

Middle Rio Grande Endangered Species Collaborative Program
Habitat Restoration Workgroup Meeting
20 July 2010 –12:30pm - 3:30pm
Interstate Stream Commission

Decisions

- The June 15, 2010 Meeting Minutes were approved with no changes.

Actions

- Comments on the DBMS data model should be submitted to Monika Mann (monika.mann@usace.army.mil) within the next 2 weeks; Monika will compile the comments and send to Kenny Calhoun.
- Monika Mann will distribute the latest revision of the HRW Future Activity Summaries to the work group.
- Monika Mann will inform the PMT that HRW would like a representative from Reclamation to attend HRW meetings.

Meeting Summary

- Rick Billings brought the meeting to order and introductions were made. The Habitat Restoration Work group (HRW) was notified that the Sandia Monitoring update on today's agenda was rescheduled for the September HRW meeting.
- The June 15, 2010 Meeting Minutes were approved with no changes.
- Kenny Calhoun, Darcee Killpack, and Joseph Foster presented the DBMS data model. For conceptual purposes the data model has been broken down into various disciplines. Darcee took the Science Workgroup (ScW) through a couple examples to show how the tables and data are related. The datasets are the center of the database; these are the actual data that is collected. The datasets are then linked to Core Tables, the fundamental tables of how information is collected. The core tables have sub tables called Variable Properties. The Variable Properties are list items, they have drop down menus and lists to select from. There are lots of relationships within the data model; along with data import, verifying that the relationships of the data are accurate and that nothing is missing is the most critical part of the project. Two key components of the database are the Document library and the Site Library. The Document Library will contain the actual file of a document as well as any photos or spreadsheets related to the data. The Site Library will be a collection of the sampling sites in order to spatially see where the work is being done. In order to protect sensitive data, the database will have several levels of permissions once completed. Comments should be submitted to Monika Mann (monika.mann@usace.army.mil) within 2 weeks; Monika will compile the comments and send to Kenny.
- The HRW was shown a presentation “[Yearly Inundation of the Middle Rio Grande \(1990-2009\)](#)” by Ryan Gronewold from the U.S. Army Corps of Engineers. The presentation showed estimates of historic inundated area using Flo-2d and HEC-GRAS modeling.
- It was thought that a member of HRW should attend Population Viability Analysis work group meetings to keep the HRW updated. Peter Wilkinson volunteered to attend PVA work group meetings.
- Ondrea Hummel distributed a picture that depicts geographic change in the oxbow area of the Rio Grande; the picture shows how much the channel has cut down. There are shapefiles for other areas showing historic channels; it was thought that these should be included in the Program database.

- It was announced that in response to the U.S. Fish and Wildlife Service 5 year review of the Rio Grande Silvery Minnow the Interstate Stream Commission (ISC) and the State Attorney General submitted a brief cover letter and document looking at changes in science. The document will be sent to Coordination Committee (CC) members.
- The HRW was given a Program update. The peer reviews are still at the CC and Executive Committee (EC) level. The CC will be having two working meetings; one for Science Workgroup (ScW) activity summary on July 28 from 8:30 am to 4:00 pm and one for HRW activity summaries on August 4 from 8:30 to 4:00. The CC has asked that anyone who wrote a summary attend. Monika Mann will distribute the latest revision of the HRW summaries to the HRW. HRW would like to have a representative from the Bureau of Reclamation (Reclamation) attend meetings. Monika Mann will take this request to the Program Management Team (PMT).
- It was announced that Terina Perez is the new PMT member for Reclamation.

Next meeting: August 17, 2010 from 12:30 pm to 3:30 pm at ISC.

**Middle Rio Grande Endangered Species Collaborative Program
Habitat Restoration Workgroup Meeting
20 July 2010 –12:30pm - 3:30pm
Interstate Stream Commission**

Meeting Minutes

Introductions and Changes to Proposed Agenda

- Rick Billings brought the meeting to order and introductions were made. The Sandia Monitoring Update will be on the agenda for the September 21, 2010 meeting.

Approve June 15, 2010 Meeting Minutes

- The June 15, 2010 Meeting Minutes were approved with no changes.

D.B. Stephens presentation of the DBMS data model

- Kenny Calhoun, Darcee Killpack, and Joseph Foster presented the Database Management System (DBMS) data model. Handouts of the enlarged Habitat sections of the data model were distributed to meeting attendees. Pdf files of the enlarged areas and the data model are available on the Program website.
- Kenny gave a brief introduction of the data model. Last year D.B. Stephens & Associates and SWCA teamed to develop the Program database; in 2009 they met with the Program and completed a Needs Assessment. The development stage of the database began in April of 2010. The data model is being developed and this is the period where the Program will review the data model; it is still a conceptual model so changes can easily be made. Today's presentation will be a tutorial of how to read the relationships in the data model. All Program signatories should have a hard copy of the data model and a pdf version is available on the Program website.
- The data model has been organized into various disciplines in order to make the relationships easier to visualize. The datasets are the center of the database; these are the actual data that are collected. The datasets are then linked to Core Tables, the fundamental tables of how information is collected. The Core Tables have sub tables called Variable Properties. The Variable Properties are list items, they have drop down menus with lists to select from; for example Ground Cover

lists Scrub/Schrub. Specific Properties are tables that are generic throughout the data model. The text boxes beside the tables give a short explanation of the table. Key components of the data model are the Document Library and the Site Library. The Document Library will have files of documents; it will include related information such as authors and publishers, and will also contain photos and spreadsheets related to data. The Site Library is a spatial collection of sampling sites in the Program area. Throughout the tables there are coordinates; users will be able to search spatially in a map for work that has been done.

- It was asked how the connections are made when data and documents are added to the database.
 - When documents or data are submitted to the database information such as location, time, date, and action are recorded. It may not be the researcher who fills out this information but someone designated in the Program. Data input tools and entry tools will be included. There will also be import tools to for datasets that are regularly used. There are drop down menus so that naming will be standardized.
- It was asked how past reports will be added to the database.
 - D.B. Stephens will be adding past reports that have been received; this includes everything on the Program website. There is a cut off date for past reports to be put into the database involving the contract, but there will be tools for Program members to add the past reports and data.
- It was asked if sensitive information (i.e. flycatcher nest locations) would be searchable by the public.
 - There will be different levels of security, some records will be available to the public and others will be exclusive to work groups.
- The HRW was asked to distribute the data model to anyone who may be able to provide input; D.B. Stephens can make arrangements to meet with people if necessary.
- The HRW was asked to look at the data model to see that all relationships are correct, terminology is correct, and to see if there are attributes of sampling that are not captured in the data model. Comments on the DBMS data model should be submitted to Monika Mann (monika.mann@usace.army.mil) within the next 2 weeks; Monika will compile the comments and send to Kenny Calhoun.

HEC-RAS Data Presentation

- The HRW was shown a presentation “[Yearly Inundation of the Middle Rio Grande \(1990-2009\)](#)” by Ryan Gronewold from the U.S. Army Corps of Engineers. The presentation showed estimates of historic inundated area using Flo-2d and HEC-GRAS modeling. *For details please see the attached presentation.*
 - Slide: Modeling Scope
 - Slide: Modeled Project Reaches
 - Slide: Investigation of Geomorphic Changes
 - HEC-RAS is a steady state model. Different flows were run to come up with a discharge vs. area inundation curve.
 - Channel includes bars and islands.
 - Qchannel is the flow in the channel and QTotal is the total flow.
 - HEC-RAS is not very accurate because it doesn’t capture what’s going on between cross sections; a lot of information can be missed.
 - Slide: Investigation of Geomorphic Changes – Isleta and Tiffany Reaches
 - It looks like there is very little difference in the upper reaches and lots of difference in the lower reaches; a lot of the divergence is due to differences in the two modeling approaches.
 - Slide: Investigation of Geomorphic Change – BOR 2002 RAS models combined

- Slide: Investigation of Geomorphic Change – BOR 1992 RAS models combined
- Slide: Investigation of Geomorphic Change - Conclusions
 - There could be changes, but they can't be seen using this model.
- Slide: Computation of Area of Inundation
- Slide: Computation of Area of Inundation – Yearly Inundated area
 - 2006 was a strange year; it had a good monsoon season but there was little snow melt run off. Snow melt run off was used for this computation.
 - These graphs were developed for each year at each reach and will be input into the Population Viability Analysis (PVA) models.
- Question: To what degree do you have habitat restoration information for when high flow was created?
 - If it happened after 2005 that information wouldn't be included at all. Depending on the number of acres of inundation added to the inundation projects there probably wouldn't be a big difference. The main driver is the hydrology and not the geomorphic changes.
- This is inundation of both the channel and the flood plain.
- Question: How is the channel defined?
 - The channel is defined as active bank to active bank, including any islands that may be in the channel. Right now there is not a good way of capturing the bars and islands.
- It was commented that there are groups using Doppler imagery of channel morphology and combining with it with LIDAR. This method doesn't have the limitations of cross sections and it gives the whole flood plain.
 - Output from the FLO-2D could be layered on LIDAR to come up with detailed floodplains, but this is huge stretch and would be very time intensive. It would make a good picture but may not give a better answer.
- Question: What was the topographic information used? Was it strictly cross sections?
 - A lot of different data sets were used; cross sections from different years and timeframes were calibrated to the 2005 runoffs.
- Question: When the U.S. Army Corps of Engineers (Corps) get's LIDAR data could the existing demography be switched out to make it more up to date?
 - It would probably be better to build a new FLO-2D model if there was a newer topography dataset.
- It was said that HRW should have a representative attend PVA work group meetings to keep them updated.
 - Peter Wilkinson volunteered to attend PVA work group meetings.

Oxbow Presentation

- Ondrea Hummel distributed a picture that depicts geographic change in the oxbow area of the Rio Grande; the picture shows how much the channel has cut down. The oxbow formed as a result of the river being channelized. The picture shows how much the river has cut down to what is there today. There are shapefiles for other areas showing historic channels; it was thought that these should be included in the Program database. It was thought that Robert Padilla at Reclamation may have worked on the shapefiles.
- There was comment that the jetty jacks from 1962 appear to have as much influence on the river as dams and levees.
- It was said that the trouble that is being had with the River Mile 83 project is that it is a "bottom up" approach. There is a need to look at the River Mile 80-89 geomorphic hydrologic assessment so that the

reach is being looked at as a whole and then being broken up into sub reaches. Given the current constraints of the levees and channel how is a stable system with variability created?

- The point that existing conditions of the river need to be considered was thought to be valid.
- It was asked if there has been a discussion on the effects that deviation has had on existing habitat restoration sites. Lots of deposition has been seen with recent deviations. It was asked if deviations will occur in future years.
 - It was thought that deviations will occur when possible.
 - It was said that a longer tail on the deviations might be better.
 - It was said that the HRW needs to discuss flow targets and inducing variability into the system.

Announcements

- In response to the U.S. Fish and Wildlife Service 5 year review of the Rio Grande Silvery Minnow the Intestate Stream Commission (ISC) and the State Attorney General submitted a brief cover letter and document looking at changes in science. The document will be sent to Coordination Committee (CC) members.
- It was announced that Terina Perez is the new PMT member for Reclamation.

Program Update

- The peer reviews are still at the CC and Executive Committee (EC) level.
- The CC will be having two working meetings; one for Science Workgroup (ScW) activity summary on July 28 from 8:30 am to 4:00 pm and one for HRW activity summaries on August 4 from 8:30 to 4:00. The CC has asked that anyone who wrote a summary attend.

Action: Monika Mann will distribute the latest revision of the HRW summaries to the HRW.

- HRW would like to have a representative from the Bureau of Reclamation (Reclamation) attend meetings. This would keep HRW updated on contract and Reclamation information.

Action: Monika Mann will take this request to the Program Management Team (PMT).

Next Meeting and Agenda Items

- August 17, 2010 at ISC from 12:30 pm to 3:30 pm.
- Colin Lee and Rick Billings will give a short synopsis of City of Albuquerque construction monitoring report.

Habitat Restoration Work Group Meeting 20 July 2010 Meeting Attendees

NAME	POSITION	AFFILIATION	PHONE NUMBER	EMAIL ADDRESS
Colin Lee		KeWa (Santo Domingo) Tribe	465-0055	clee@sdutilities.com
Ondrea Hummel	HR Member	USACE	342-3375	ondrea.c.hummel@usace.army.mil
Jill Wick	HR Member	NMDGF	476-8091	jill.wick@state.nm.us
Rick Billings	HR Chair	ABCWUA	796-2527	rbillings@abcwua.org

Anders Lundahl	HR Member	ISC	383-4047	anders.lundahl@state.nm.us
Peter Wilkinson	HR Member	ISC	827-5801	peter.wilkinson@state.nm.us
Sarah Beck		USACE	342-3333	sarah.e.beck@usace.army.mil
Monika Mann	PMT Liaison	USACE	342-3250	monika.mann@usace.army.mil
Joseph Fluder	---	SWCA	263-5339	jfluder@swca.com
Kenny Calhoun	Presenter	DBS & A	353-9076	kcalhoun@dbstephens.com
Joseph Foster	Presenter	DBS & A	353-9044	jfoster@dpstephens.com
Darcee Killpack	Presenter	SWCA	303-487-1183	dkillpack@swca.com
Stephen Scissons	Presenter	USACE	342-3328	stephen.k.scissons@usace.army.mil
Ryan Gronewold	Presenter	USACE	342-3340	ryan.p.gronewold@usace.army.mil
Christopher London		San Felipe Pueblo		clondon@sfpueblo.com
Christine Sanchez	Admin support	Tetra Tech, EMI	881-3188 x 139	christine.sanchez@tetrattech.com

Yearly Inundation of the Middle Rio Grande (1990 – 2009)

PVA Biology Work Group Meeting

June 29, 2010



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Modeling Scope

- Analysis Goal: Provide estimates of historic inundated area for each year (1990 to 2009)
- Tools:
 - ▶ FLO-2D Model:
 - Created from 2005 topography
 - Calibrated to 2005 spring runoff (*hydrology*)
 - Use: Initial Inundated Area Curve computed from this model
 - ▶ HEC-RAS Model:
 - Obtained from BOR
 - Topography for two datasets: 1992 and 2002
 - Calibrated to various data sets (*ie. historic inundation extents*)
 - Use: Computed various characteristics (*ie. Q Chnl, & Surface Area*)



Modeled Project Reaches

- 13 Reaches
- Based on URGWOM Geomorphic Reaches

Reach #	Reach Name	River Miles	BOR Agg/Deg Range Lines
1	Cochiti	232.3 to 210	19 to 235
2	Angostura	210 to 203.4	236 to 297
3	Bernalillo	203.4 to 199.8	299 to 337
4	Rio Rancho	199.8 to 169	338 to 654
5	Isleta	169 to 152.3	656 to 828
6	Peralta return	152.3 to 126.3	829 to 1095
7	Rio Puerco	126.3 to 118.6	1096 to 1181
8	Rio Salado	118.6 to 115.9	1182 to 1206
9	San Acacia	115.9 to 95.2	1207 to 1397
10	Canas/Brown Arroyo	95.2 to 77.2	1398 to 1584
11	RM 78	77.2 to 72.7	1585 to 1652
12	Tiffany	72.7 to 67.8	1653 to 1701
13	San Marcial	67.8 to 60.4	1702 to 1792



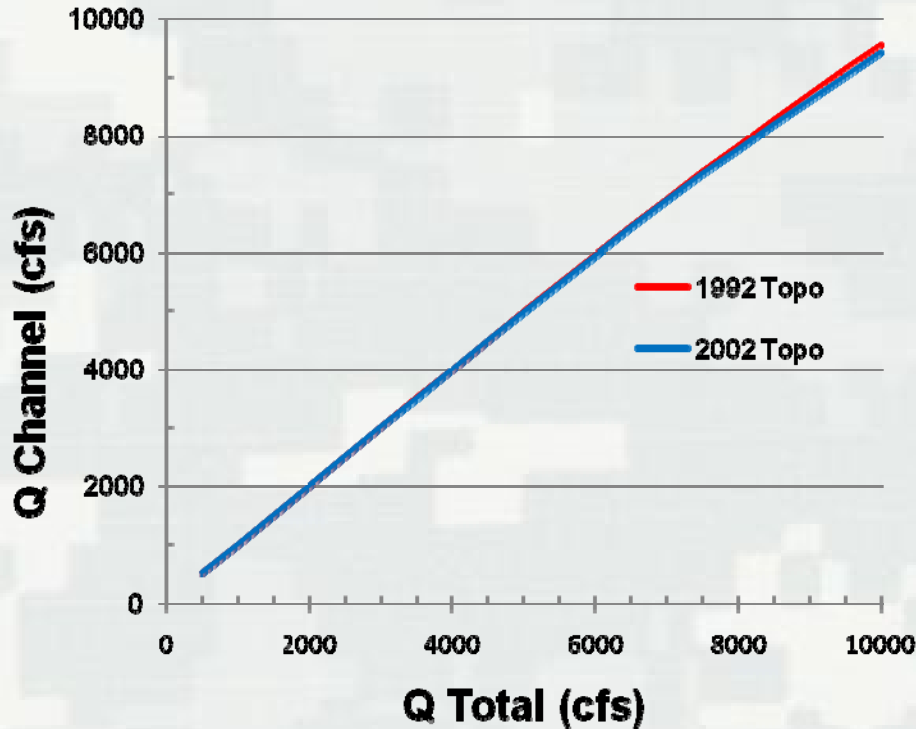
Investigation of Geomorphic Changes

- Approach:
 - Obtained the HEC-RAS models from BOR
 - Applied steady state values (Range: 500 to 10,000 cfs)
 - Q_{Total} = steady state values
 - Tests:
 - #1: Plots of $Q_{channel}$ vs. Q_{Total} for 1992 & 2002 models
 - #2: Compared Surface Area for each Reach using 1992 & 2002 models

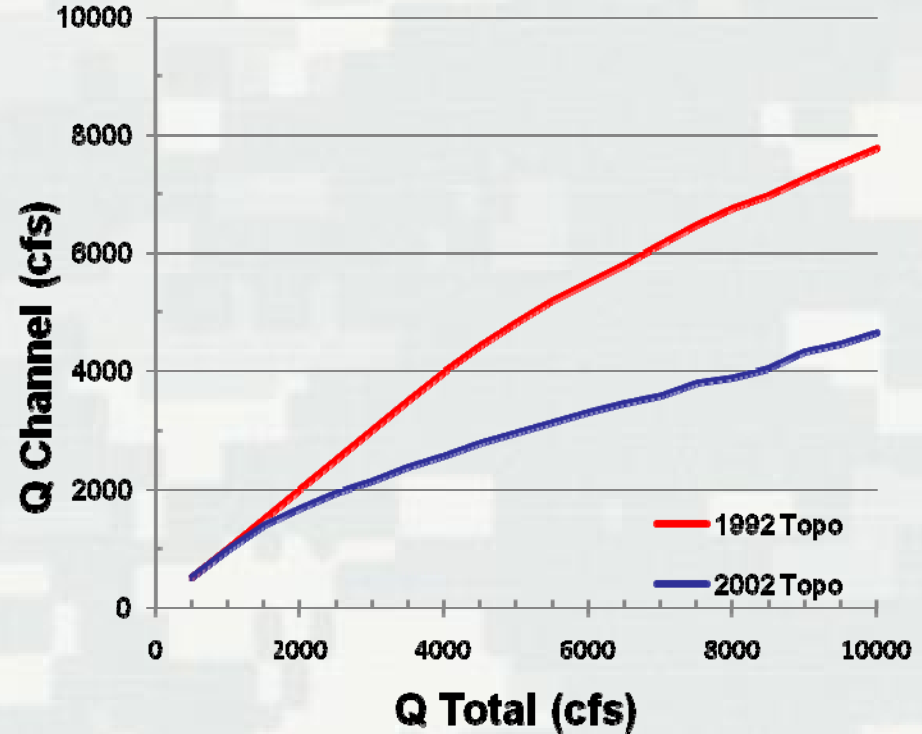


Investigation of Geomorphic Changes

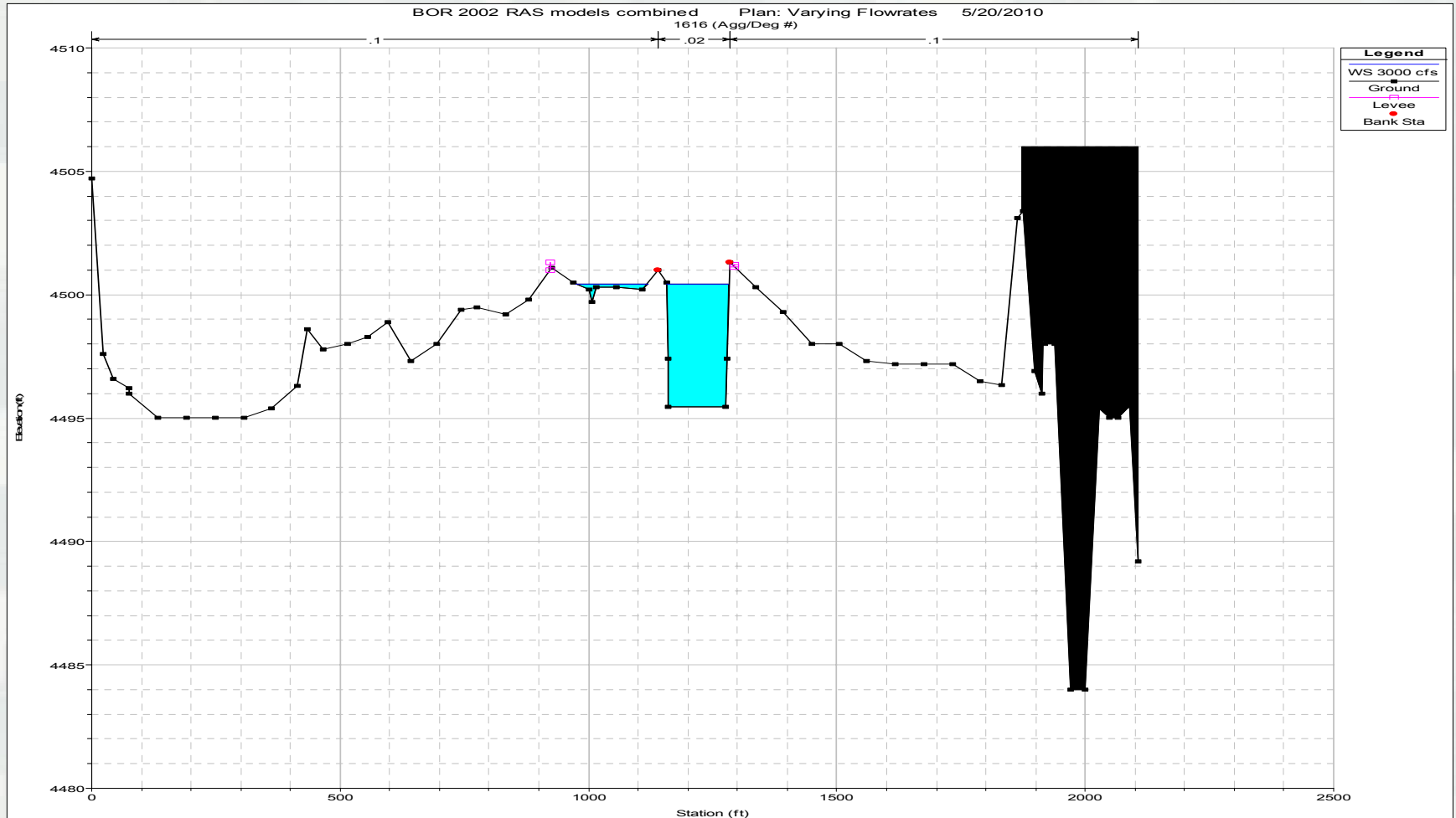
Isleta Reach



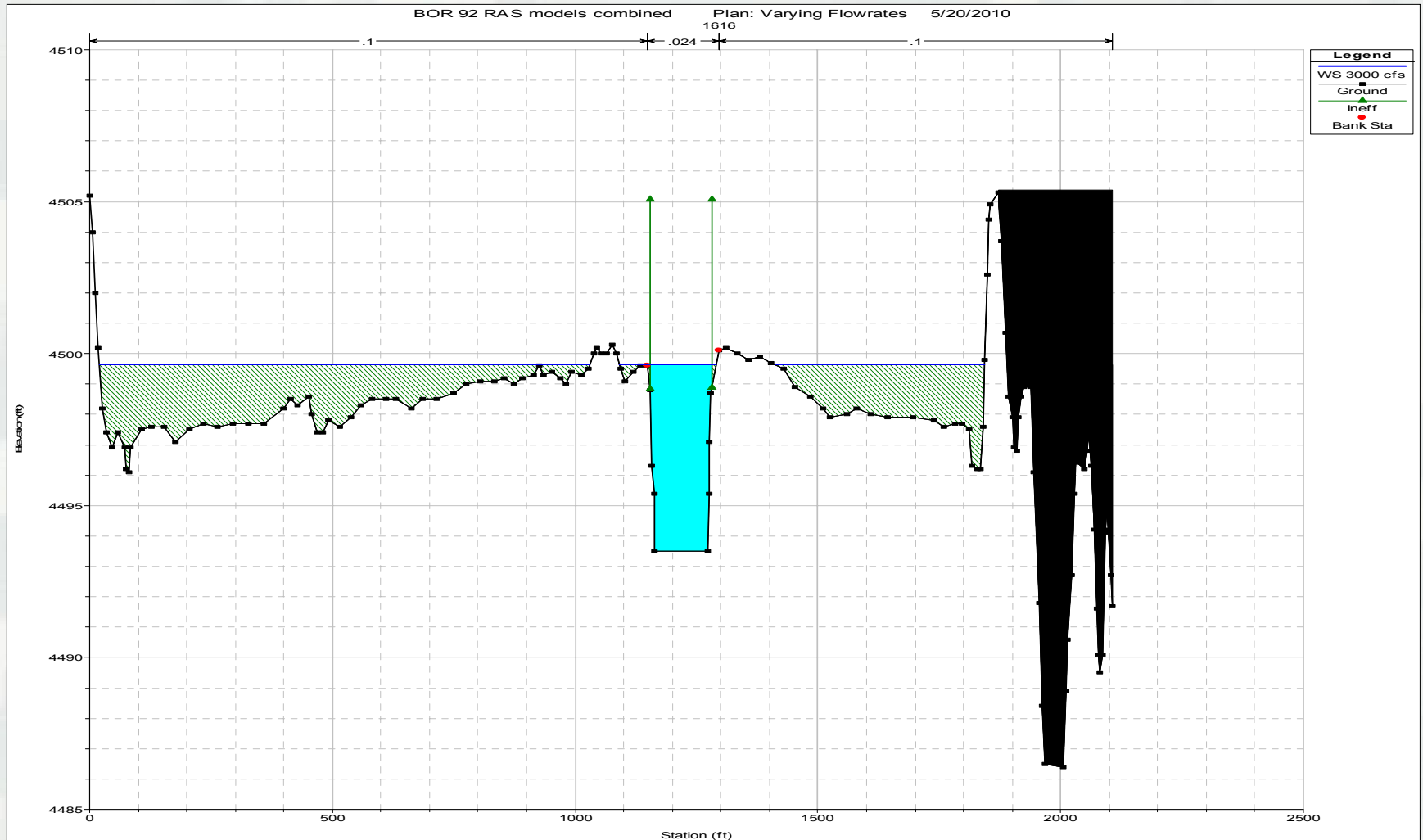
Tiffany Reach



Investigation of Geomorphic Changes



Investigation of Geomorphic Changes



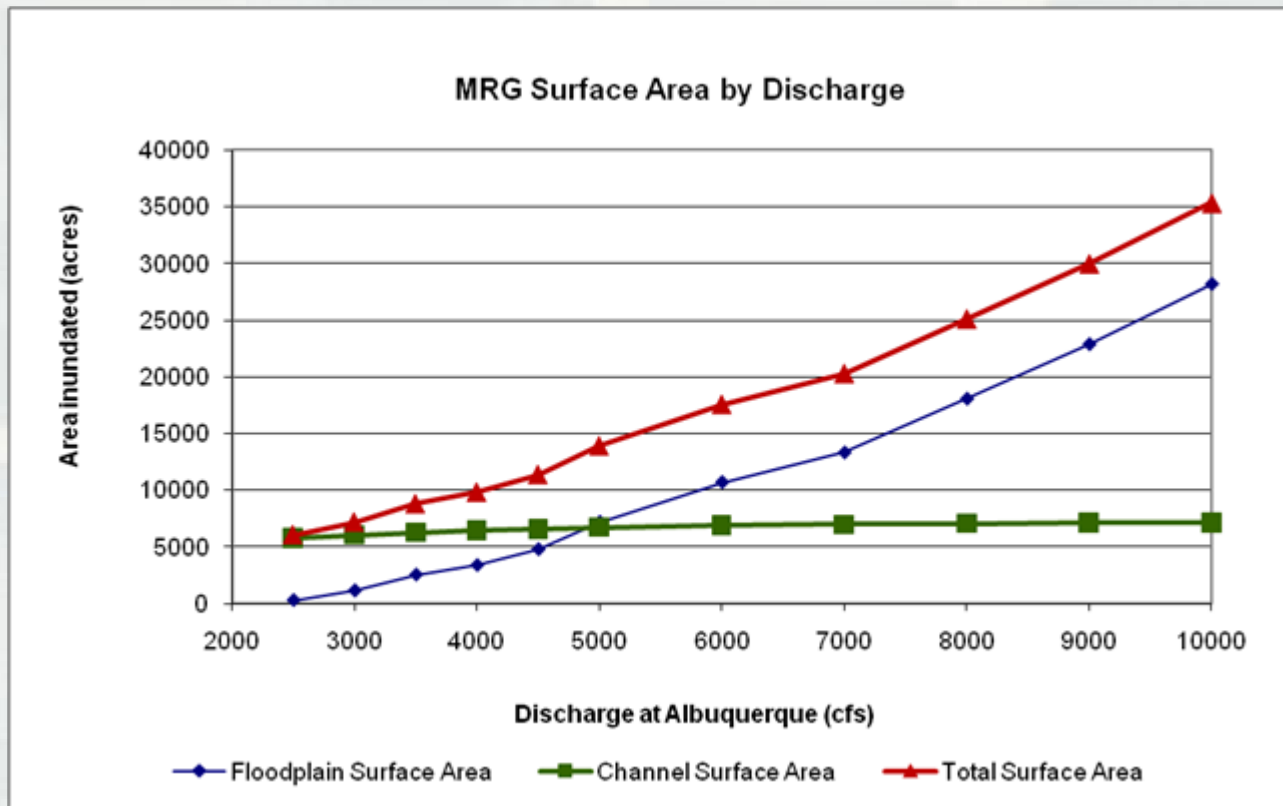
Investigation of Geomorphic Changes

- Conclusions: (comparing 1992 vs. 2002 datasets)
 - Reaches above San Acacia:
 - No clear difference in channel capacity
 - So, assume that geomorphic changes have not occurred
 - Compute Area of Inundation from 2005 curve
 - Reaches below San Acacia:
 - Comparisons are inconclusive
 - So, geomorphic changes need to be evaluated further
 - Effects only lower reaches of overall study area
- Further Work:
 - Lower Reach Geomorphology Investigation
 - Evaluate modeling methods (ie. Levee cards vs. Ineffective flow area)
 - May need to shift the 2005 Inundation Curve
 - Still assume that floodplain deposition or scour is static

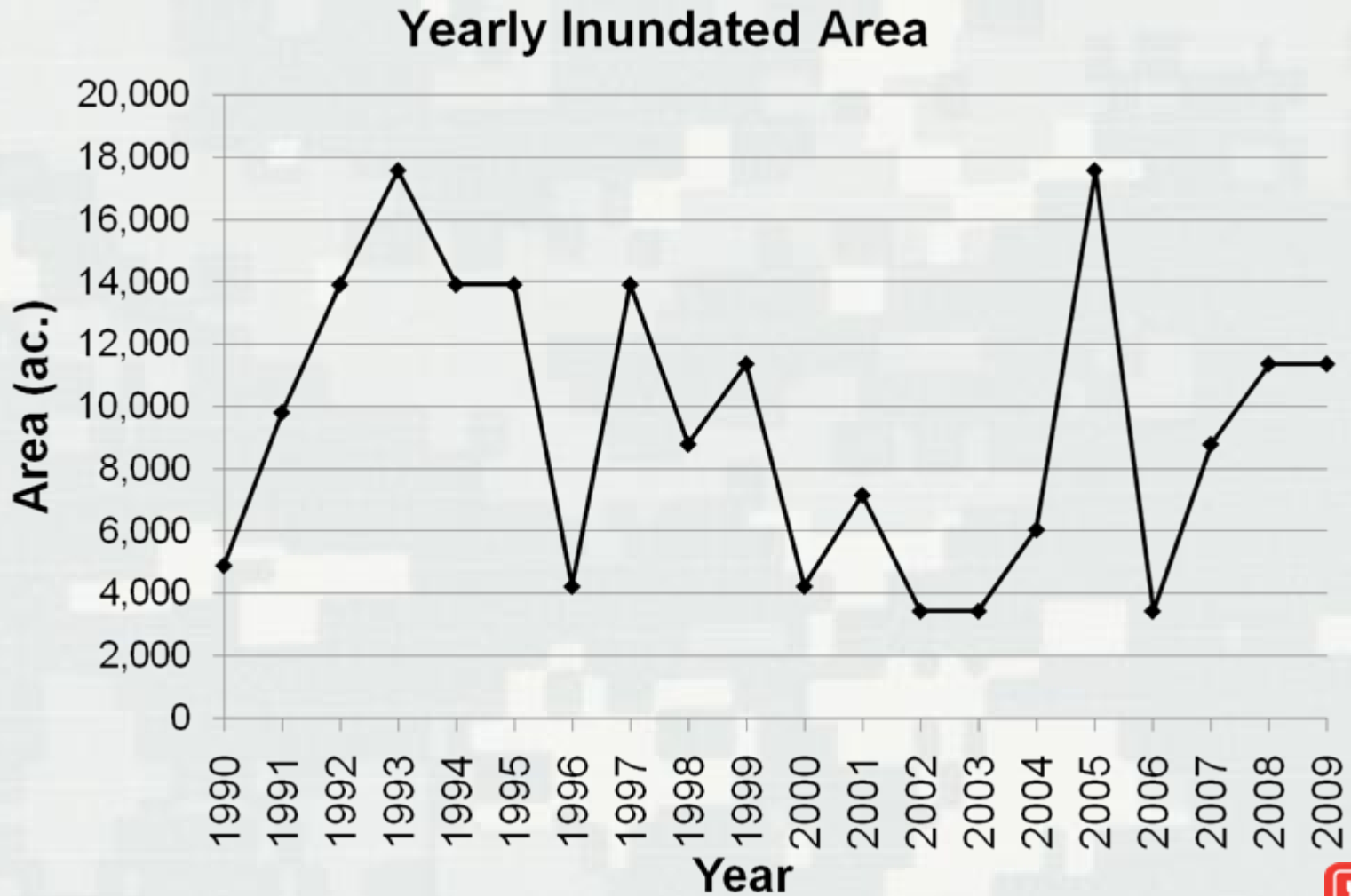


Computation of Area of Inundation

- Assume geomorphic changes have not occurred
- Compute: Highest 5-day average peak for years (1990 to 2009)
- Using Graph: Applied each yearly value to the rating curve



Computation of Area of Inundation



Questions?

