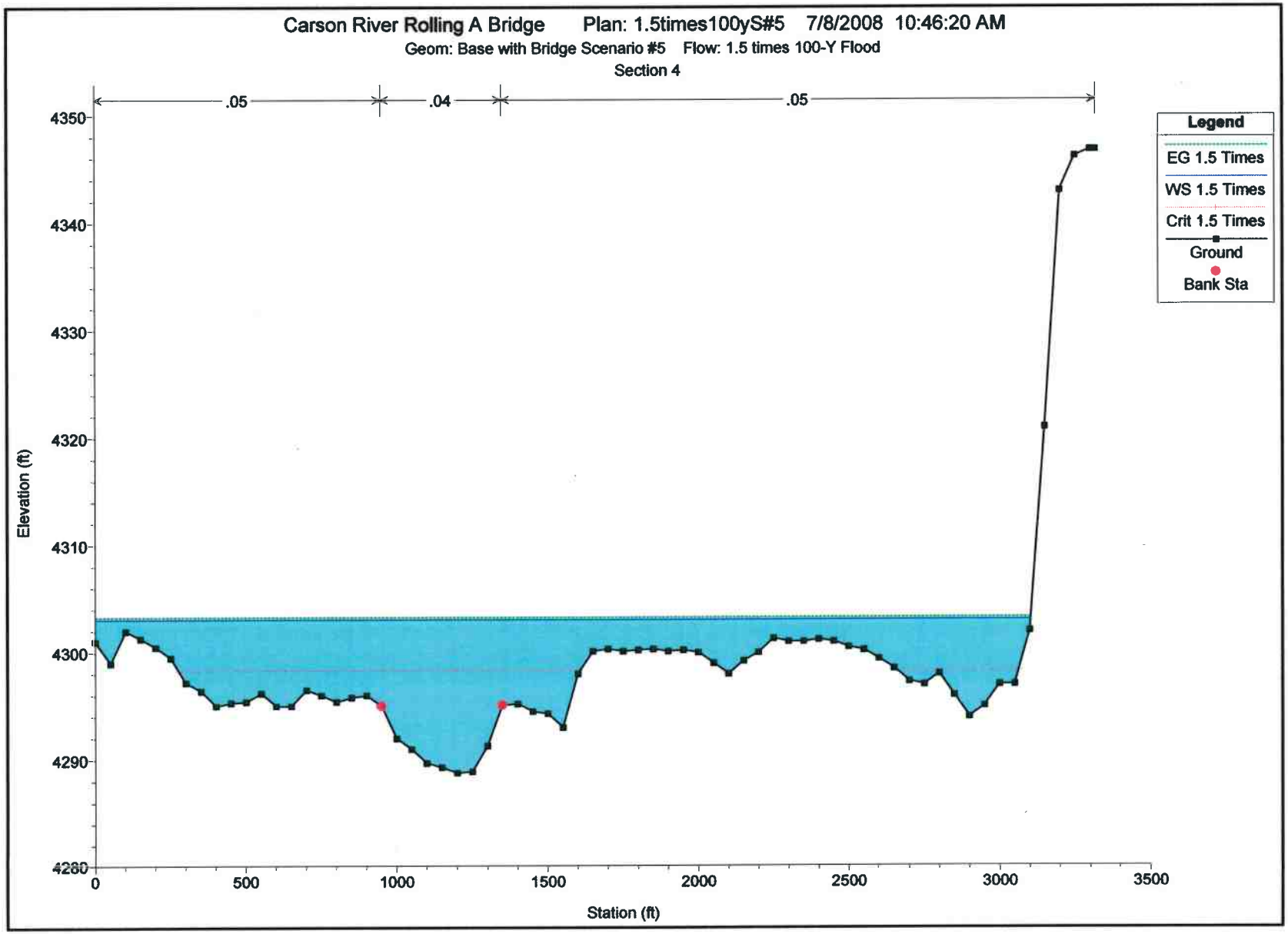
E.G. Elev (ft)	4303.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	4303.04	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	4298.58	Flow Area (sq ft)	5214.49	4630.41	7443.99
E.G. Slope (ft/ft)	0.000785	Area (sq ft)	5214.49	4630.41	7443.99
Q Total (cfs)	54150.00	Flow (cfs)	13863.68	22756.22	17530.11
Top Width (ft)	2922.74	Top Width (ft)	893.00	382.00	1647.74
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)	2.66	4.91	2.35
Max Chl Dpth (ft)	14.23	Hydr. Depth (ft)	5.84	12.12	4.52
Conv. Total (cfs)	1932099.0	Conv. (cfs)	494662.8	811953.1	625482.8
Length Wtd. (ft)	100.00	Wetted Per. (ft)	1008.96	451.50	1812.11
Min Ch El (ft)	4288.81	Shear (lb/sq ft)	0.25	0.50	0.20
Alpha	1.40	Stream Power (lb/ft s)	0.67	2.47	0.47
Frctn Loss (ft)		Cum Volume (acre-ft)	622.58	450.71	661.22
C & E Loss (ft)		Cum SA (acres)	114.60	44.38	134.95

Plan: 1.5x100y-S#5 Carson Near Dayton RS: 55 Profile: 1.5 Times

E.G. US. (ft)	4303.28	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4303.07	E.G. Elev (ft)	4303.26	4302.97
Q Total (cfs)	54150.00	W.S. Elev (ft)	4303.04	4302.76
Q Bridge (cfs)	54150.00	Crit W.S. (ft)	4298.58	4298.17
Q Weir (cfs)		Max Chl Dpth (ft)	14.23	14.46
Weir Sta Lft (ft)		Vel Total (ft/s)	3.13	3.15
Weir Sta Rgt (ft)		Flow Area (sq ft)	17288.89	17184.87
Weir Submerg		Froude # Chl	0.25	0.25
Weir Max Depth (ft)		Specif Force (cu ft)	73339.92	72012.97
Min El Weir Flow (ft)	4311.00	Hydr Depth (ft)	5.92	5.73
Min El Prs (ft)	4305.00	W.P. Total (ft)	3272.57	3337.74
Delta EG (ft)	0.31	Conv. Total (cfs)	1932099.0	1952688.0
Delta WS (ft)	0.30	Top Width (ft)	2922.74	2997.87
BR Open Area (sq ft)	23016.69	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.15	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.26	0.25
Br Sel Method	Momentum	Power Total (lb/ft s)	0.81	0.78

Plan: 1.5x100y-S#5 Carson Near Dayton RS: 55 BR D Profile: 1.5 Times

E.G. Elev (ft)	4302.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.045	0.040	0.050
W.S. Elev (ft)	4302.76	Reach Len. (ft)	9.74	9.74	9.74
Crit W.S. (ft)	4298.17	Flow Area (sq ft)	5793.48	4480.16	6911.22
E.G. Slope (ft/ft)	0.000769	Area (sq ft)	5793.48	4480.16	6911.22
Q Total (cfs)	54150.00	Flow (cfs)	16858.57	21391.67	15899.77
Top Width (ft)	2997.87	Top Width (ft)	1010.53	382.00	1605.34
Vel Total (ft/s)	3.15	Avg. Vel. (ft/s)	2.91	4.77	2.30
Max Chl Dpth (ft)	14.46	Hydr. Depth (ft)	5.73	11.73	4.31
Conv. Total (cfs)	1952688.0	Conv. (cfs)	607932.1	771398.8	573356.9
Length Wtd. (ft)	9.74	Wetted Per. (ft)	1130.18	448.97	1758.58
Min Ch El (ft)	4288.30	Shear (lb/sq ft)	0.25	0.48	0.19
Alpha	1.33	Stream Power (lb/ft s)	0.72	2.29	0.43
Frctn Loss (ft)		Cum Volume (acre-ft)	609.94	440.25	644.74
C & E Loss (ft)		Cum SA (acres)	112.41	43.50	131.22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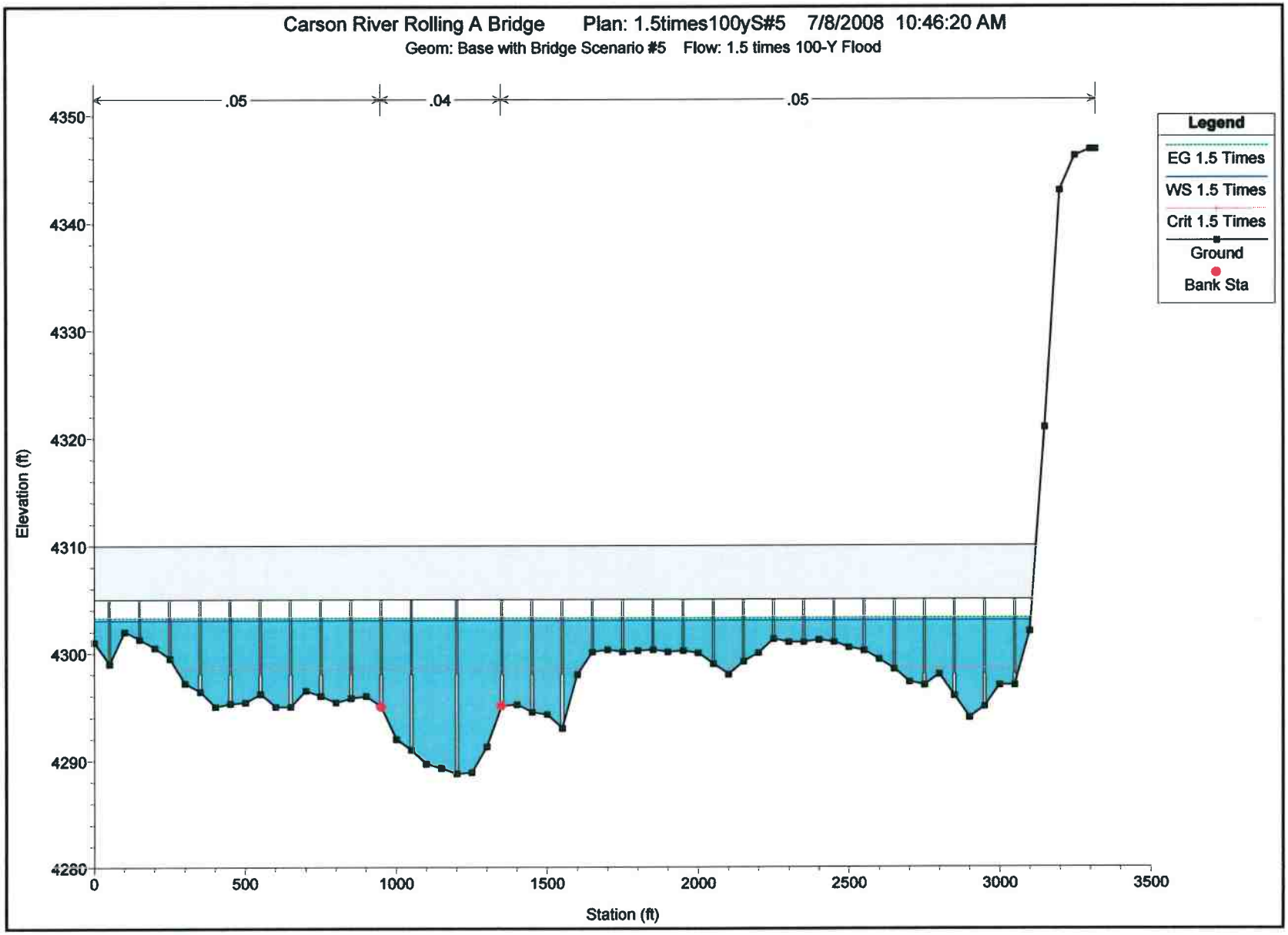
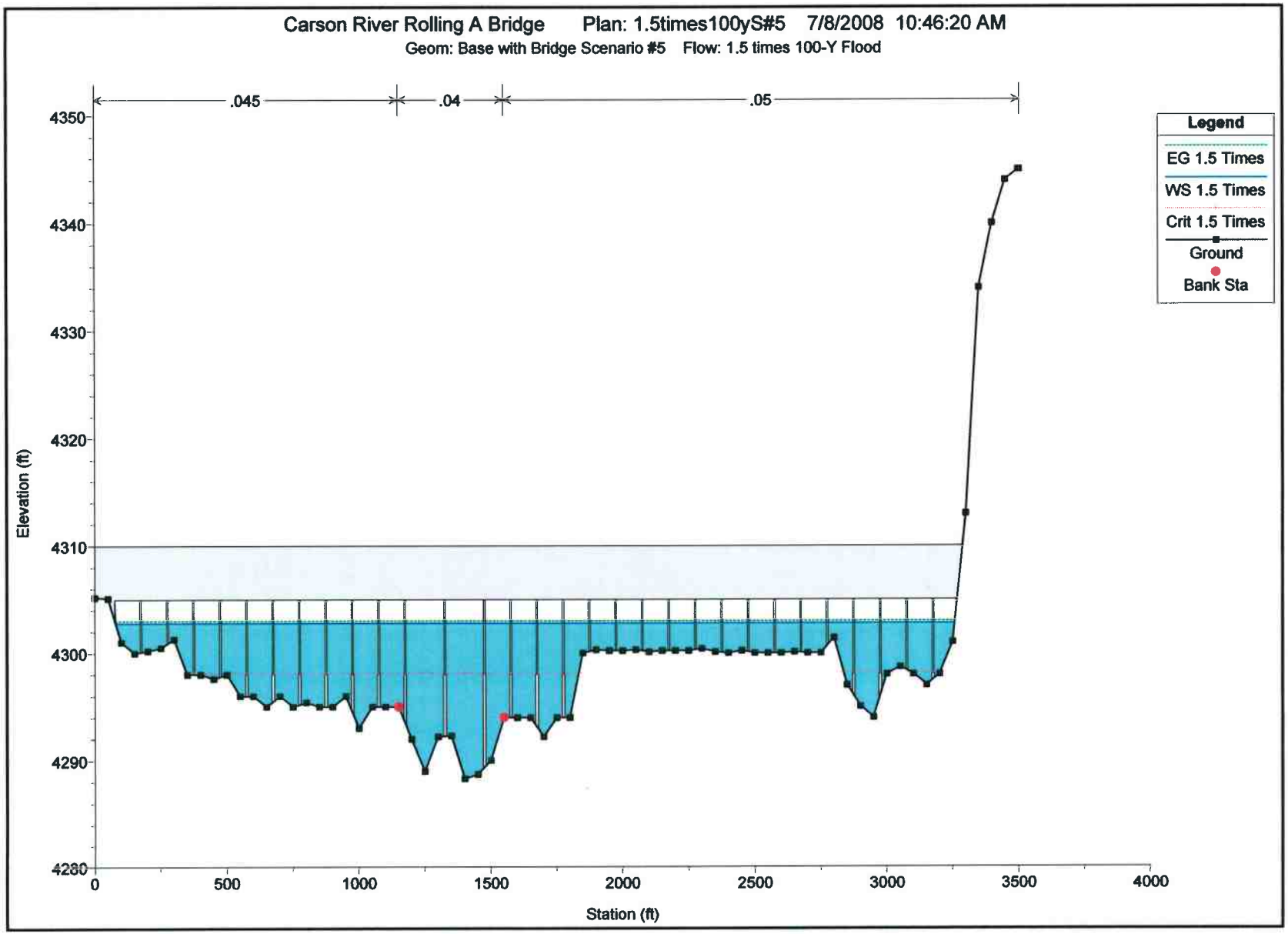
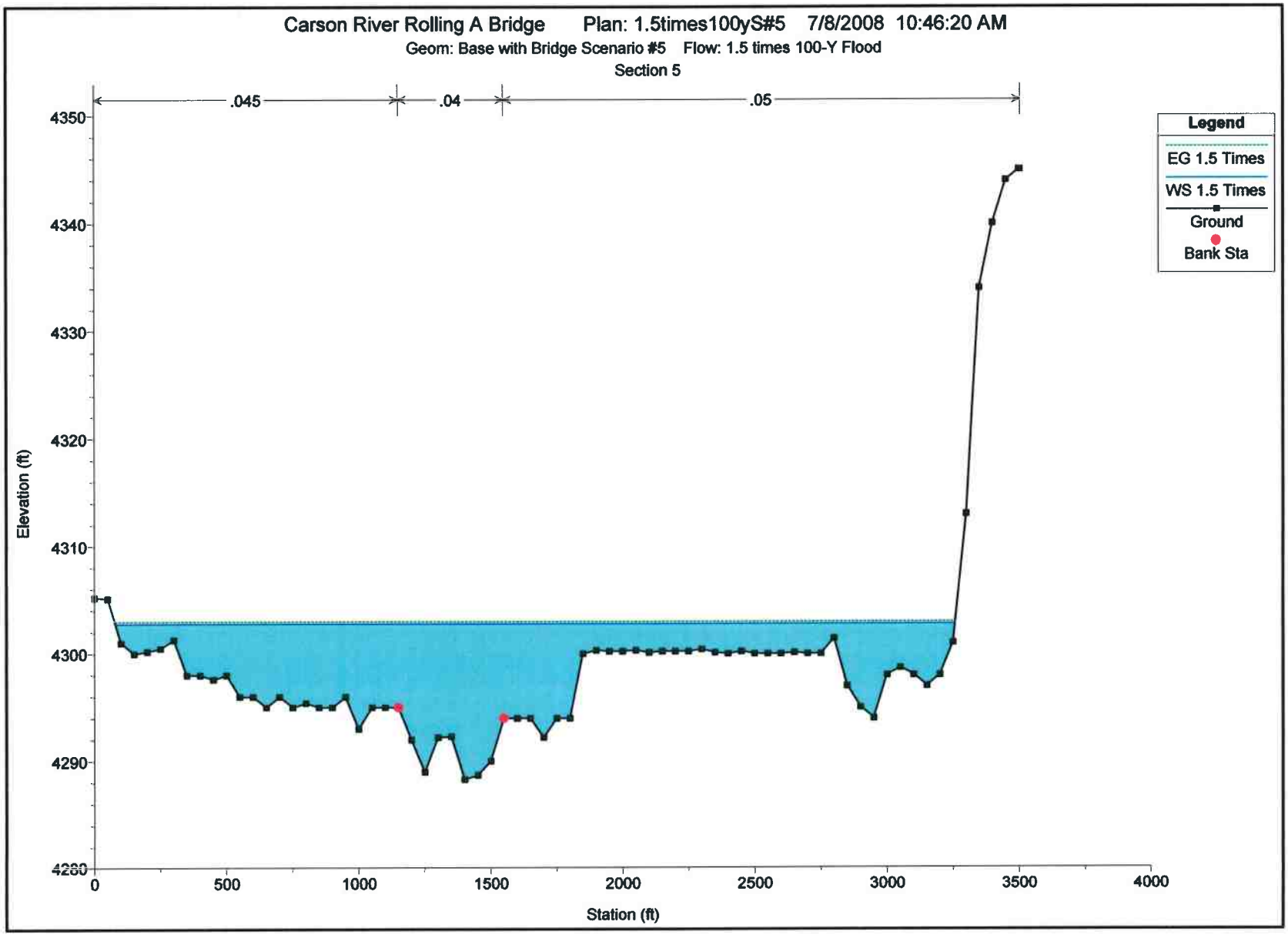
Geom: Base with Bridge Scenario #5 Flow: 1.5 times 100-Y Flood
Section 4
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#5 7/8/2008 10:46:20 AM
Geom: Base with Bridge Scenario #5 Flow: 1.5 times 100-Y Flood
.05
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#5 7/8/2008 10:46:20 AM
Geom: Base with Bridge Scenario #5 Flow: 1.5 times 100-Y Flood
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Crit 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)


Carson River Rolling A Bridge Plan: 1.5times100yS#5 7/8/2008 10:46:20 AM
Geom: Base with Bridge Scenario #5 Flow: 1.5 times 100-Y Flood
Section 5
.045
.04
.05
Legend
EG 1.5 Times
WS 1.5 Times
Ground
Bank Sta
Elevation (ft)
4350
4340
4330
4320
4310
4300
4290
4280
0
500
1000
1500
2000
2500
3000
3500
4000
Station (ft)

HEC-RAS Plan: 1.5x100y-S#5 River: Carson Reach: Near Dayton Profile: 1.5 Times

Reach	River Sta	Profile	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)	
Near Dayton	90	1.5 Times	54150.00	4291.00	4306.40		4306.61	0.000638	5.35	17321.10	2764.01	0.25
Near Dayton	80	1.5 Times	54150.00	4290.00	4305.42		4305.62	0.001253	5.98	17099.44	2740.82	0.34
Near Dayton	70	1.5 Times	54150.00	4288.00	4303.80		4304.08	0.001263	5.92	16339.10	2266.48	0.31
Near Dayton	60	1.5 Times	54150.00	4288.80	4303.07	4298.32	4303.28	0.000615	4.91	18611.93	3102.81	0.25
Near Dayton	55		Bridge									
Near Dayton	50	1.5 Times	54150.00	4288.30	4302.77		4302.97	0.000621	4.82	18419.05	3178.87	0.25
Near Dayton	40	1.5 Times	54150.00	4287.50	4302.17		4302.44	0.000927	5.54	15126.94	2394.61	0.30
Near Dayton	30	1.5 Times	54150.00	4286.00	4300.97		4301.31	0.001334	6.71	13989.12	2546.63	0.36
Near Dayton	20	1.5 Times	54150.00	4286.10	4300.25		4300.54	0.001123	6.41	14918.62	2477.80	0.33
Near Dayton	10	1.5 Times	54150.00	4285.10	4298.87		4299.19	0.001356	5.77	13392.04	2372.03	0.34
Near Dayton	0	1.5 Times	54150.00	4285.00	4297.54	4293.39	4297.71	0.000646	4.19	17797.90	3056.32	0.24

Appendix C Site Pictures and Estimates of Manning's n

Picture 1 Between Sections 1 & 2 looking toward W.-Main channel Manning's n=0.04, Right overbank Manning's n=0.045

Picture 2 Between Sections 1 & 2 looking toward NW.-Left overbank Manning's n=0.045

Picture 3 Between Sections 2 & 3 looking toward E.-Main channel Manning's n=0.04, Right overbank Manning's n=0.06

Picture 4 Between Sections 2 & 3 looking toward W. -Right overbank Manning's n=0.06

Picture 5 At Section 3 looking toward N-Main channel between Sections 3 and 4
Manning's n=0.045, Left overbank Manning's n=0.055

Picture 6 At Section 3 looking toward E.-Right overbank at Section 3
Manning's n=0.075

Picture 7 At Section 3 looking toward NE.-Left overbank at Section 3 Manning's n=0.055

Picture 8 Between Sections 3 & 4 looking toward W.-Main channel Manning's n=0.045, Right overbank Manning's n=0.075

Picture 9 At Sections 4 looking toward NW.-Main channel Manning's n=0.04, Left overbank Manning's n=0.055

Picture 10 At Section 4 looking toward N.-Main channel Manning's n=0.04, Left overbank Manning's n=0.05

Picture 11 At Section 4 looking toward NE.-Main channel Manning's n=0.04, Left Overbank Manning's n=0.05

Picture 12 At Section 5 looking toward NE-E.-Main channel Manning's n=0.04,

Picture 13 At Section 5 looking toward E.-Right overbank Manning's n=0.05

Picture 14 At Section 6 looking toward W.-Right overbank Manning's n=0.05

Picture 15 At Section 6 looking toward NW.- Main channel Manning's n=0.04, Left overbank Manning's n=0.05

Picture 16 At Section 6 looking toward NE.-Main channel Manning's n=0.04, Left overbank Manning's n=0.05

Picture 17 At Section 6 looking toward E.-Right overbank Manning's n=0.05

Picture 18 At Section 8 looking toward W.-Right overbank Manning's n=0.05

Picture 19 At Section 8 looking toward NW.-Left overbank Manning's n=0.05

Picture 20 At Section 8 looking toward N.-Left overbank Manning's n=0.05

Picture 21 At Section 8 looking toward NE.-Left overbank Manning's n=0.05

Picture 22 At Section 8 looking toward S.-Right overbank Manning's n=0.05

Picture 23 At Section 9 looking toward W.-Right overbank Manning's n=0.05

Picture 24 At Section 9 looking toward NW.-Main channel Manning's n=0.04, Left Overbank Manning's n=0.05

Picture 25 At Section 9 looking toward NE.-Main channel Manning's n=0.04, Left overbank Manning's n=0.05

Picture 26 At Section 9 looking toward E.-Right overbank Manning's n=0.045~0.05

FIGURE 1
VICINITY MAP

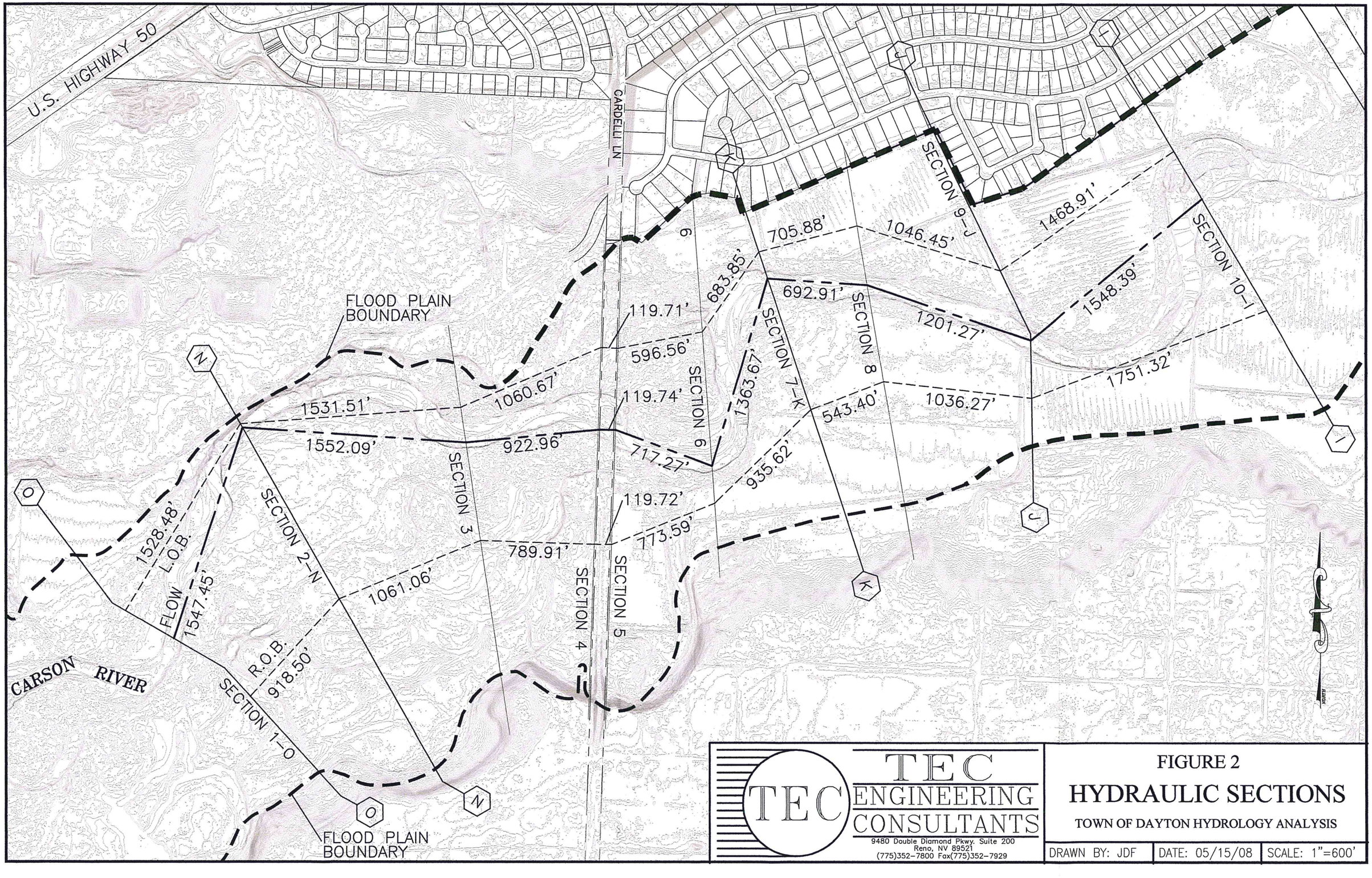


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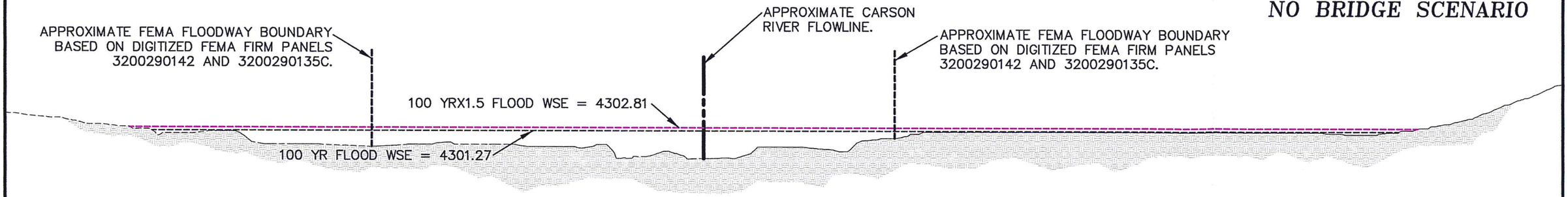
FIGURE 2

HYDRAULIC SECTIONS

TOWN OF DAYTON HYDROLOGY ANALYSIS

DRAWN BY: JDF	DATE: 05/15/08	SCALE: 1"=600'

FIGURE 3
CARDELLI/SUTRO BRIDGE
DAYTON, NEVADA
NO BRIDGE SCENARIO



X–X'

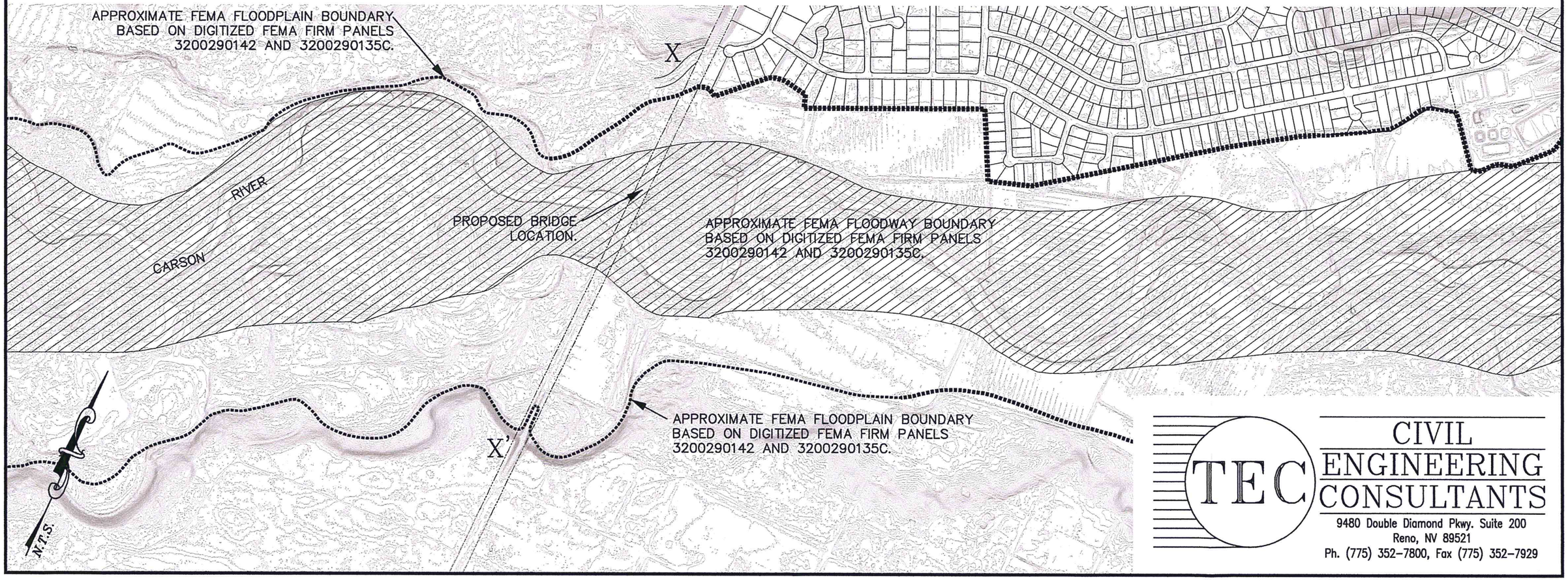


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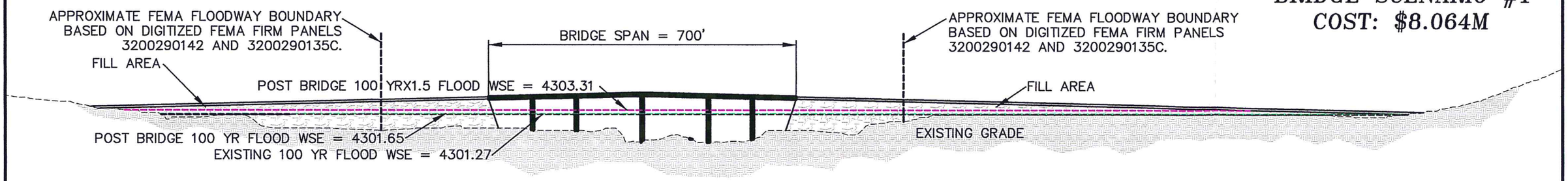
FIGURE 4
CARDELLI/SUTRO BRIDGE
DAYTON, NEVADA
BRIDGE SCENARIO #1
COST: $8.064M



X–X'

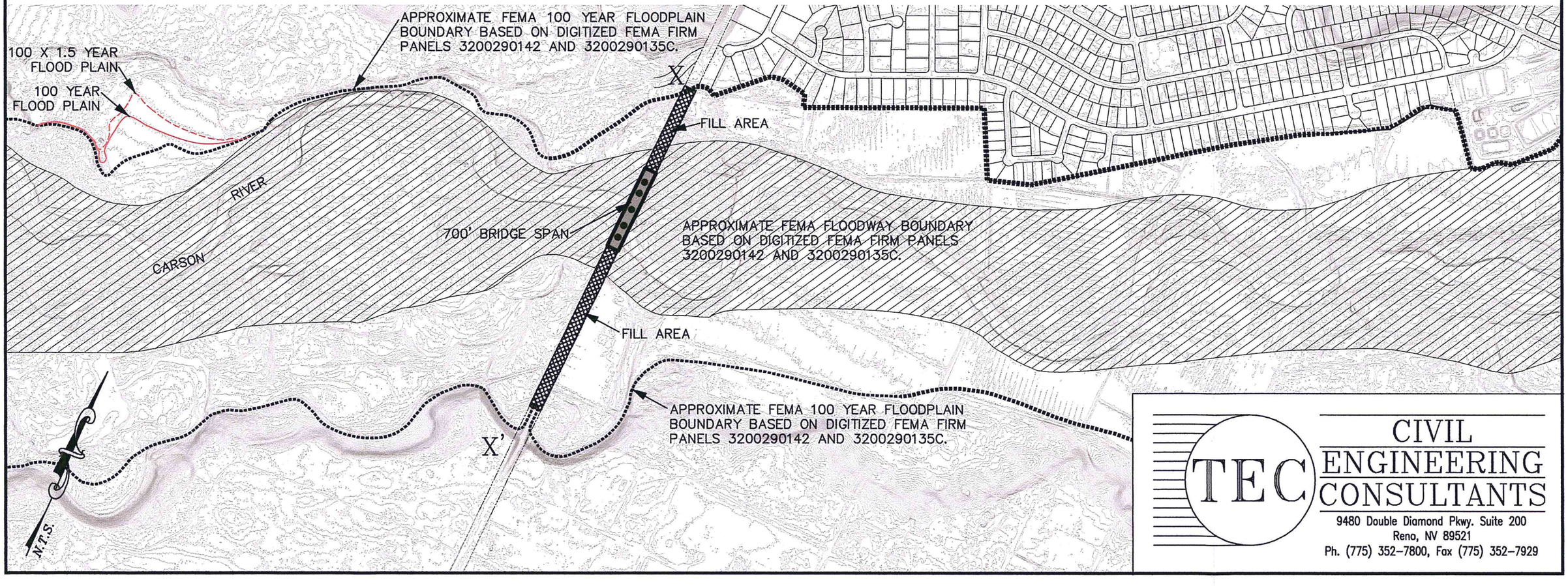


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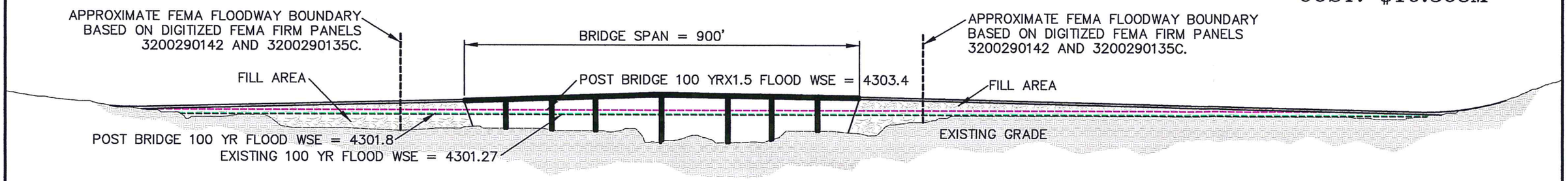
FIGURE 5
CARDELLI/SUTRO BRIDGE
DAYTON, NEVADA
BRIDGE SCENARIO #2
COST: $10.368M



X–X'

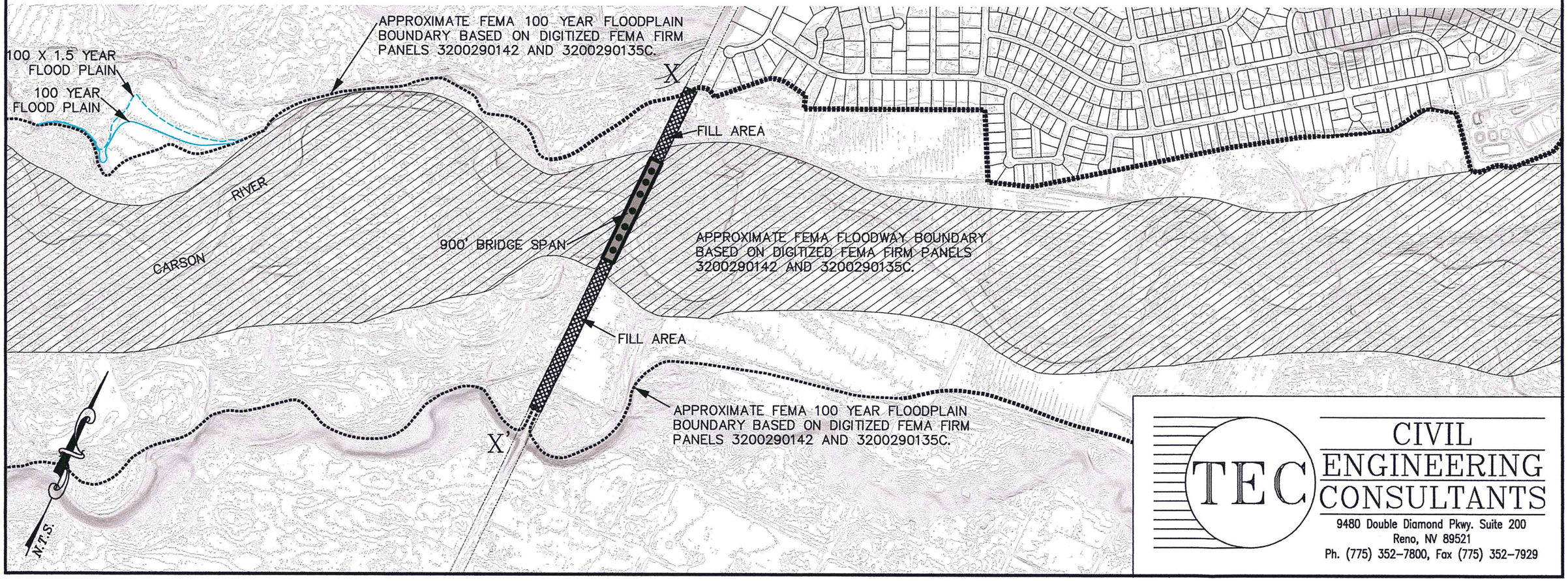


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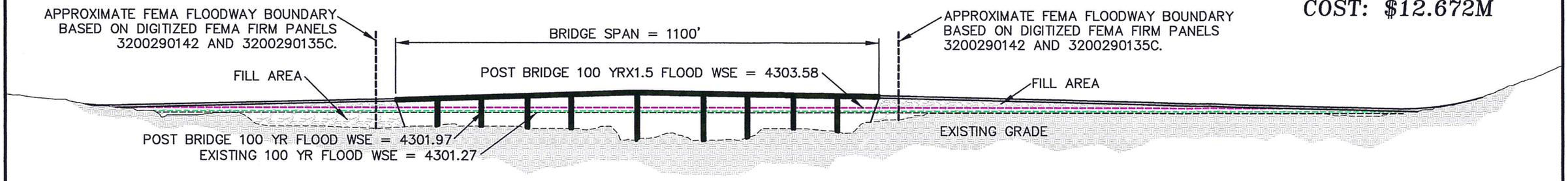
FIGURE 6
CARDELLI/SUTRO BRIDGE
DAYTON, NEVADA
BRIDGE SCENARIO #3
COST: $12.672M



X–X'

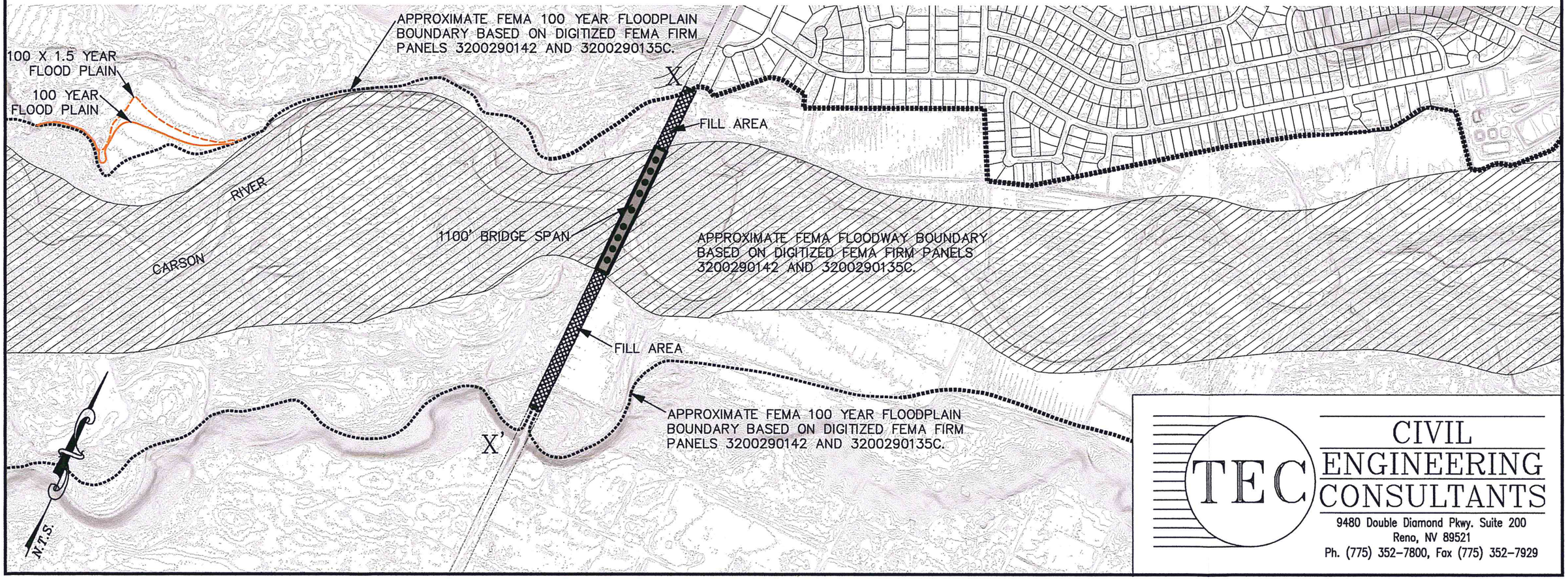


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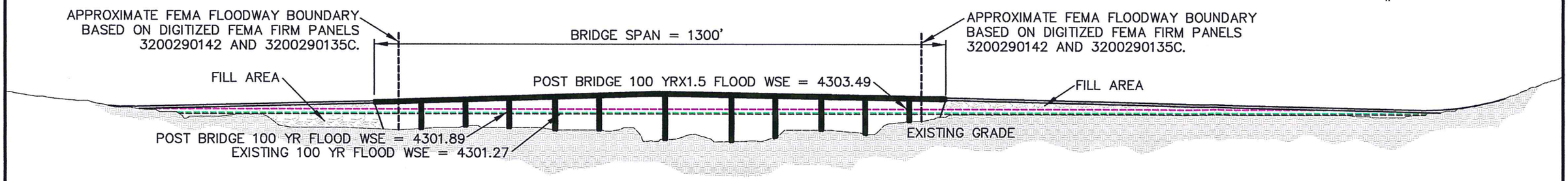
FIGURE 7
CARDELLI/SUTRO BRIDGE
DAYTON, NEVADA
BRIDGE SCENARIO #4
COST: $14.976M



X–X'

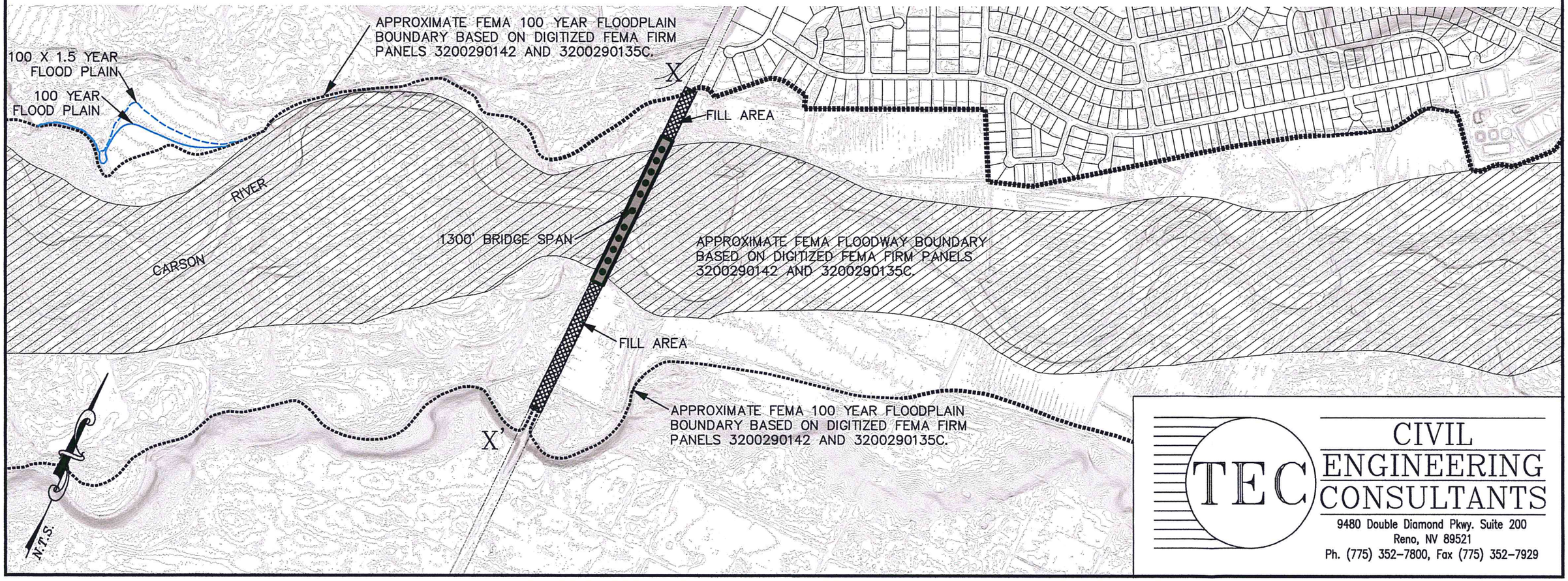


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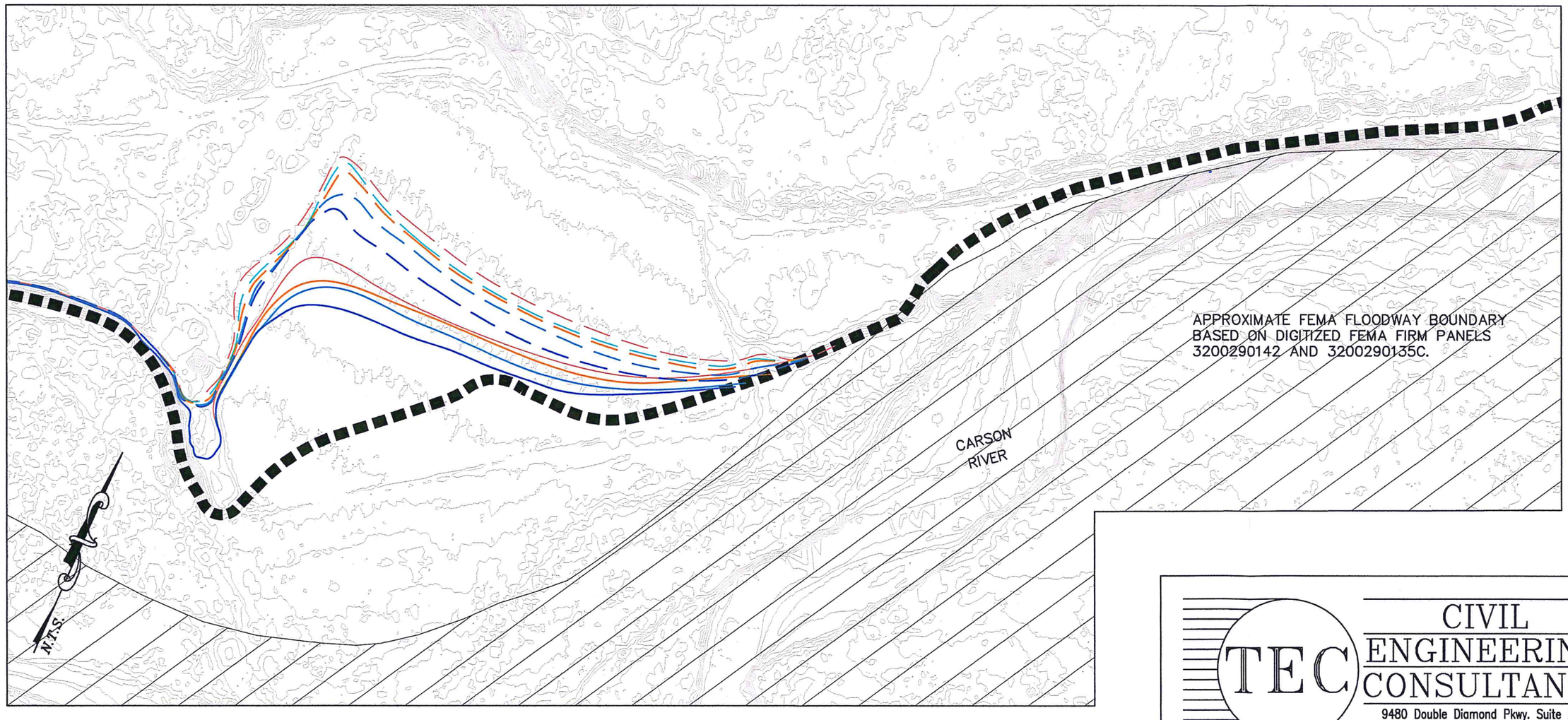
FIGURE 9
CARDELLI/SUTRO BRIDGE
DAYTON, NEVADA
FLOODPLAIN SCENARIO COMPARISON

KEY:

- DIGITIZED FEMA 100 YEAR FLOODPLAIN
- SCENARIO #1 100 YEAR X 1.5 FLOODPLAIN
- SCENARIO #2 100 YEAR X 1.5 FLOODPLAIN
- SCENARIO #3 100 YEAR X 1.5 FLOODPLAIN
- SCENARIO #4 100 YEAR X 1.5 FLOODPLAIN
- SCENARIO #5 100 YEAR X 1.5 FLOODPLAIN
- SCENARIO #1 100 YEAR FLOODPLAIN
- SCENARIO #2 100 YEAR FLOODPLAIN
- SCENARIO #3 100 YEAR FLOODPLAIN
- SCENARIO #4 100 YEAR FLOODPLAIN
- SCENARIO #5 100 YEAR FLOODPLAIN



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Stantec
6995 Sierra Center Parkway
Reno, NV 89511
775.850.0777

May 30, 2018

Ms. Dorothy Timian-Palmer, PE
VIDLER WATER
3480 GS Richards Blvd., Suite 101
Carson City, NV 89703

Dear Dorothy,

Reference: Proposal for Bridge and Roadway Design Engineering and Support Services

We have reviewed your request to develop a proposal for the proposed Carson River Bridge and Secondary Access Roadway in the Dayton area of Lyon County. It is our understanding per our discussion that Lyon County requires a new access to support the proposed development area. Pursuant to your request, Stantec will develop an engineered plan set for the bridge crossing and secondary access roadway, an opinion of probable cost, and develop a program for an assessment/impact area. For purposes of this proposal "Client" refers to Vidler Water.

The project limits are from the intersection of Chaves Road at Fort Churchill Road, extending south across the Carson River, extending diagonally in a southeast direction and connecting to Dayton Valley Road for an approximate length of 17,000 linear feet. The bridge structure is estimated to be between 350 and 550 feet, depending on floodplain modeling of the crossing.

With a good understanding of the project elements, we have provided a detailed scope of work that includes two subconsultants, as noted. We have also identified our project team who have the experience and technical expertise to deliver the engineering design and support services.

We look forward to working you and Vidler on this exciting opportunity.

SCOPE OF SERVICES

The following scope of work is based upon discussions with the Client. As Stantec and our subconsultants understand, our work involves the design engineering for construction of a 4-lane (2-lanes per direction) roadway and bridge structure. Starting at the north end of the project, the roadway begins at the intersection of Fort Churchill Road and Chaves Road and heads in a south-southwest direction to the bridge crossing at the Carson River. From the south end of the bridge structure, the roadway alignment heads in a southwest direction, crossing a bedrock knoll with a length of about ½ mile, before transitioning to flatter topography. The roadway continues in a southwest direction for approximately 1 mile before turning due south at a location that is about 700 feet east of Bullion Road, immediately south of Eureka Lane. The roadway continues south for the final 1¼ miles before transitioning back to a southwesterly direction prior to intersecting with Dayton Valley Road at Bullion Road.

The bridge has a preliminary length ranging from 350 to 550 feet and crosses both the Carson River and Koch Ditch. The bridge is assumed to be multi-span with intermediate supports. The northern abutment is located adjacent to the Koch Ditch and the southern abutment is located approximately 130 feet north of the existing dirt access road south of the Carson River. Span lengths may vary between 60 to 200 feet,

depending on the superstructure type. For the purposes of this proposal, it is assumed the spans are equally spaced with foundation support spacings ranging from 60 to 200 feet.

We assume bridge supports will consist of deep foundations with either caissons (drilled shafts) or driven piles. Bridge foundation scour will be assessed as total scour (degradation and local) could be significant and will determine the ultimate drilled shaft depths. Two anticipated primary pile options are being considered: 2 to 4-foot diameter drilled shafts with loading on the order of 500 to 1,000 kips per support (i.e. abutment or intermediate foundation support) or larger diameter drilled shafts (6 to 8-foot diameter) with loading on the order of 2,000 to 3,000 kips per support. Driven piles will also be considered as a foundation option where feasible. Driven piles (e.g. closed ended pipe piles, H-piles) could be feasible north of the Carson River, driven piles may be a preferred option to lessen environmental impacts during construction.

Roadway cuts and fills are expected to be about 10 feet or less. Maximum fills are anticipated north of the bridge located in farmlands and maximum cuts are anticipated at the bedrock knoll south of the bridge. The roadway alignment appears to be on privately owned land; it is anticipated rights of entry will be provided by the Client. The project is assumed to be privately owned and maintained in the short term. It is understood the bridge will be under the authority of Lyon County at a future date.

Task 1: Preliminary Design Memorandum

Kickoff/Coordination Meeting and Design Memorandum

A kickoff meeting is essential to ensuring a quality project, with adherence to cost and schedule constraints, and consistency with your expectations. Stantec proposes a kickoff meeting with your key staff and others, as you may determine are needed in this meeting, to outline tasks, responsibilities, and schedule. At a minimum, the agenda for this kickoff meeting would include:

- Establish lines of communication and team responsibilities
- Review project background and confirm scope of work
- Identification of key stakeholders
- Discuss permitting requirements and any utility coordination
- Identify specific needs for surveying and the geotechnical investigation
- Identify data needs including access, record drawings, utility maps
- Discussion of relevant issues that may be critical to the project
- Workplan and Deliverables
- Schedule

Deliverables

Basis of design Memo for submittal to Vidler, Lyon County and/or NDOT documenting speeds, geometric standards, cross-sectional elements that will form the basis for the design. Comment and feedback prior to the onset of design will be needed.

Task 2: Roadway Topographic Survey

Stantec will provide a 2-person survey crew, utilizing survey-grade GPS to take measurements to existing Nevada Department of Transportation, section corner and parcel corner monuments. Field survey will

include placement and measurement of aerial panels, cross sections at the proposed river crossing, and detailed surveys at the intersections of the proposed roadway and the existing roadways. Aerial photography and mapping provided at 40-scale with 1-foot contour intervals. The aerial photography and mapping is provided by a sub-consultant.

The Topographic Survey will include:

- Boundaries and easements with dimensions based upon recorded maps and Preliminary Title Report information and documents
- Visible features
- 1-foot contours
- Surface evidence of utilities
- Found monumentation
- Seamless Color Digital Ortho Photo(s) at 0.2' pixel resolution

Assumptions

1. The proposed roadway alignment will be based upon the existing 50-foot roadway easement across most of the proposed alignment and the selected locations for river crossing and tie-ins at the existing roadways.
2. Setting property corner monuments and/or preparing and filing a Record of Survey is not anticipated and therefore not included in this scope.
3. Areas to be surveyed will have unobstructed access.
4. Preliminary Title Reports for the area of the proposed roadway alignment will be provided by Client.

Schedule

Field work and mapping is estimated to be completed within 15 to 20 working days after notice to proceed.

Additional Surveying Services

Legal Descriptions or mapping for right-of-way or easements for the proposed roadway and/or construction limits will be provided by separate proposal(s). These will be provided once the roadway alignment has been determined.

Task 3: Geotechnical Investigation (CME, Inc.)

Summary of geotechnical investigation services:

- Literature review;
- Bridge supports vertical test borings ranging from 50 to 90 feet below ground surface (bgs). For the preliminary level of the investigation, three borings will be drilled at the bridge site (one at each abutment location and a boring at an intermediate location). For the final investigation, borings will be required at each span support location. Boring depths will be based on preliminary loads provided by Stantec and materials encountered at the time of drilling;
- Roadway investigation will include both test pits and vertical test borings. Boring depths will range from 10 to 20 feet bgs. Exploration depths will be based on the anticipated cut/fill depth/thickness;

- Geophysical testing includes both refraction and ReMi; refraction will be completed at two locations: southern bridge abutment and bedrock knoll area to determine anticipated depth to bedrock and hardness. ReMi geophysical testing will be completed at both abutment areas to determine site classification to develop seismic parameters;
- Laboratory testing; and
- Engineering analyses to allow formulation of geotechnical recommendations for design and construction of this project.

Literature Review

Prior to initiating the field exploration, our engineer will review published geologic maps, fault hazard reports, and soils maps to identify the presence of documented geologic hazards at the site.

Based on a review of geologic maps (Castor et al, *Preliminary geologic map of the Flowery Peak Quadrangle, Storey and Lyon Counties, Nevada*, 1:24,000, 2006; and Stewart et al, *Geologic Map of the Carson City 30 x 60 Minute Quadrangle, Nevada*, 1:100,000, 1999), the majority of the roadway alignment traverses alluvium deposits or sand dunes with the exception of an approximate ½ mile roadway distance, located immediately south of the proposed southern bridge abutment, where a rock knoll, consisting of either andesitic or dacite has been mapped.

Field Exploration

Field exploration will consist of USA Dig Clearance (Section 2.2.1), geologic reconnaissance, permitting (Section 2.2.2), geophysical testing (Section 2.2.3), and test pits (Section 2.2.5) vertical test borings (Section 2.2.4/6). The following presents field exploration assumptions:

- Rights of entry will be provided and coordinated by the Client.
- Stantec will survey all field exploration locations including ground elevations prior to exploration.
- Access is available to all exploration locations and potential ground disturbance by exploration equipment is acceptable by the land owner.
- An identified access constraint is crossing the Koch Ditch located on the north side of the Carson River. This cost proposal assumes the dirt access road between the ditch and the Carson River is accessible via the small bridge located about 2,000 feet west-southwest of the north bridge abutment; however, the weight capacity and geometry of this bridge needs to be verified. The approximate weight of the proposed drill rig is on the order of 35,000 lb. An alternative crossing option is to place steel plates across the ditch to allow access; however, this still requires a site visit and verification from our subcontractor. Another option is to temporarily fill the ditch to allow a crossing, but this option requires coordination with the time of the year that the ditch is not flowing. It is difficult to provide a cost estimate for crossing if the bridge alternative is not viable. Consequently, it is assumed that the Client will provide materials and construction for the crossing.

USA Dig Clearance

Prior to initiating the subsurface exploration, CME will contact USA Dig to determine the location of existing utilities as required by State Law. Our fee is not adequate to compensate for damage or disruption of service and repair costs. If insufficient or incorrect data results in damage to underground

structures, the cost for repair will be the responsibility of the Client. It is also assumed that all exploration locations and ground elevations will be surveyed by Stantec prior to exploration.

Permitting/Rights of Entry

CME will obtain an NDEP *Working in the Waters* permit. We have budgeted 10 hours to obtain and coordinate, not including the permit fee. It is anticipated the abutment borings will not require this permit; however, any borings located in the banks of the channel will require this permit. Based on discussions with NDEP, processing time to obtain permitting varies from 4 to 8 weeks.

It is assumed an Army Corps of Engineers permit is not required for the exploration investigation. However, if required, the permit will either by obtained by the Client or an additional fee will be presented to obtain the permit. It is assumed all other necessary permits and/or rights of entry for our field exploration will be provided and coordinated by the Client.

Geophysical Testing

Refraction testing will be conducted to determine bedrock compressional velocities and potential rippability/excavatability difficulties. Refraction testing will be performed at up to four locations, concentrated around deeper cuts and locations where shallow bedrock is anticipated. Refraction testing will also be attempted near the southern abutment to provide additional information regarding potential bedrock depth. Two-dimensional refraction lines will be provided. An example of the 2-dimensional refraction line is shown in Figure 1 on the following page.

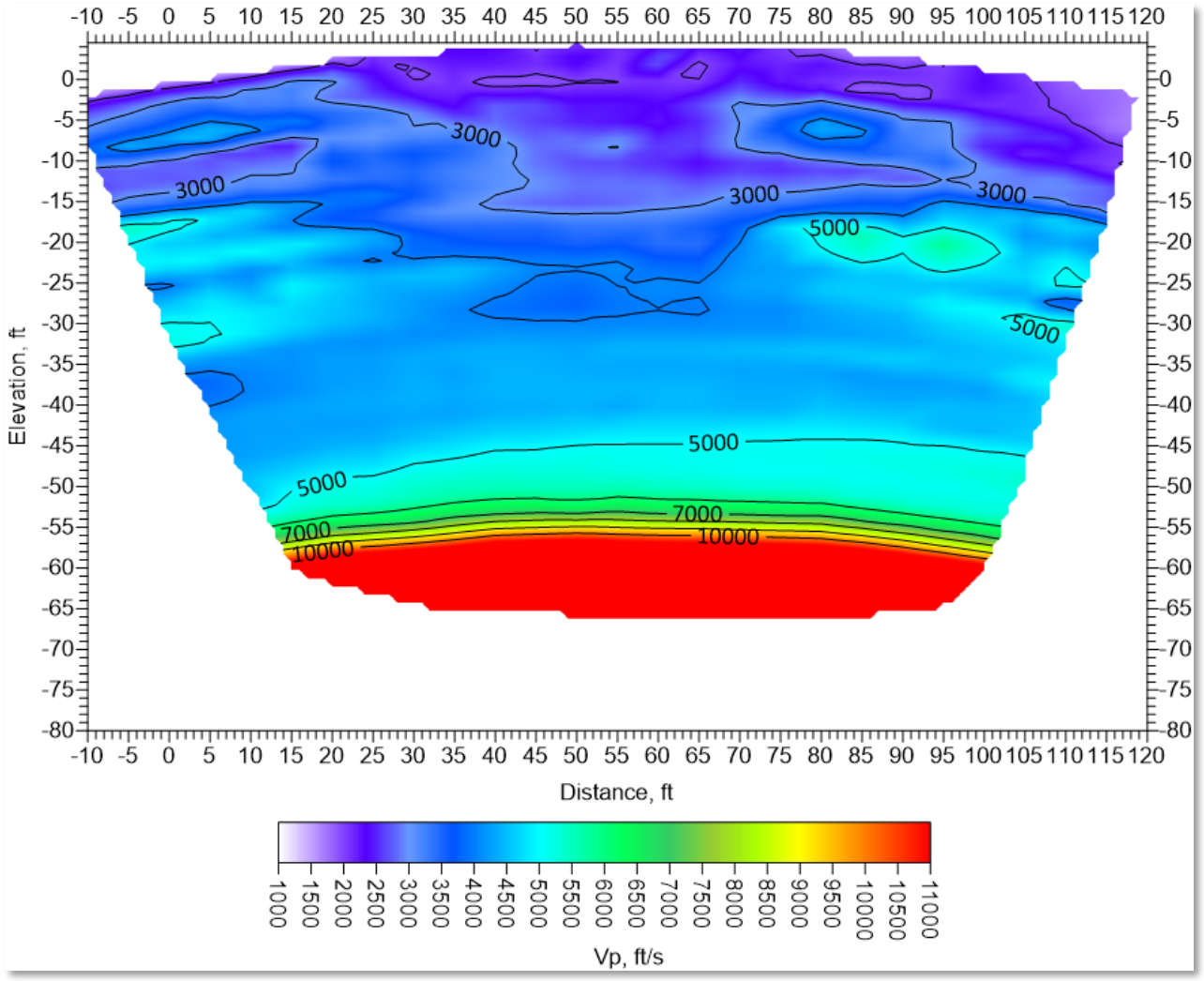


Figure 1 *Two-Dimensional Refraction Line*

In addition to refraction testing, up to two ReMi soundings will be completed to determine subsurface soils shear wave velocity measurements to a depth of 100 feet below the ground surface. This information will be used to determine subsurface soil site class for seismic design.

Preliminary Investigation Bridge Foundation Vertical Test Borings

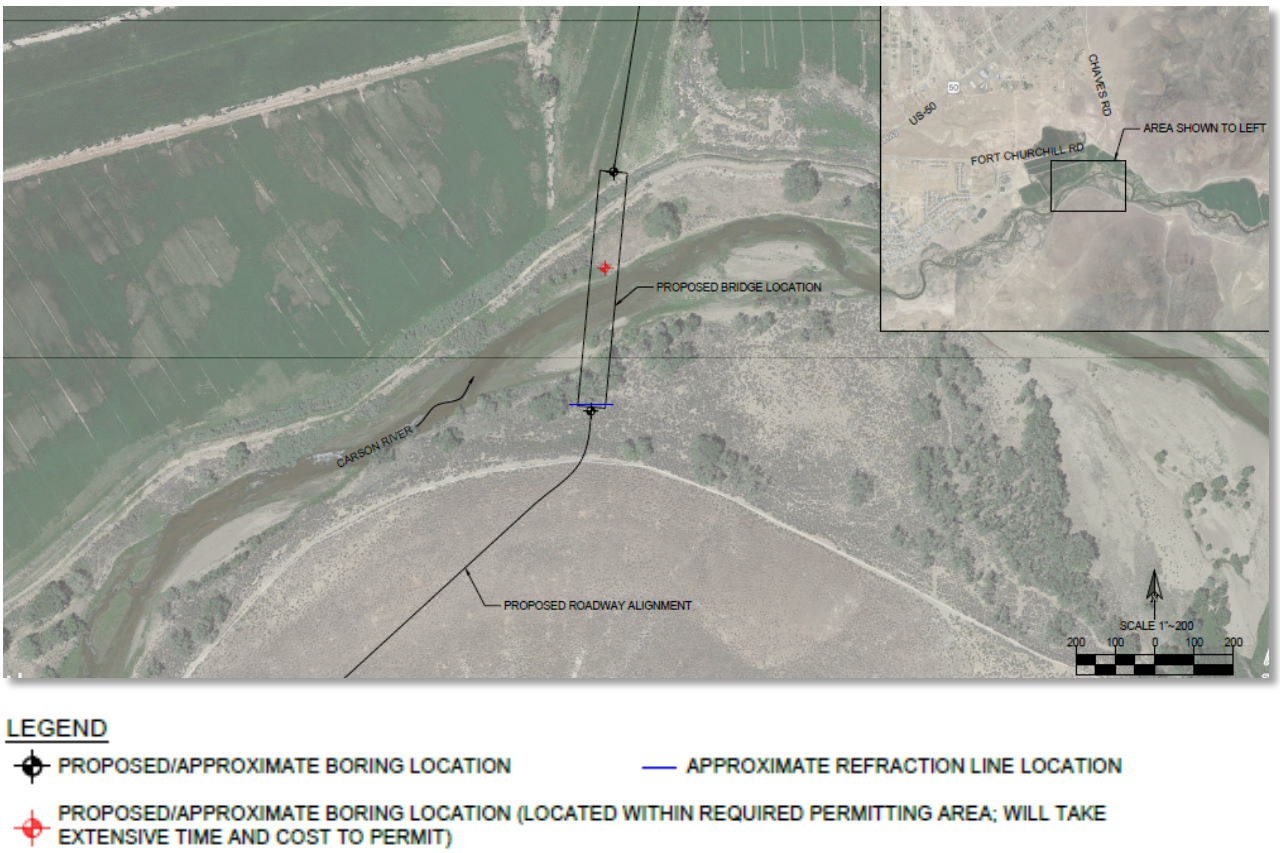
For the preliminary investigation, we proposed to drill three (3) vertical test borings to depths ranging from 50 to 90 feet bgs or to refusal, whichever comes first. Due to possible bedrock conditions at the southern abutment, rock coring may be anticipated at this abutment. At the remaining boring locations, hollow/solid stem auger or mud rotary techniques are anticipated. It is assumed a typical track mounted drill rig will be necessary to access the proposed boring locations. One mobilization is budgeted for the bridge and roadway boring investigation.

Soils will be sampled at 2½-foot intervals with a two or three-inch diameter (OD) split-spoon sampler driven by a 140-pound automatic hammer with 30-inch stroke. The number of blows to drive the sampler one-foot into undisturbed soil (Standard Penetration Test) is an indication of the density and shear strength of the material. If rock coring is utilized, continuous rock cores will be taken in generally 5-foot runs. During rock coring operations, several different bedrock physical characteristics will be recorded, measured, and identified. These bedrock physical characteristics include:

- Drill rate (assists in determining core loss zones);
- Core recovery percentage (identifies areas of highly fractured and/or soft, friable bedrock areas);
- Rock Quality Designation (RQD), which is the ratio of intact pieces of core greater than 4 inches to the length of the recovered cored;
- Discontinuities (spacing and orientation);
- Weathering; and
- Rock type description.

All cores will be stored in a core box and labeled. A tentative boring location exhibit for the preliminary investigation is shown below. Boring locations may need to be field adjusted to due to access constraints and support locations.

Figure 2 *Tentative Bridge Field Exploration Location Map*



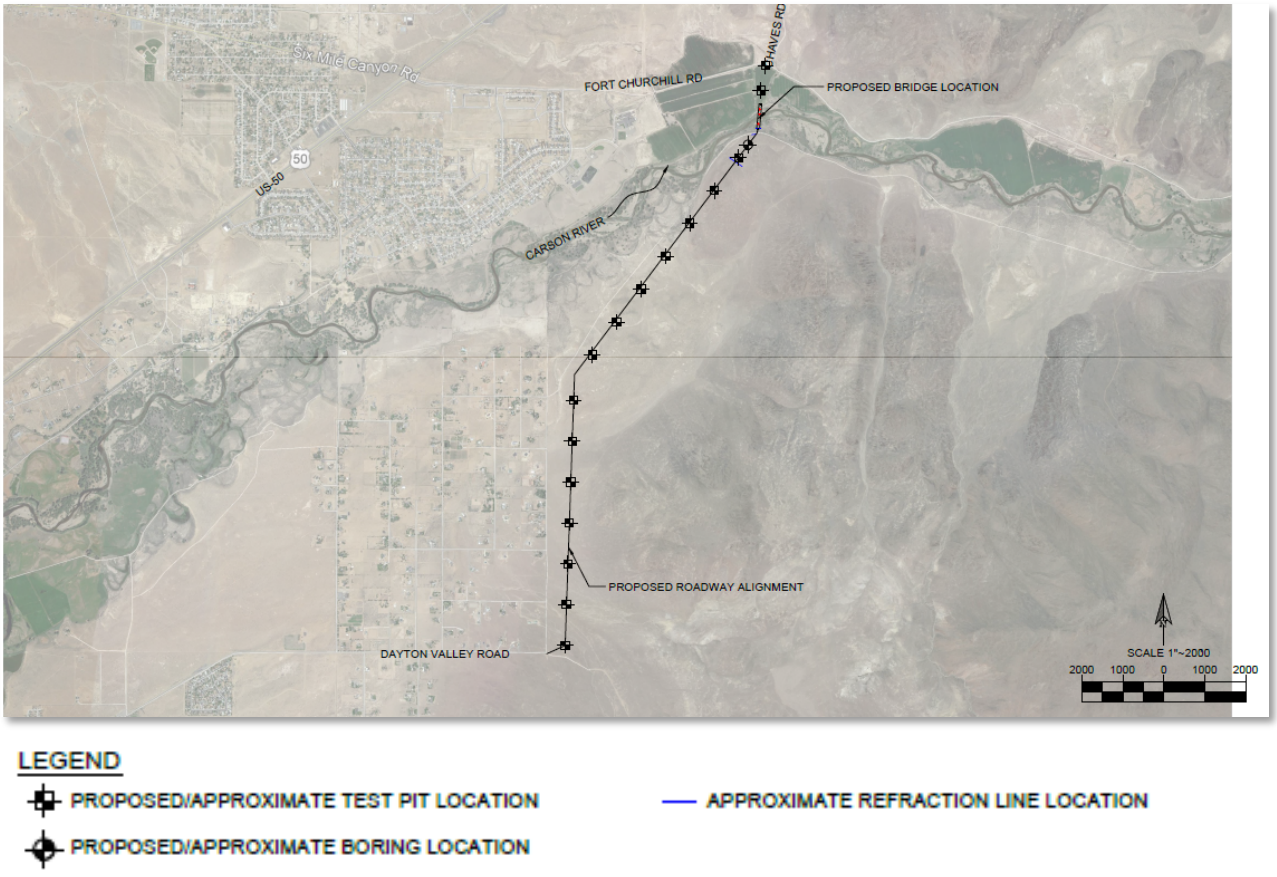
Our geotechnical personnel will log material encountered during exploration in the field. The groundwater surface will be measured if encountered. Representative soil samples will be returned to our Reno laboratory for testing. Boreholes will be backfilled in accordance with NDEP regulation; remaining soil cuttings will be spread on-site.

The scope and fee assumed in this proposal are based upon the assumption that the site is accessible to the exploration equipment proposed.

Preliminary Investigation Roadway Test Pits

Approximately sixteen (16) exploratory test pits are planned (approximate 1000-foot spacings) along the 3-mile long roadway alignment to depths of 5 to 10 feet with a backhoe, or practical refusal. Test pits will be backfilled with on-site spoils with the equipment available at hand.

Figure 3 *Exploration Test Pit Location Map*



Preliminary Investigation Roadway Borings

For the preliminary investigation, we proposed to drill two (2) vertical test borings to depths ranging from 15 to 30 feet bgs or to refusal, whichever comes first. These borings will be concentrated at geotechnical critical areas of the roadway: one in the farmland north of the bridge and one on the bedrock knoll south of the bridge. The farmland boring will be primarily used for settlement and slope stability/bearing pressure analysis; the bedrock knoll boring will assist in assessing cut slope gradient and excavatability characteristics. These borings will be drilled using a similar methodology to the bridge foundation borings (Section 2.2.4). It is assumed a typical track mounted drill rig will be necessary to access the proposed boring locations. One mobilization is budgeted for the bridge and roadway boring investigation.

Laboratory Testing

The purpose of the laboratory test program will be to evaluate the engineering and mechanical properties of soil samples collected in the field. We anticipate our laboratory test program may consist of the following:

- Testing for index properties such as moisture content, grain size distribution and plasticity;
- Insitu moisture density;
- Unconfined compressive, direct shear and/or triaxial shear strength tests (depending on material type) for bearing capacity and lateral capacity analysis;
- Point load testing on rock samples (if applicable);
- R-value for pavement recommendations;
- Corrosion testing including soluble sulfates, pH, and resistivity; and
- Consolidation or expansion testing, as appropriate, may be conducted on fine-grained soils to evaluate settlement or expansion potential (if encountered).

Bridge Foundation Analysis & Recommendations

Foundation analysis will be completed for bridge supports using AASHTO methodology. Deep foundations are likely to consist of either driven piles or drilled shafts. Analysis will determine axial compression, tension, and lateral capacities for deep foundations. Total and differential settlements will also be provided. Recommended selection of deep foundation systems will be based on key factors such as constructability, accessibility, and costs.

Computer Software such as SHAFT or APILE will be used to determine the axial capacity and settlement behavior of the selected foundation. Axial capacity can be determined considering both side resistance and/or end bearing. Deep foundation tip elevations can be provided, depending on both loading and scour depths, as provided from Stantec.

Lateral loading can be evaluated with computer software such as LPILE. This software will evaluate pile head deflections for different pile lengths and lateral loads (to be provided by others). Also, bending moments and shear force with depth can be evaluated.

Seismicity and Seismic Hazards

Evaluation of seismic design parameters will be provided including site classification and peak ground acceleration. Seismic hazards including soil liquefaction and lateral spread will also be evaluated. If seismic hazards are encountered, mitigation construction options will be discussed.

Roadway Analysis & Recommendations

Roadway embankments may overlie weak and compressible soils located north of the Carson River. Analysis will evaluate bearing or rotational failure and settlement in these sediments. Recommendations to reinforce embankment fills including the use of geogrids, or other methods to reduce potential bearing failure and excessive horizontal deformations will be provided. Construction recommendations to stabilize subgrade soils will also be provided, if required.

Cut and fill slope gradients recommendations will be provided as well as erosional considerations. Where required in steep side slope areas, construction benching and drainage recommendations will be provided.
An important aspect of this investigation is to determine available structural fill material in anticipated cut areas and the best use of this material in the embankment areas. Also, the determination of potentially detrimental materials such as expansive clays or bedrock and removal of these materials will be an important aspect.

As with past projects with Stantec, it is assumed that Stantec will complete the structural pavement section design based on subgrade soil design resilient modulus provided by this investigation.

Geotechnical Investigation Report

Upon completion of our field, laboratory and office studies, a geotechnical investigation report will be completed for the project and will include the following:

- Description of project site with the approximate locations of our explorations, shown on a Site Plan;
- Log of Test Borings (LOTB);
- Descriptive logs of the explorations performed for this study;
- Summary of geologic setting and soil profile and bedrock descriptions;
- Results of laboratory tests and a description of test methods;
- Soil corrosion potential for steel and concrete;
- Seismic hazards including site seismicity and parameters for design;
- Seismic analysis results including peak ground acceleration and soil liquefaction potential; if soil liquefaction is detrimental to the project and design level mitigation procedures are warranted, an additional scope and fee will be provided;
- Anticipated groundwater depths and effect on construction;
- Types of suitable foundations;
- Allowable bearing pressures including sliding friction values and active and passive pressures;
- Recommended type of deep foundation including axial compression, tension, and lateral capacities;
- Anticipated total and differential settlements for both embankments and foundations.
- Lateral soil pressures including static and dynamic values for bridge wingwall design;

- Site preparation and grading including: o Stripping and grubbing requirements to remove organics;
- Foundation soils preparation;
- Recommendations for embankment construction and material types;
- Excavation difficulties in bedrock;
- Subgrade soil stabilization alternatives including rock fill or geogrids and stabilizing fill;
- Cut and fill slope gradients;
- Embankment fill recommendations and available cut material soil types;
- Suitability of site soils for use as structural fill and trench backfill; and
- Anticipated construction difficulties.

Task 4: Determination of Planning/Impact Area for Assessment

Overview

The law requires that assessments, levied pursuant to the provisions of the "Consolidated Local Improvement Law" under chapter 271 of the Nevada Revised Statues (NRS), specifically (271.275 NRS), must be based on the benefit that the properties receive from the works of improvements. The law does not specify the method or formula that should be used in any special assessment district proceeding. The responsibility rests with the Assessment Engineer, who may be appointed for making an analysis of the facts and determining the correct apportionment of the assessment obligation.

A "district" is initiated pursuant to the alternative procedure for local improvements (NRS 271.700 – 271.730). The Assessment Engineer prepares and files with the county Clerk the Engineer's Report which describes the improvements, provides the assessment made upon all benefiting properties within the District proportional to the benefits received in accordance with the method of assessment described within the report. The County must make the final action in determining whether the assessment spread has been made in direct proportion to the benefits received by each parcel within the district.

Benefit Determination

The proposed improvements will benefit all parcels located within the boundaries of the district. The backbone infrastructure improvements will create access to the properties with the roads and enhance development which could include utilities, storm drain facilities, sanitary sewage collection, landscaping, reclamation water for irrigation and water system improvements. Properties which continue to remain undeveloped will also benefit from the construction of the proposed bridge and roadway improvements because they will have a portion of their development requirements satisfied when they develop in the future.

To successfully complete this task, we will require the existing spatial data for approved, unbuilt and proposed development within the geographic area of the proposed bridge structure. We will also require a portion of the Lyon County Assessor's parcel base and zoning information in a geospatial form from Lyon County. We assume Vidler has some of this information and will assist Stantec with obtaining the Lyon County parcel base data from them. Stantec will incorporate the relevant spatial layers into a single ArcGIS geodatabase to analyze the future build-out scenario of properties within the "benefit" area of the proposed bridge.

Area of Benefit

The benefit area for the public improvements to be financed in the district will be defined as portions of the district. We will work closely with the Client and Lyon County staff to reach agreement on the proposed benefit area. Once determined, all subsequent analysis and mapping will reflect this geography. Stantec can develop up to three (3) build-out scenarios based on low-medium-high assumptions of total development per vacant parcel. We will also project estimates of total construction of residential units and other land uses in 5-year increments. Stantec will work closely the State Demographer and Regional Planning staff to ensure our estimates of annual absorption correspond to overall growth rates and reflect the most up to date market trends.

Method of Assessment

For purposes of this proposal we have assumed the project components for this design effort will be financed by a special district. The cost does not include the efforts to establish the district legally; that will be covered under a separate scope of work. But Stantec will work collaboratively with the County, Client and affected agencies and property owners to discuss alternatives for an anticipated method of spreading the cost (basis for assessment) of these project components.

Task 4 assumes attendance at five (5) meetings with Client and Lyon County to develop and agree upon the benefit area for planning purposes and the build-out scenarios for cost-sharing purposes.

Task 5: Traffic Report

Stantec will prepare a traffic study meeting the requirements of Lyon County and CAMPO for the proposed bridge structure. With the determination of the Planning/Impact area traffic, we will project the traffic based on existing and future development within the area. Stantec will perform a traffic impact and operations analysis for the existing condition and a build out condition. These projections will be provided to CAMPO to run in the regional travel demand model to provide existing and future traffic ADT's (average daily traffic) volumes for the 20-year horizon and our use in determining road and bridge capacity design geometrics for the approximate three-mile roadway. It is also anticipated that operational analysis and intersection geometric recommendation will be required at the roadway tie-in to US 50. The deliverable will be a traffic report in support of the project design.

Stantec will develop the traffic data required for pavement design. This task will include collection of traffic data and development of new/additional traffic data needed to estimate the future 18-kip ESAL applications that will be required for pavement design. It is assumed that all the information on average daily traffic (current and future), truck percentages and truck factors will be available from CAMPO and/or the Nevada DOT traffic records. The deliverable will be a traffic report in support of the project design.

Task 6: Drainage Analysis

Drainage analyses will be prepared to support the roadway improvement and Carson River bridge crossing design. The analyses will be prepared to verify that the proposed improvements do not impact the Federal Emergency Management Agency (FEMA) floodplain/floodway or adjacent properties and will provide the technical backup for the Drainage Report for submittal to Lyon County and the Nevada Department of Transportation (NDOT). The analyses will also provide technical backup for the Conditional

Letter of Map Revision (CLOMR) application for submittal to FEMA for development within the regulatory floodplain and floodway.

Drainage analysis will be performed for the selected alignment as described below:

Coordination, Meetings and Site Visit

1. Coordinate with Vidler Water Company, Lyon County, the Carson Water Subconservancy District and FEMA through the drainage analysis and design and review process.
2. Attend one (1) meeting with Lyon County and two (2) meetings with the Carson Water Subconservancy District.
3. Conduct a field observation of the selected alignment.

Hydrologic Analyses

1. Develop preliminary onsite watershed basins and compute peak flow rates at key concentration points for the 5-year and 100-year events for the roadway and associated drainage conveyance improvements. The peak flow rates will be calculated using the Rational Method.
2. The FEMA Flood Insurance Study (FIS) for Lyon County, Nevada and Incorporated Areas, dated October 20, 2016 contains Carson River peak flow rates for the 10-year, 50-year, 100-year and 500-year events near Dayton, Nevada. The FEMA effective HEC-1 hydrologic model will be obtained from Lyon County, converted to HEC-HMS and updated to develop the 25-year peak flow rate of the Carson River near Dayton.
3. Prepare a proposed condition HEC-HMS model to include the road and bridge improvements and determine the increase in peak flow rate to the Carson River.
4. Should Lyon County be unable to produce the FEMA effective HEC-HMS hydrologic model, Stantec will attempt to obtain the model from FEMA. FEMA imposed research fees are not included in this scope of work.

Hydraulic Analyses

1. Obtain the FEMA effective HEC-RAS model of the Carson River from Lyon County.
2. Create a duplicate effective HEC-RAS model and modify to include the 10-year, 25-year and 50-year events.
3. Create a corrected effective HEC-RAS model of existing conditions, if required.
4. Create a revised (post project) effective HEC-RAS model of the proposed bridge and roadway improvements to verify there are no impacts to the 10-year, 25-year, 50-year, 100-year and 500-year event water surface elevations or floodway.
5. Coordinate with the bridge design engineer for bridge elevation and span lengths.
6. Develop preliminary flood control improvements utilizing manning's equations for the following:
   a. Drainage inlet and storm drain structures sizes and locations;
   b. Culvert sizes and locations for localized drainage and roadway runoff;
   c. Minor channelization to convey roadway runoff and localized drainage into existing ditches or flow patterns;
   d. Low Impact Development (LID) improvements to mitigate the increase in imperviousness and to provide water quality improvements. It is assumed separate detention basin improvements will not be required to mitigate the increase in imperviousness.

e. Detailed hydraulic analyses of roadway improvements, such as StormCAD or HEC-RAS are not included in this scope of work.

Scour Analysis

1. A preliminary scour analysis, in accordance with the Nevada Department of Transportation (NDOT) Drainage Manual (latest edition), will be prepared for Carson River bridge for the 100-year and 500-year events. Two conditions, with and without the Bridge, will be evaluated and the condition resulting in the deepest scour depth will be used for the preliminary design of the bridge foundation.
2. One iteration of bridge configuration scour analyses is included in this scope of work. Should additional iterations be required, Stantec can provide these services on a time and expense basis.

Document Preparation

1. Prepare a Floodplain Development Permit for submittal to Lyon County.
2. Prepare a Technical Drainage Report for submittal to Lyon County.
3. Prepare an Encroachment Permit for submittal to NDOT
4. Prepare a request for CLOMR and Annotated FIRM for submittal to FEMA.
5. Prepare a Floodway Public Notice for publication or for distribution to affected property owners.

Deliverables

Floodplain Development Permit Application – 4 hard copies, 1 digital .pdf copy
Technical Drainage Report – 7 hard copies, 1 digital .pdf copy
NDOT Encroachment Permit Application – 4 hard copies, 1 digital .pdf copy
Request for CLOMR - 4 hard copies, 1 digital .pdf copy

Task 7: Roadway Engineering and Design (Excludes Bridge)

Stantec will perform the engineering and related services in support of the secondary access Roadway and Bridge Project in Dayton Valley, Lyon County, Nevada. Stantec's roadway engineering scope of services includes preparing design calculations for the alignment, pavement design, placing drainage improvements along the roadway and developing plan sheets, quantity calculations, and notes to specifications for the construction of the roadway. These deliverables will be part of the construction contract documents.

Stantec will work with Vidler, Lyon County and/or NDOT to develop the basic cross section for the roadway traveled way. Based on the geotechnical investigation and traffic forecast Stantec will develop the ultimate structural section for the roadway, design speed and geometrics associated with the design speed. These assumptions will be in the basis of design memo for the project.

Preliminary Design Documents - Roadway

The roadway starts at the intersection of Fort Churchill Road/Chaves Road intersection and proceeds southerly to the proposed bridge location. With the bridge elevation the roadway profile will need to build up the approaches on both ends. Once south of the river the first 2,000 feet of alignment will require adjustments to fit the terrain, closer to the river and may require some balancing of cuts\sloped embankments and retaining walls for the roadway width. Once past the hilly terrain the alignment is

relatively flat all the way to Dayton Valley Road/Bullion Road intersection. Vidler will be part of the alignment decisions to assure the chosen alignment does not hinder development potential of your parcels.

Using the basis of design information and topographic information Stantec will prepare preliminary roadway plans (approximately 30% complete) of the selected alignment. Roadway plans will be designed in accordance with design criteria developed in the basis of design memo and in accordance with Lyon County, AASHTO, State and MUTCD Criteria. The preliminary plans will be on 22" x 34" sheets and will show all elements of the project construction, including plan/profile view, right-of-way lines, sections of improvement, drainage, and construction/slope limits.

The preliminary plan set will include, as a minimum, the following in various stages of development:

- Cover Sheet. (1)
- Notes, Abbreviations and Legend sheet (1)
- Sections of Improvement (1)
- Plan/Profile Sheets (at 1"=20’ scale) (14)
- Horizontal Control/Right of Way Sheets (6)
- Intersection Layout Plan Sheets (at 1"=40' scale) (3)
- Bridge Approach Sheets (at 1” =20’ scale) (2)
- Striping/Signing Plan Sheets (at 1"=40') (5)
- Roadway Storm Drain Plans. (3)
- Detailed Wetland Mitigation Plan
- Pavement Design Report
- Hydraulics Report for Roadway Drainage

Plans, along with other design documents will be submitted to Vidler, Lyon County and/or NDOT for review (Reviewers). After review of the preliminary plans, Stantec will perform a field review of the plans with a site walk through.

60% Design Documents – Roadway

Based on the approvals from the preliminary design phase Stantec incorporate Reviewer’s comments as applicable and will advance the roadway project design elements into 60% design documents. Roadway plans, preliminary specifications and updated Opinion of Probable cost will be provided.

100% Design Documents – Roadway

In general, Stantec will incorporate reviewers 60% review comments, as applicable, and complete 100% construction drawings for the roadway. Stantec will submit completed details and checked plan sheets to allow Reviewers to review and provide final comments. We will also develop a final list of construction contract pay items, calculate final estimated pay quantities, and prepare final notes to specifications for Vidler’s or Lyon County’s use in finalizing the project draft Special Provisions.

Roadway Final Design Documents

The final construction plans will be on 22" x 34" size sheets and will show all elements of the project construction, including plan/profile view, right-of-way lines and construction/slope limits (if applicable), , project phasing, pavement design, traffic plans for the three (3) intersections, striping and signing plans, and construction details. The final plan set will include approximately ±91 sheets as follows:

- Cover Sheet (1)
- Notes, Legend, Sheet Index, Abbreviations (1)
- Section of Improvement Sheets (1)
- Right of Way and Horizontal Control (6)
- Project Phasing (4) if required
- Key Sheet (1)
- Plan/Profile Sheets (14 at 1"=40' scale)
- Intersection Layout Plan Sheets (3 at 1"=20’ scale)
- Bridge approach Sheets (1” = 20’) (2)
- Striping and Signing Plan Sheets (7 at 1"=40', 2400’/sht.)
- Roadway drainage Plans (2)
- Detail Sheets (5) (scales as noted).
- Wetlands Mitigation Sheets (3)
- *Bridge Sheets (41+) described below*

The Contract Documents and Technical Specifications will reference the latest edition of Standard Specifications for Public Works Construction (Orange Book) for standard construction items. Technical provisions will be prepared for approved deviations from the Orange Book and unique construction items not adequately covered in the Orange Book. The final plans and specifications will be signed and sealed by a Nevada Registered Professional Civil Engineer in responsible charge of preparation. Plans and specifications will be submitted to the Vidler, Lyon County and /or NDOT and other affected parties for review at completion.

Independent Checker. An independent checker will check, initial and date each plan sheet. A quality control review of the plans, contract documents and technical specifications will be performed which will focus on technical aspects of the plans and specifications and will ensure that all items of work are adequately covered. Included as well is a Peer Review of the final product by senior personnel not associated with the design aspects of the project.

Task 8: Bridge Selection Report/Design Drawings

Stantec shall perform engineering and related services in support of the secondary access road and bridge. Stantec’s structural scope of services includes preparing design calculations and developing plan sheets, quantity calculations, and notes to specifications for the construction of the bridge. These deliverables will be part of the construction contract documents.

The bridge is assumed to be a multi-span structure over the Carson River flood plain. The bridge is expected to be a skewed crossing, aligned in a general north-south orientation over the flood plain as an extension of Chaves Road. The length of bridge is unknow at this time, but is planned to be in the range

of 350 to 550 feet long. The foundation recommendations necessary for the bridge design are part of the geotechnical investigation report and hydraulic requirements are part of the drainage/hydrologic Report.

The bridge will be designed under the direction of licensed civil engineer(s), registered in the State of Nevada. All drawings and Specification Notes will be sealed and signed by the same engineer(s). Design criteria for the bridge shall be in accordance the applicable sections of the following codes and guidelines:

- (AASHTO) LRFD Bridge Design Specifications, 8th Edition, 2017
- NDOT Structures Manual, 2008
- Lyon County Nevada Standards (as applicable to bridge design)
- Live load shall be HL-93, design tandem, and overload provisions for a P13 permit vehicle

Preliminary Design Documents - Bridge

Structure Data Collection
Stantec shall obtain the structure site data. Applicable data shall be collected: concept level typical roadway section; roadway plan and profile, planimetric (topography) data, utilities, and right-of-way restrictions. In conjunction with the preliminary plan assessment, Stantec will work with Vidler, Lyon County and/or NDOT Structures Division (Reviewers) to develop the project-specific criteria to be used to design the structure.

Structure Selection and Layout
Review the structure site data to determine the requirements that will control the structure size, layout, type, and span configuration. On a continuing basis, provide support data and recommendations as necessary to finalize the structure site data. Determine the structure layout alternatives. Determine the structure length, width, and span configurations that satisfy all horizontal and vertical clearance criteria.

Determine the structure type alternatives. Consider (1) steel girder and (2) cast-in-place concrete superstructures and determine the spans and depths for each.

Determine the foundation alternatives. Consider piles, caissons, spread footings, and reinforced earth foundations based on geology information from existing structures in the area and early estimates from the project geologist. Obtain supporting information, initiate the foundation investigation as early as possible during the preliminary design phase.

Compute preliminary quantities and preliminary cost estimates as necessary to evaluate and compare the structure layout and type alternatives.

Evaluate the structure alternatives. Establish the criteria for evaluating and comparing the structure alternatives that, in addition to cost, encompass all aspects of the project's objectives. Based on these criteria, select the optimum structure layout, and type alternatives for recommendation to the reviewers.

Prepare preliminary general layout for the recommended structure. Prepare structure layouts in accordance with the NDOT Structures Manual. Special detail drawings and a preliminary cost estimate shall accompany the general layout.

Type Selection Report

Prepare a type selection report to document, and obtain approval for, the structure preliminary design. By means of the structure general plan, with supporting drawings, tables, and discussion, provide for the following:

Summarize the structure site data used to select and layout the structure which includes:

- Project site plan and contractor access
- Roadway vertical and horizontal alignments and cross sections at the structure
- Contractor local preferences and equipment for erection and construction methods
- Utilities on, below, and adjacent to the structure
- Hydraulics: Channel size and skew, design year frequency, minimum low girder elevation, design year and 500-year high water elevations, estimated design year and 500-year scour profiles, and channel scour protection
- Preliminary geology information for structure foundations & feasibility of installation
- Architectural requirements

Report on the structure selection and layout process which includes:

- Discuss the structure layout, type, and rehabilitation alternatives considered.
- Define the criteria used to evaluate the structure alternatives and how the recommended structure was selected.
- Provide a detailed preliminary cost estimate and general layout of the recommended structure.

Obtain acceptance from the Reviewers on the recommended structure and its layout. Allow approximately two weeks for review of the structure selection report. The associated general layout, with the revisions required by the reviewers, will be included in the 60% plans. The work schedule shall be planned accordingly. The structure selection report, with the associated general layout, must be accepted in writing by the reviewers prior to the commencement of further design activities.

Geotechnical Investigation Request

Initiate the foundation investigation as early in the preliminary design phase as is practical. On plan sheets showing the project control line, its stations, and coordinates, as well as any utilities, identify the test holes needed and submit them to the geotechnical engineer.

Preliminary Design Deliverables

Type Selection Report (draft and final) to include General Plan, Elevation and Opinion of Probable Cost.

60% Design Documents

Following Vidler, Lyon County and/or NDOT's acceptance of the Type Selection Report, Stantec will proceed with the 60% design and prepare intermediate construction plans. Stantec will submit intermediate plan sheets to allow reviewers to monitor progress, review and provide comments as the design develops. For planning and budgeting purposes, the anticipated construction plan sheet list shown in the following table assumes a 4-span, constant depth, post-tensioned, cast-in-place box-girder bridge supported on pile foundations on a tangent alignment. The geotechnical engineer (Task 3) shall prepare the log of test borings sheets, which are not included in this list.

Table 8.1: Anticipated Bridge Sheet List

General Plan and Elevation	B1
Typical Section and General Notes	B2
Geometrics and Quantities	B3
Abutment No.1 Foundation and Section	B4
Abutment No.1 Plan and Elevation	B5
Abutment No.2 Foundation and Section	B6
Abutment No.2 Plan and Elevation	B7
Abutment Shear Key Details	B8
Abutment Details	B9
Wingwall No.1 Details	B10
Wingwall No.2 Details	B11
Wingwall No.3 Details	B12
Wingwall No.4 Details	B13
Bearing Pad Plan and Elevation	B14
Bearing Pad Details	B15
Pier No.1 and No.3 Foundation and Column Details	B16
Pier No.2 Foundation and Column Details	B17
Pier Column Isolation Details	B18
Pier No.1 and No.3 Cap Plan and Elevation	B19
Pier No.2 Cap Plan and Elevation	B20
Pier Cap Sections	B21
Typical Deck Section	B22
Bottom Slab and Web Reinforcing No.1	B23
Bottom Slab and Web Reinforcing No.2	B24
Top Deck Reinforcing No.1	B25
Top Deck Reinforcing No.2	B26
Exterior Girder Elevation and Stirrup Spacing	B27
Interior Girder Elevation and Stirrup Spacing	B28
End Diaphragm Details	B29
Girder Prestressing and Camber Diagram	B30
P/S Notes, Concrete Pouring and Concrete Class	B31
Approach Slabs	B32
Approach Slab Details	B33
Bridge Rail Details No.1	B34
Bridge Rail Details No.2	B35
Strip Seal Expansion Joint Details	B36
Bent Bar Details No. 1	B37
Bent Bar Details No. 2	B38
Bill of Materials No.1	B39
Bill of Materials No.2	B40
Architectural Treatment	B41

Stantec will develop a list of anticipated construction contract pay items, calculate preliminary estimated pay quantities, and prepare preliminary notes to specifications for Vidler's and Lyon County's use in developing the project Special Provisions.

Deliverables

Preliminary contract item list (one set)
Preliminary construction plans (one 11x17 copy, one electronic PDF file)
Preliminary Notes to specifications (one set)
Preliminary Quantity calculations (one set)

100% Bridge Design

Stantec will submit completed details and checked plan sheets to allow Reviewers to review and provide final comments. Stantec will submit structure plan sets to Reviewers for review and comment at 100 percent complete. We will develop a final list of construction contract pay items, calculate final estimated pay quantities, and prepare final notes to specifications for Vidler's or Lyon County's use in finalizing the project draft Special Provisions. We will prepare load rating calculations for the proposed structure and submit the Load Rating Report and Load Rating Summary for review. Load rating shall be calculated by the Load and Resistance Factor Rating (LRFR) Method in accordance with the AASHTO Manual for Bridge Evaluation, 3rd Edition 2018. Load rating methodology, software and deliverables shall adhere to applicable portions of Section 28.3 of the 2008 NDOT Structures Manual.

Stantec will provide an Independent Design Check of the structure as a part of our QA/QC plan for major structures. The Independent Design Engineer shall be provided a complete set of 100% construction plans without any supporting calculations from the structural design engineer. Through the independent design check, a second set of calculations will be produced to support/confirm all appropriate design details and information shown in the plans, including, but not limited to, the following:

- Design criteria
- Geometry
- All structural elements that support load
- Devices that accommodate structure movements
- Quantities and cost estimate
- Specification Notes and/or other special provisions

Deliverables

100% contract item list (one set)
100% construction plans (one 11x17 copies, one electronic PDF file)
Final Notes to specifications
100% Load Rating Report and Load Rating Summary (one set)
Independent Design Check results and resolutions

Bridge Final Design

Stantec will incorporate Reviewers 100% review comments and provide final construction drawings for the bridge. Plan sheets will be completed; and final, ready for advertising. Final plans and calculations will be stamped and signed by the responsible engineer registered in the State of Nevada.

Stantec will submit final construction contract pay items and final pay quantities. Stantec will review Vidler and Lyon County's draft Special Provisions for consistency with the details included in the bridge plans.

Stantec will submit the final Load Rating Report, Load Rating Summary, supporting calculations and applicable electronic deliverables. The Load Rating Report will be stamped and signed by the responsible engineer registered in the State of Nevada.

Deliverables

Final contract item list
Final construction plans (two 11x17 copies, one electronic PDF file)
Electronic drawing files in MicroStation V8i
Specification review comments
Quantity calculations (one set)
Structural calculations (one set)
Independent check calculations (one set)
Final Load Rating Report, Load Rating Summary, supporting calculations and applicable electronic files (one set)

Task 9: USACE Permitting (RedHorse)

Currently there are three locations under consideration. A review of the proposed alignments indicate that each site has around 0.5 acre of impacts to waters of the U.S. and will require authorization from the U.S. Army Corps of Engineers (USACE) pursuant to the Section 404 of the Clean Water Act. To that end, Redhorse will prepare a complete application package for submission to the USACE and continue working with the USACE throughout the permit process until a permit decision is made. The specific tasks are described below.

Field Studies

Once the location of the bridge is finalized, field studies will commence. The results of the following field studies will be included as a part of the permit application package.

Cultural Resource Inventory - Redhorse's cultural contractor, Kautz Environmental Consultants, Inc. (KEC), will conduct Class III pedestrian survey that meets the Nevada State Historic Preservation office and USACE requirements. KEC will document all identified sites; prepare a report evaluating sites for the National Register; and assess potential effects on eligible or potentially eligible resources.

Aquatic Resources Delineation - The field study methods will follow current technical manuals for wetland and Ordinary High-Water Mark (OHWM) delineations. The report will meet the USACE Sacramento District's minimum standards for preparing aquatic resources delineation reports.

Threatened and Endangered Species Survey – The survey will be conducted concurrent with the delineation field work. Redhorse expects the project area to lack suitable habitat for species listed as threatened and endangered under the Federal Endangered Species Act. To formally ascertain if potential exists for Federally-listed species, Redhorse will request a species list through the U.S. Fish and Wildlife

and contact the Nevada Natural Heritage Program to obtain known occurrences of sensitive species. A short technical memorandum will be prepared documenting survey methods and findings.

Pre-Application Coordination

With engineering technical support from Stantec, Redhorse will meet with the USACE twice. The purpose of the first meeting is to understand USACE's recommended criteria for site selection and discuss opportunities to minimize impacts to waters of the U.S. so that the project can qualify for a Nationwide Permit (4-month permit processing.) The second meeting will be a formal pre-application meeting with invited resource/regulatory agencies and Native American Tribes. Topics to be discussed at the pre-application meeting include:

- Type of permit (i.e. Nationwide Permit or Individual Permit)
- Timelines for submittal of an application and agency approvals
- Issues and concerns
- Environmental protection measures and design features recommended by regulatory/resource agencies and Tribes

Redhorse will be responsible for presenting the project and developing meeting materials. If requested by the USACE, Redhorse will coordinate a field visit to the project site.

Revegetation Plan

Redhorse's revegetation subcontractor, Western Botanical Services, Inc. (WBS), will assess the project area for successful revegetation potential. A technical memorandum will be prepared documenting survey methods, findings, and design recommendations (Existing Conditions Report). In coordination with Stantec to ensure it is consistent with the civil design, WBS will develop a conceptual revegetation plan which Redhorse will present to the USACE during pre-application coordination. The conceptual revegetation plan will address establishing riparian species and site stabilization with an emphasis on biotechnical methods, as appropriate. Specifications will address slope stabilization, access routes, staging areas, and stockpiles, as necessary. WBS' approach emphasizes the re-use of on-site materials, reduction of imported materials, and low maintenance solutions. For the permit application package, the revegetation plan will include details regarding species diversity and density, planting methods, performance criteria, and monitoring methods.

Following Stantec's development of the grading and improvement plans, WBS will be responsible for 60%, 90% and 100% deliverables consisting of revegetation and erosion control specifications and engineers estimates.

Nationwide Permit Application

Redhorse assumes the project can qualify for a Nationwide Permit, which is used to authorize routine, minimal impact projects that impact less than 0.5 acres of waters of the U.S. Redhorse will prepare a complete application package consisting of a signed application form; aquatic resources delineation report cultural resources inventory report; a riparian revegetation plan; and supplemental narratives addressing compliance with Clean Water Act Section 404(b)(1), impacts to Federally-listed threatened and endangered species, and methods to protect water quality during construction. Redhorse will be

responsible for follow-up coordination with the USACE to track the progress of permit processing. It is Redhorse's goal to obtain a permit decision within 4 months of submittal of a complete application.

Optional Task 5 Individual Permit Application

Should the USACE determine the project requires an individual permit, the labor hours up to 60 labor hours will be added to address public comments; develop supplemental information that may be requested by the USACE; and coordination with USACE to ensure the agency stays focused on processing the permit application have been included in our proposed fee. If the USACE determines a nationwide permit will suffice we will not need to complete optional Task 5. Redhorse will strive to obtain a permit decision within 9 months of submittal of a complete application.

Deliverables

Section 404 Clean Water Act Application package.
Application for "Request for 401 Water Quality Certification" suitable for submission to NDEP Bureau of Water Quality Planning.
Revegetation and erosion control specifications and engineer's estimates the 60%, 90% and 100% design.

Assumptions

1. Attendance at two office meetings and one field meeting with the USACE.
2. The area of survey for cultural resources is 20 acres and assumes one site will be recorded.
3. A Historic Properties Treatment Plan is not included because adverse effects to a site eligible for National Register of Historic Places is not anticipated.
4. Assumes a Revegetation Plan (for replacement of cottonwoods and willows) can be provided in lieu of a more detailed Final Wetland Mitigation and Monitoring Proposal.
5. Should an individual permit be required, the $100 permit application fee is included. Fees for other potential permit applications are not included.

Schedule

Redhorse will start work within two weeks of execution of a contract. Permitting timeline will be dependent on the progress of the civil engineering plans. If the project qualifies for a Nationwide Permit, anticipate 4 months from completion of the 60% design. For an Individual Permit, anticipate 9 months from completion of the 60% design. (The USACE may allow earlier submission of the application.)

Task 10: Design Coordination and Project Management

Stantec assigned a project manager and assistant project manager to ensure the design efforts are managed and the schedule is maintained. This task requires internal supervision and coordination with external agencies and Client. Anticipated work activities include:

- Project Coordination/Management;
- Coordination meetings: assume fifteen (15) 2.5-hour progress meetings with the Vidler/Local agencies (includes travel time);
- Supervise execution of work and coordinate work between disciplines;
- Coordinate quality control reviews of project activities, deliverables, and reports;

- Monitor Subconsultant activities;
- Prepare and update project schedule and monitor progress;
- Review invoices and prepare monthly progress reports; and
- Utility Agency Coordination. Coordinate with all utility agencies for upcoming work, facility relocation and new installation.

PROPOSED FEES

Task 1	Preliminary Design Memorandum	$9,500
Task 2	Roadway Topographic Survey	$29,500
Task 3	Geotechnical Investigation (CME, Inc.)	$79,900
Task 4	Determination of Planning/Impact Area	$22,000
Task 5	Traffic Report	$32,100
Task 6	Drainage Analysis	$145,500
Task 7	Roadway Engineering and Design	$240,000
Task 8:	Bridge Selection Report/Design Drawings	$295,000
Task 9	USACE Permitting (Redhorse)	$59,200
Task 10	Design Coordination and Project Management	$45,600
	Subtotal	$958,300
	Reproducible expenses	$1,000
	TOTAL.	$959,300

Stantec appreciates the opportunity to be of assistance on this important project. Should you find this proposal agreeable, we will provide our Professional Services Agreement. Upon receipt of your written authorization, we will proceed with our services in accordance with the terms and conditions of the agreement. Please do not hesitate to call should you need additional information or have any questions.

Regards,

Stantec Consulting Services Inc.

John J. Welsh, PE
Managing Principal

Phone: (775) 398-1215
john.welsh@stantec.com

Appendix B
Carson River Bridge and Chaves Road - Preliminary Engineering
Preliminary Design Fee Estimate

		Greg Lyman, P.E. Principal	Project Manager Keith Karpstein, P.E.	Project Designer EIT	Senior Engineer - Environmental Oversight	Environmental Analyst	Surveyor, Jason Caster, PLS	2 Man Survey Crew	Survey Technician	Sr. Admin	Total Labor		Subconsultant	Mark-Up [15%]	TOTAL
TASKS	**Rate ($/hr)**	$160	$152	$95	$142	$95	$130	$170	$90	$90	Hours	($)	($)	($)	($)
1.0	**Project Management**														
1.1	Project Management & Administration	8	40								48	$7,360			$7,360
1.2	Scheduling	4	12								16	$2,464			$2,464
1.3	Initial Project Meeting	4	4								8	$1,248			$1,248
1.4	Client Meetings/phone calls	16	40								56	$8,640			$8,640
1.5	Monthly invoicing		8							12	20	$2,296			$2,296
	Subtotal	**32**	**104**							**12**	**148**	**$22,008**			**$22,008**
2.0	**Preliminary Engineering**														
2.1	Review existing drainage maps and studies		4	16							20	$2,128			$2,128
2.2	Review existing LC traffic master plan		2	4							6	$684			$684
2.3	Prepare project design criteria	1	2	4							7	$844			$844
2.4	Establish roadway centerline alignment	2	8	60							70	$7,236			$7,236
2.5	Complete preliminary geotechnical investigation												$70,000	$10,500	$80,500
2.6	Establish roadway profile and earthwork quantities	4	24	80							108	$11,888			$11,888
2.7	Complete traffic study and intersection analysis												$30,000	$4,500	$34,500
2.8	Complete preliminary hydrologic and hydraulic analysis	8	32	60							100	$11,844			$11,844
2.9	Prepare Bridge Type Selection Report												$10,000	$1,500	$11,500
2.10	Prepare preliminary bridge plans												$15,000	$2,250	$17,250
2.11	Preliminary bridge hydraulics design												$10,000	$1,500	$11,500
2.12	Prepare plan and profile sheets (15% design)	4	12	60							76	$8,164			$8,164
2.13	Prepare intersection alternative layout sheets	4	16	40							60	$6,872			$6,872
2.14	Develop Engineer's Opinion of Probable Costs	2	8	60							70	$7,236			$7,236
2.15	Develop Benefit-Cost Analysis	8	40	80							128	$14,960			$14,960
2.16	Supplemental topo survey at roadway tie-in locations						18	36			54	$8,460			$8,460
2.17	Aerial survey and mapping						8	27			35	$5,630	$13,500	$2,025	$21,155
	Subtotal	**33**	**142**	**444**			**26**	**63**			**708**	**$85,946**	**$148,500**	**$22,275**	**$256,721**
3.0	**Preliminary Environmental**														
3.1	Review preliminary roadway design					2					2	$190			$190
3.2	Waters of US and wetland delineation												$35,300	$5,295	$40,595
3.3	Impact summary and mitigation strategies												$1,700	$255	$1,955
3.4	Additional NEPA resource review and summary				4	16					20	$2,088			$2,088
3.5	USACE coordination - delination approval				1	4					5	$522			$522
3.6	Establish control and stake centerline						12	45			57	$9,210			$9,210
3.7	Cultural and historic resources report												$17,330	$2,600	$19,930
3.8	Additional meetings and environmental studies per FHWA requirements				8	16					24	$2,656	$10,000	$1,500	$14,156
	Subtotal				**8**	**16**					**24**	**$14,666**	**$64,330**	**$9,650**	**$88,646**
4.0	**2020 BUILD Grant Application**														
4.1	Review NOFO	1	4							4	9	$1,128			$1,128
4.2	Prepare BUILD grant application document	10	32							80	122	$13,664			$13,664
4.3	QA/QC	8	16								24	$3,712			$3,712
	Subtotal	**19**	**52**							**84**	**155**	**$18,504**			**$18,504**
	Totals Without Contingency	**84**	**298**	**444**	**8**	**16**	**26**	**63**		**96**	**1035**	**$ 141,124**	**$ 212,830**	**$ 31,925**	**$ 385,879**
													Grand Total		**$385,879**

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
16.d

Subject:
For Possible Action: To discuss and provide direction to the County Manager in regards to developing a Bill Draft Resolution (BDR) for the 2023 Legislature, which may include: discussion on possible topics for a BDR; direction to staff to research and come back with information related to a possible BDR; and input from the public on possible topics for a BDR. The Board may direct staff to prepare a resolution and bring back to the Board for further consideration. (Requested by Commissioner Henderson)

Summary:
Commissioner Henderson requested this item at the January 20, 2022 BOCC meeting in Dayton. Lyon County is authorized 1 Bill Draft Resolution per regular session of the Legislature.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:

ATTACHMENTS

-

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
17.a

Subject:
For Possible Action: (A) Execution of "Subdivision Settlement Participation Forms" and releases pursuant to the One Nevada Agreement on Allocation of Opioid Recoveries ("One Nevada Agreement") previously agreed upon for participation in settlements with (1) the State of Nevada and opioids distributor defendants AmerisourceBergen Drug Corporation, Cardinal Health, and McKesson as listed in Exhibit C to the One Nevada Agreement, and (2) the State of Nevada and opioid manufacturer defendant Janssen/Johnson & Johnson as listed in Exhibit C to the One Nevada Agreement; and (B) Execution of an "Amendment No. 1 to One Nevada Agreement on Allocation of Opioid Recoveries" regarding a reduction in attorney's fees to the One Nevada Agreement for purposes of these two settlements only.

Summary:
The Nevada Attorney General has reached out to the counties involved in the Opioid lawsuit to get an amendment to the agreement to allow the State of Nevada and the counties to settle a portion of the claims related to the opioid lawsuit filed by Lyon County. Several counties, cities and other entities have agreed to the Nevada One Agreement in regards to the opioid lawsuits filed by the several entities. This amends the Agreement to allow for the settlement as provided therein.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:

Recommendation:
Approve Amendment No. 1 to One Nevada Agreement on Allocation of Opioid Recoveries and approve the State of Nevada and opioids distributor defendants AmerisourceBergen Drug Corporation, Cardinal Health, and McKesson and the State of Nevada and opioid manufacturer defendant Janssen/Johnson & Johnson.

ATTACHMENTS
- - Participation Form and Release for Janssen-J&J Agreement (Final)
- - Participation Form and Release for Distributor Agreement (Final)
- - Amendment to One Nevada Agreement (Final)

Exhibit B

Settlement Participation Form

Governmental Entity:	Lyon County	State: NV
Authorized Official:	Ken Gray	
Address 1:	27 S. Main Street	
Address 2:		
City, State, Zip:	Yerington, NV 89447	
Phone:	(775)463-6531	
Email:	elopez@lyon-county.org	

The governmental entity identified above ("Governmental Entity"), in order to obtain and in consideration for the benefits provided to the Governmental Entity pursuant to the Settlement Agreement dated July 21, 2021 (the "Global Settlement") and the Nevada Term Sheet dated January 3, 2022 (the "Nevada Term Sheet," and with the Global Settlement, the "Janssen Settlement"), and acting through the undersigned authorized official, hereby elects to participate in the Janssen Settlement, release all Released Claims against all Released Entities, and agrees as follows.

1. The Governmental Entity is aware of and has reviewed the Janssen Settlement, understands that all terms in this Election and Release have the meanings defined therein, and agrees that by this Election, the Governmental Entity elects to participate in the Janssen Settlement and become a Participating Subdivision as provided therein.

2. The Governmental Entity shall, no later than 14 days after the Reference Date and prior to the filing of the Consent Judgment, dismiss with prejudice any Released Claims that it has filed.

3. The Governmental Entity agrees to the terms of the Janssen Settlement pertaining to Subdivisions as defined therein.

4. By agreeing to the terms of the Janssen Settlement and becoming a Releasor, the Governmental Entity is entitled to the benefits provided therein, including, if applicable, monetary payments beginning after the Effective Date.

5. The Governmental Entity agrees to use any monies it receives through the Janssen Settlement solely for the purposes provided therein.

6. The Governmental Entity submits to the jurisdiction of the court in the Governmental Entity's state where the Consent Judgment is filed for purposes limited to that court's role as provided in, and for resolving disputes to the extent provided in, the Janssen Settlement.

7. The Governmental Entity has the right to enforce the Janssen Settlement as provided therein.

8. The Governmental Entity, as a Participating Subdivision, hereby becomes a Releasor for all purposes in the Janssen Settlement, including but not limited to all provisions of Section IV

(Release) of the Global Settlement, and along with all departments, agencies, divisions, boards, commissions, districts, instrumentalities of any kind and attorneys, and any person in their official capacity elected or appointed to serve any of the foregoing and any agency, person, or other entity claiming by or through any of the foregoing, and any other entity identified in the definition of Releasor, provides for a release to the fullest extent of its authority. As a Releasor, the Governmental Entity hereby absolutely, unconditionally, and irrevocably covenants not to bring, file, or claim, or to cause, assist or permit to be brought, filed, or claimed, or to otherwise seek to establish liability for any Released Claims against any Released Entity in any forum whatsoever. The releases provided for in the Janssen Settlement are intended by the Parties to be broad and shall be interpreted so as to give the Released Entities the broadest possible bar against any liability relating in any way to Released Claims and extend to the full extent of the power of the Governmental Entity to release claims. The Janssen Settlement shall be a complete bar to any Released Claim.

9. In connection with the releases provided for in the Janssen Settlement, each Governmental Entity expressly waives, releases, and forever discharges any and all provisions, rights, and benefits conferred by any law of any state or territory of the United States or other jurisdiction, or principle of common law, which is similar, comparable, or equivalent to § 1542 of the California Civil Code, which reads:

> **General Release; extent.** A general release does not extend to claims that the creditor or releasing party does not know or suspect to exist in his or her favor at the time of executing the release that, if known by him or her, would have materially affected his or her settlement with the debtor or released party.

A Releasor may hereafter discover facts other than or different from those which it knows, believes, or assumes to be true with respect to the Released Claims, but each Governmental Entity hereby expressly waives and fully, finally, and forever settles, releases and discharges, upon the Effective Date, any and all Released Claims that may exist as of such date but which Releasors do not know or suspect to exist, whether through ignorance, oversight, error, negligence or through no fault whatsoever, and which, if known, would materially affect the Governmental Entities' decision to participate in the Janssen Settlement.

10. Nothing herein is intended to modify in any way the terms of the Janssen Settlement, to which Governmental Entity hereby agrees. To the extent this Election and Release is interpreted differently from the Janssen Settlement in any respect, the Janssen Settlement controls.

I have all necessary power and authorization to execute this Election and Release on behalf of the Governmental Entity.

Signature: _____

Name: Ken Gray

Title: Chair

Date: 2/3/2022

EXHIBIT K

Subdivision Settlement Participation Form

Governmental Entity:	Lyon County	State:	Nevada
Authorized Official:	Ken Gray		
Address 1:	27 S. Main Street		
Address 2:			
City, State, Zip:	Yerington, NV 89447		
Phone:	(775)463-6511		
Email:	elopez@lyon-county.org		

The governmental entity identified above ("*Governmental Entity*"), in order to obtain and in consideration for the benefits provided to the Governmental Entity pursuant to the Settlement Agreement dated July 21, 2021 ("*Distributor Settlement*"), and acting through the undersigned authorized official, hereby elects to participate in the Distributor Settlement, release all Released Claims against all Released Entities, and agrees as follows.

1. The Governmental Entity is aware of and has reviewed the Distributor Settlement, understands that all terms in this Participation Form have the meanings defined therein, and agrees that by signing this Participation Form, the Governmental Entity elects to participate in the Distributor Settlement and become a Participating Subdivision as provided therein.

2. The Governmental Entity shall, within 14 days of the Reference Date and prior to the filing of the Consent Judgment, secure the dismissal with prejudice of any Released Claims that it has filed.

3. The Governmental Entity agrees to the terms of the Distributor Settlement pertaining to Subdivisions as defined therein.

4. By agreeing to the terms of the Distributor Settlement and becoming a Releasor, the Governmental Entity is entitled to the benefits provided therein, including, if applicable, monetary payments beginning after the Effective Date.

5. The Governmental Entity agrees to use any monies it receives through the Distributor Settlement solely for the purposes provided therein.

6. The Governmental Entity submits to the jurisdiction of the court in the Governmental Entity's state where the Consent Judgment is filed for purposes limited to that court's role as provided in, and for resolving disputes to the extent provided in, the Distributor Settlement. The Governmental Entity likewise agrees to arbitrate before the National Arbitration Panel as provided in, and for resolving disputes to the extent otherwise provided in, the Distributor Settlement.

7. The Governmental Entity has the right to enforce the Distributor Settlement as provided therein.

8. The Governmental Entity, as a Participating Subdivision, hereby becomes a Releasor for all purposes in the Distributor Settlement, including, but not limited to, all provisions of Part XI, and along with all departments, agencies, divisions, boards, commissions, districts, instrumentalities of any kind and attorneys, and any person in their official capacity elected or appointed to serve any of the foregoing and any agency, person, or other entity claiming by or through any of the foregoing, and any other entity identified in the definition of Releasor, provides for a release to the fullest extent of its authority. As a Releasor, the Governmental Entity hereby absolutely, unconditionally, and irrevocably covenants not to bring, file, or claim, or to cause, assist or permit to be brought, filed, or claimed, or to otherwise seek to establish liability for any Released Claims against any Released Entity in any forum whatsoever. The releases provided for in the Distributor Settlement are intended by the Parties to be broad and shall be interpreted so as to give the Released Entities the broadest possible bar against any liability relating in any way to Released Claims and extend to the full extent of the power of the Governmental Entity to release claims. The Distributor Settlement shall be a complete bar to any Released Claim.

9. The Governmental Entity hereby takes on all rights and obligations of a Participating Subdivision as set forth in the Distributor Settlement.

10. In connection with the releases provided for in the Distributor Settlement, each Governmental Entity expressly waives, releases, and forever discharges any and all provisions, rights, and benefits conferred by any law of any state or territory of the United States or other jurisdiction, or principle of common law, which is similar, comparable, or equivalent to § 1542 of the California Civil Code, which reads:

> **General Release; extent.** A general release does not extend to claims that the creditor or releasing party does not know or suspect to exist in his or her favor at the time of executing the release, and that if known by him or her would have materially affected his or her settlement with the debtor or released party.

A Releasor may hereafter discover facts other than or different from those which it knows, believes, or assumes to be true with respect to the Released Claims, but each Governmental Entity hereby expressly waives and fully, finally, and forever settles, releases and discharges, upon the Effective Date, any and all Released Claims that may exist as of such date but which Releasors do not know or suspect to exist, whether through ignorance, oversight, error, negligence or through no fault whatsoever, and which, if known, would materially affect the Governmental Entities' decision to participate in the Distributor Settlement.

11. Nothing herein is intended to modify in any way the terms of the Distributor Settlement, to which Governmental Entity hereby agrees. To the extent this Participation Form is interpreted differently from the Distributor Settlement in any respect, the Distributor Settlement controls.

I have all necessary power and authorization to execute this Participation Form on behalf of the Governmental Entity.

Signature: _____

Name: Ken Gray

Title: Chairman

Date: 2/3/2022

AMENDMENT NO. 1

TO ONE NEVADA AGREEMENT ON ALLOCATION OF OPIOID RECOVERIES

Pursuant to Court Order (MDL Order 3814) governing the settlements with the AmerisourceBergen Drug Corporation ("ABDC"), Cardinal Health, McKesson, and Janssen/Johnson & Johnson Defendants listed on Exhibit C to the One Nevada Agreement, Counsel is waiving enforcement of its 25% contingency fee for each Local Government represented by Counsel under the One Nevada Agreement on Allocation of Opioid Recoveries. As such, it is necessary to amend Section B paragraph 7 of the One Nevada Agreement on Allocation of Opioid Recoveries for purposes of settlements with Defendants ABDC, Cardinal Health, McKesson, and Janssen/Johnson & Johnson only. As to the Local Governments represented by Counsel, Section B paragraph 7 of the One Nevada Agreement on Allocation of Opioid Recoveries shall be amended as follows:

7. The Settlements with Defendants ABDC, Cardinal Health, McKesson, and Janssen/Johnson & Johnson anticipate that Defendants will pay some portion of the Local Governments' attorney fees from a national fee fund, however, the national fee fund is expected to be insufficient to satisfy contracts between Local Governments and their attorneys. As such, Local Governments in the One Nevada Agreement on Allocation of Opioid Recoveries will create a supplemental attorneys' fee fund, referred to in the MDL Order as a "Backstop Fund." The Backstop Fund will be funded with 15% of each Local Government's Allocation from the One Nevada Agreement on Allocation of Opioid Recoveries from the settlements paid by ABDC, Cardinal Health, McKesson, and Janssen/Johnson & Johnson. Attorney fees from the Backstop Fund will be allocated on a pro rata basis consistent with the recovery by each Local Government. Under no circumstances may any Counsel collect more in attorney fees for its work on behalf of a Local Government than it would under its original contingency agreement with that Local Government and any excess amounts will revert back to the Local Governments that are represented by Counsel. It is understood and agreed that this Amendment: (1) applies only to the settlements with ABDC, Cardinal Health, McKesson, and Janssen/Johnson & Johnson; (2) does not change any other term of the One Nevada Agreement on Allocation of Opioid Recoveries; and (3) does not change any term of the One Nevada Agreement on Allocation of Opioid Recoveries with respect to the State of Nevada.

I have all necessary power and authorization to execute this Amendment No. 1, on behalf of the Governmental Entity listed below, which shall have an effective date of January 3, 2022.

Name of Governmental Entity: Lyon County

Signature: _____

Name: Ken Gray

Title: Chairman, County Commission

Date: February 3, 2022

Lyon County Board of County Commissioners Agenda Summary

Meeting Date: February 3, 2022

Agenda Item Number:
18.a

Subject:
For Possible Action: Propose Ordinance amending Lyon County Code Title 5, Chapter 5.01.02, by prohibiting the licensing of a cannabis consumption lounge as a business; Title 7, Chapter 2, by prohibiting the consumption of cannabis and cannabis products in a public place; and providing for the severability, constitutionality and effective date thereof; and other matters properly relating thereto

Summary:
The Nevada Legislature authorized local governments to license cannabis consumption lounges. This ordinance would prohibit those in Lyon County at this time.

Financial Department Comments:

Approved As To Legal Form:

County Manager Comments:
Recommend the BOCC propose the ordinance and set a hearing date for March 2022

Recommendation:
A single County Commissioner may propose the ordinance.

Staff requests that the hearing on the ordinance be scheduled for the first meeting in March.

ATTACHMENTS
- - Draft Ordinance Prohibiting Cannabis Consumption Lounges in Lyon County

Bill No. 22- Ordinance No. _____

Summary: An ordinance relating to cannabis, and amending Lyon County Code Title 5, Chapter 5.01.02, by prohibiting the licensing of a cannabis consumption lounge as a business; and Title 7, Chapter 2, by prohibiting the consumption of cannabis and cannabis products in a public place.

Title: An ordinance amending Lyon County Code Title 5, Chapter 5.01.02, by prohibiting the licensing of a cannabis consumption lounge as a business; Title 7, Chapter 2, by prohibiting the consumption of cannabis and cannabis products in a public place; and providing for the severability, constitutionality and effective date thereof; and other matters properly relating thereto.

Explanation: Matter in blue is new or added language, red strikethrough is the existing language to be deleted by the proposal.

The Board of County Commissioners of Lyon County, Nevada does hereby ordain:

Section 1. Lyon County Code Title 05 (Business and License Regulations), Chapter 5.01.02 (License Required; Exceptions; Other Licenses Required) is hereby amended by adding thereto a new Section 5.01.02.D (Licensing of Cannabis Consumption Lounges Prohibited) to read as follows:

5.01.02. D. Licensing of Cannabis Consumption Lounges Prohibited:

1. Notwithstanding any other provision of Lyon County Code and pursuant to the authority established by NRS 678D.510, as amended by Section 30.3 of Assembly Bill 341 of the 81st (2021) Session of the Nevada Legislature, the Lyon County Business License Department shall not issue to any person a license to operate a cannabis consumption lounge.

2. As used in this section, "cannabis consumption lounge" has the meaning ascribed to it in Section 2 of Assembly Bill 341 of the 81st (2021) Session of the Nevada Legislature.

Section 2. Lyon County Code Title 7 (Police Regulations), Chapter 2 (Miscellaneous Offences) is hereby amended by adding thereto a new Section 7.02.05 (Consumption of Cannabis or Cannabis in a Public Place Prohibited) to read as follows:

7.02.05: Consumption of Cannabis or Cannabis Products in a Public Place Prohibited:

1. Pursuant to the authority established by Section 12.9 of Assembly Bill 341 of the 81st (2021) Session of the Nevada Legislature, it is unlawful for any person to consume cannabis or any cannabis product in a public place. For the purpose of this subsection, a person consumes cannabis or a cannabis product if such a substance is ingested or inhaled.

2. As used in this section, "cannabis product" has the meaning ascribed to it in NRS 678A.120.

Section 3. If any section of this ordinance or portion thereof is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such holding shall not invalidate the remaining parts of this ordinance.

Section 4. All ordinances, parts of ordinances, chapters, sections, subsections, clauses, phrases or sentences contained in the Lyon County Code conflict herewith and hereby repealed.

Section 5. This ordinance shall be in full force and effect from and after its passage, approval and publication as required by law**.**

Proposed on the ____ day of _____, 2022.

THIS Ordinance has been PASSED, ADOPTED and APPROVED this ____ day of_____, 2022 by the following vote of the Board of Commissioners, Lyon County:

AYES: _____

NAYS: _____

ABSENT: _____

Board of County Commissioners
Lyon County

_____

By: Chairman

Attest:

_____

Clerk of the Board