CITY OF ALBUQUERQUE

Planning Department Alan Varela, Director



August 14, 2024

Nina Leung-Villa, P.E. Huitt-Zollers Inc. 333 Rio Rancho Dr NE, Suite 101 Rio Rancho, NM 87124

RE: North Domingo Baca Park

LOMR Request Engineer's Stamp Date: No Date

Hydrology File: C19D043

Dear Ms. Leung-Villa:

Based upon the information provided in your submittal received 08/09/2024, the LOMR Request **is not** approved by the City of Albuquerque. The following comments need to be addressed for approval of the above referenced project:

PO Box 1293

Albuquerque

----1---1---

NM 87103

www.cabq.gov

Flood Control Authority (AMAFCA) facility, approval by AMAFCA will be need prior to Hydrology approval. Please contact Jared Romero P.E, CFM (<u>iromero@amafca.org</u> or 505-884-2215).

1. Since this project is adjacent to, or drains into an Albuquerque Metropolitan Arroyo and

- 2. Please provide an engineer's stamp with a signature and date on the drainage report.
- 3. Under the Description of the Revision, please refer to the final Kinney Dam report, Final Design Analysis Report for Lower North Domingo Baca Detention Dam (Resource Technology, Inc., 1995)
- 4. Under the Description of the Revision, please talk about the City of Albuquerque constructed a 6'x10' double barrel box culvert from Wyoming Blvd to Kinney Dam (managed by Albuquerque Metropolitan Arroyo and Flood Control Authority (AMAFCA)). The as-built drawing should be included in the Appendix.

CITY OF ALBUQUERO

Planning Department Alan Varela, Director



Mayor Timothy M. Keller

CITY OF ALBUQUERQUE DEPARTMENT OF MUNICIPAL DEVELOPMENT PARK DESIGN AND CONSTRUCTION DIVISION CONSTRUCTION PLANS FOR

NORTH DOMINGO BACA PARK PHASE 4 CONSTRUCTION - BOX CULVERT

WYOMING BOULEVARD TO KINNEY DAM

INE	DEX OF DRAWINGS	DISCLOSURE STATEMENT: M. SHARET PROCESTS LOCKED ALEXA & FIRMED LARGEL, DUE TO BARRET PROPERTY BEING GOLDEN & FIRMED LARGEL, DUE TO BARRET PROPERTY BEING GOLDEN & FIRMED LARGEL, DUE TO BRIDGE STATEMENT MEDIANS.
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6 7 8 9	CDC PLAN & PROFILE STA 94655 TO STA 17+00 CDC PLAN & PROFILE STA 17+00 TO STA 24+00 CDC PLAN & PROFILE STA 24+00 TO 27+09 CDC DETAL — NADDOT SERIAL CB-32-1	APPROVED FOR CONSTRUCTION — GTY OF ALBOOUROUS $\underbrace{CHC_{TM}}_{Churchill}$ of alboourous octoons and the construct of alboourous octoons of the construct of alboourous octoons
10 11 12 13	CBC DETAIL — NAMOOT SERAL CB-32-2 CONCRETE BOX CULTWENT DETAILS SECTIONS & DETAILS TRANSITION STRUCTURE SECTIONS & DETAILS STEEL GRATE SECTIONS & DETAILS	APPROVED FOR CONSTRUCTION WHIN AMAFCA R.O.W. OH P / WHY 7-19-05 OH GILV P.C. DISTORMER HOROUTHN AMERICA ROUNDETY AND CONSTRUCTION AMERICA ROUNDETY



PO Box 1293

5. Under the Description of the Revision, please refer to the Zone AO (Depth 1') that covers the park and not just Zone AO.

Albuquerque

6. Under the Description of the Revision, please state that this LOMR will not affect the downstream Kinney Dam which has a Zone AE (El 5230).

NM 87103

7. Under B. Overview on MT-2 Form 1, the Community No. is 350002 for the City of Albuquerque. Also, please remove North Domingo Baca from the Community Name. This should just be City of Albuquerque.

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- 8. Under Requestor's Signature on the MT-2 Form 1, please sign and date the form. This should be someone from the Park's Department since the City owns this property.
- Under the Community Concurrence on MT-2 Form 1, please remove Tiequan Chen's information. Any one within the Hydrology Section can sign this form.
- 10. Under Certification by Registered Professional Engineer on MT-2 Form 1, please have the engineer seal, sign & date the form.
- 11. Under HEC-HMS, Basin Maps, please indicate what version of HEC-HMS that was used in the calculations.
- 12. In HEC-HMS map, please refer to the Dam as Kinney Dam and not Ndb park pond.
- 13. In HEC-HMS, please do not include an outfall unless you plan on including the dam design. According to AMAFCA, Kinney Dam has a peak discharge of 208 cfs. This may just need to refer to the Dam's design report.

CITY OF ALBUQUERQUE

Planning Department Alan Varela, Director



- 14. On Exhibit 2, please change Ndb Park Pond to Kinney Dam.
- 15. Under HEC-RAS, please indicate what version of HEC-RAS was used in the calculations.
- 16. In With the HEC-RAS model, please use a 6'x10' double barrel box culvert for the sections. The section shown appears to be a channel and not a box culvert. There will need to be a section of the upstream channel, the box culverts, and the channel which outfalls into Kinney Dam. Please update the model.
- 17. On the Revised FIRM (LOMR Exhibit 5), Please show the box culvert as the black dashed line that needs to stay.

If you have any questions, please contact me at 924-3995 or <u>rbrissette@cabq.gov</u>.

Sincerely,

PO Box 1293

Renée C. Brissette, P.E. CFM Senior Engineer, Hydrology

Renée C. Brissette

Albuquerque

Planning Department

NM 87103

www.cabq.gov



City of Albuquerque

Planning Department
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (DTIS)

Project Title:		Hydrology File #		
Legal Description:				
City Address, UPC, OR Parcel	:			
Applicant/Agent:		Contact:		
		Phone:		
Email:				
Applicant/Owner:		Contact:		
Address:		Phone:		
Email:				
(Please note that a DFT SITE is or	ne that needs Site Plan A	pproval & ADMIN SITE is one that does not need it.)		
TYPE OF DEVELOPMENT:	PLAT (#of lots)	RESIDENCE		
	DFT SITE	ADMIN SITE		
RE-SUBMITTAL: YES	NO			
DEPARTMENT: TRANS	SPORTATION	HYDROLOGY/DRAINAGE		
Check all that annly under Roth	the Type of Submittal	and the Type of Approval Sought:		
TYPE OF SUBMITTAL:	the Type of Submittal	TYPE OF APPROVAL SOUGHT:		
ENGINEER/ARCHITECT CERTIFICATION		BUILDING PERMIT APPROVAL		
PAD CERTIFICATION		CERTIFICATE OF OCCUPANCY		
CONCEPTUAL G&D PLAN		CONCEPTUAL TCL DFT APPROVAL		
GRADING & DRAINAGE PI	LAN	PRELIMINARY PLAT APPROVAL		
DRAINAGE REPORT		FINAL PLAT APPROVAL		
DRAINAGE MASTER PLAN		SITE PLAN FOR BLDG PERMIT DFT		
CLOMR/LOMR		APPROVAL		
TRAFFIC CIRCULATION LA	AYOUT (TCL)	SIA/RELEASE OF FINANCIAL GUARANTEE		
ADMINISTRATIVE		FOUNDATION PERMIT APPROVAL		
TRAFFIC CIRCULATION LAYOUT FOR DFT APPROVAL		GRADING PERMIT APPROVAL		
TRAFFIC IMPACT STUDY (TIS)	SO-19 APPROVAL		
STREET LIGHT LAYOUT		PAVING PERMIT APPROVAL		
OTHER (SPECIFY)		GRADING PAD CERTIFICATION		
, ,		WORK ORDER APPROVAL		
		CLOMR/LOMR		
		OTHER (SPECIFY)		
DATE SUBMITTED:				



REQUEST FOR LETTER OF MAP REVISION TO FIRM PANEL 35043C2150D & 35001C0137H

PREPARED FOR:





PREPARED BY:

HUITT-ZOLIARS

333 RIO RANCHO BLVD., SUITE 101 RIO RANCHO, NEW MEXICO 87124

JULY 2024

HZI Project R312254.01



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eferences	8



Item 1 Description of the Revision



Item 1. Description of the Revision

The purpose of the request is to revise the current floodplain mapping for the North Domingo Baca (NDB) Park between Wyoming Blvd NE and Louisiana Blvd NE. North Domingo Baca Park is currently comprised of the following completed projects: NDB Multigenerational Center, NDB Phase 5, Fire Station No. 20, NDB Phase 8 and NDB Park. The NDB Pool Complex will be the next project to be constructed in the development. This will include an indoor and outdoor aquatic center for community engagement. The pool complex, along with the mentioned completed projects are currently within flood zone AO. Hydraulic analysis was completed utilizing the HEC-HMS and HEC-RAS applications. The analysis verifies the current storm drain design is efficient and directs the storm water to the Kinney Dam appropriately. The current FEMA flood zone indicates the entire development is within flood zone AO and needs to be updated to reflect the current flood zone as being confined to the Kinney Dam.

Huitt-Zollars requests that FEMA revise the current Flood Insurance Rate Map of Albuquerque, NM to incorporate and reflect the existing and future construction of the North Domingo Baca Development.



Item 2

FEMA MT-2 Form 1 (OVERVIEW & CONCURRENCE FORM)

DEPARTMENT OF HOMELAND SECURITY Federal Emergency Management Agency

OVERVIEW & CONCURRENCE FORM

OMB Control Number: 1660-0016 Expiration: 1/31/2024

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA						
This request is for a (check one):					
CLOMR: revision or proposed hydrolo Endangered Spec	CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72). All CLOMRs require documentation of compliance with the Endangered Species Act. Refer to the Instructions for details.					
	er from DHS-FEMA officially revising See 44 CFR Ch. 1, Parts 60, 65 & 72	•	to show the cha	nges to floodp	olains, regulato	ry floodway or
		B. OVERVIEW				
1. The NFIP map p	anel(s) affected for all impacted comr	munities is (are):				
Community No.	Community Name			Map No.	Panel No.	Effective Date
35001 North Domingo Baca, Albuquerque		NM	35001C	0137H	8/16/2012	
35001	North Domingo Baca, Albuquerque		NM	35001C	0141G	9/26/2008
2. a. Flooding Sour	ce:		•			
b. Types of Floo	ding: Riverine	Coastal X	Shallow Flooding	ng (e.g., Zone	s AO and AH)	
Alluvial Fan Lakes Other (Attach Descript		escription)				
Project Name/Identifier:						
4. FEMA zone desi	4. FEMA zone designations (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)					
a. Effective: AO						
b. Revised: X						

5. Basis for Request and Type of Revision:				
a. The basis for this revision request is (check all that apply)				
$oxed{igwedge}$ Physical Change $oxed{igwedge}$ Improved Methodology/Da	ta Regulatory Floodway Revisi	ion 🔀 Base Map Changes		
│ Coastal Analysis │ │ │		Corrections		
☐ Weir-Dam Changes ☐ Levee Certification	☐ Alluvial Fan Analysis	☐ Natural Changes		
 ⊠ New Topographic Data				
	corn is not required, but is very helpfu	ıl during raviow		
Note: A photograph and narrative description of the area of cor		i duffig feview.		
b. The area of revision encompasses the following structures (
Structures: Channelization Levee/Floodwa				
Dam Fill				
6. Documentation of ESA compliance is submitted (required information.	to initiate CLOMR review). Please ref	er to the instructions for more		
C. REV	/IEW FEE			
Has the review fee for the appropriate request category been include	d? Yes Fee amount:	\$		
		*		
	No, Attach Explanation	6. (6)		
 Please see the DHS-FEMA Web site at http://www.fema.g map-related-fees for Fee Amounts and Exemption 		software/flood-		
•	NATURES			
	NATURES			
REQUESTOR'S SIGNATURE All documents submitted in support of this request are correct to the	hest of my knowledge. Lunderstand	 d that any false statement may be		
punishable by fine or imprisonment under Title 18 of the United States		T that any haise statement may be		
Name: Corie Trujillo	Company: Huitt-Zollars			
Mailing Address:	Daytime Telephone: 505-235-3194 Fax No.:			
333 Rio Rancho Dr. NE Rio Rancho, NM	E-mail Address: ctrujillo@huitt-zollars.com			
Tuo Tuniono, Tuni	Date:			
Signature of Requestor (required):				
2. COMMUNITY CONCURRENCE				
As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.				
Community Official's Name and Title: Tiequan Chen - Floodplain Adr	Community Official's Name and Title: Tiequan Chen - Floodplain Administrator			
Mailing Address:	Community Name: Albuquerque			
600 2nd Street NW Albuquerque, NM 87102	Daytime Telephone: 5059243860 Fax No.:			
7 Nouqueique, Min 07 102	E-mail Address: tchen@cabq.gov			
Community Official's Signature (required):	Date:			

3. CERTIFICATION BY REGISTERED PROFESSIONAL	ENGINEER	AND/OR LAND SURVEYOR			
3. CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.					
Certifier's Name: Scott Eddings		License No.: 12856	Expiration Date:		
Company Name: Huitt-Zollars		Mailing Address:	•		
Telephone No.: 505-892-5141 Fax No.:		333 Rio Rancho Dr. NE Rio Rancho, NM 87124			
E-mail Address: seddings@huitt-zollars.com					
Signature:			Date:		
Ensure the forms that are appropriate to your revision	n request ar	e included in your submittal.			
Form Name and (Number)	Required	<u>if</u>			
Riverine Hydrology and Hydraulics Form (Form 2)	New or rev	rised discharges or water- evations			
Riverine Structures Form (Form 3)	bridge/culv	modified, addition/revision of verts, addition/revision of lwall, addition/revision of dam			
Coastal Analysis Form (Form 4)	New or rev	rised coastal elevations			
Coastal Structures Form (Form 5)	Addition/revision of coastal structure				
Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans		Seal (Optional)		
Coastal Structures Form (Form 5) Addition/revision of coastal structure					



Item 3

FEMA MT-2 Form 2
(RIVERINE HYDROLOGY & HYDRAULICS)

DEPARTMENT OF HOMELAND SECURITY Federal Emergency Management Agency

RIVERINE HYDROLOGY & HYDRAULICS FORM (FORM 2)

OMB Control Number: 1660-0016 Expiration: 1/31/2024

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

prev	ent FEMA from processing a determin	nation regarding a requested char	ge to a (NFIP) Floo	od insurance kate Maps (FIRM).	
Floo	ding Source:				
Note	: Fill out one form for each flooding se	ource studied			
		A. HYDROL	OGY		
1.	Reason for New Hydrologic Analysis	(check all that apply):			
	Not revised (skip to section B)	No existing analysis	⊠ Impr	roved data	
	Alternative methodology	Proposed Conditions (CLC	OMR) 🔀 Cha	nged physical condition of watersh	ned
2.	Comparison of Representative 1%-A	nnual-Chance Discharges			
	Location	Drainage Area (Sq. Mi.)	Effective/FIS (c	cfs) Revised (cf	fs)
1	North Domingo Baca Arroyo	4.3	2,439	1,787	
3.	Methodology for New Hydrologic Ana		D. w. tie v.	OALL Printell Amount 6	. 40 :
	•	ecify Model: HEC-HMS	Duration:	24 Hr Rainfall Amount: 3	3.49 In
	Statistical Analysis of Gage Records	;			
	Regional Regression Equations	Other (please attach desc	ription)		
	ase enclose all relevant models in digi port the new analysis.	tal format, maps, computations (ir	cluding computation	on of parameters), and documenta	ition to
4.	Review/Approval of Analysis				
	If your community requires a regiona approval/review. 4. HEC-R.	l, state, or federal agency to revie AS File Description**:	w the hydrologic ar	nalysis, please attach evidence of	
5.	Impacts of Sediment Transport on Hy	ydrology			
	Is the hydrology for the revised flood	ing source(s) affected by sedimen	t transport?] Yes 🗵 No	
	If yes, then fill out Section F (Sedime	ent Transport) of Form 3. If No, the	en attach your expl	anation.	

			B. HYDR	RAULICS		
1.	Reach to be Revised	Description	Croos	s Section	Water Surface	Flavotion (ft)
		Description	Cross	s Section	Water-Surface Effective	Proposed/Revised
	Downstream Limit*	Kinney Dam			5381	5325
	Upstream Limit*	Culvert @ Wyon			5380	5380
*Dro	posed/Revised elevations		•	oin O.E. fact at the day		
	Hydraulic Method/Model L			III 0.5 loot at the dow	nstream and upstream	THITHIS OF FEVISION.
		Unsteady State	e One-Din	nensional	Two-Dimentional	
	Pre-Submittal Review of I	-		OV DAG / //		1150 540 1 1 1
	S-FEMA has developed tw lels, respectively. We reco					
4.	HEC-RAS File Description	٠ ٦**:				
	Models Submitted	Natura	al Run	Flood	lway Run	Datum
	Ouplicate Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
C	Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
	xisting or Pre-Project Conditions Model	File Name:	Plan Name:	File Name:	Plan Name:	
	Revised or Post-Project					
	Conditions Model	File Name:	Plan Name:	File Name:	Plan Name:	
	Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	
* Fo **S∈	r details, refer to the corre ee instructions for informati	sponding section of the ion about modeling ot	ne instructions. her then HEC-RAS.	. 🔀 Digital Models	s Submitted? (Require	ed)
		-	C. MAPPING RE	EQUIREMENTS		,
Δςο	rtified tonographic work	man must he suhmi			here annlicable): the	boundaries of the effective,
exist	ing, and proposed condition	ons 1%-annual-chand	ce floodplain (for ap	proximate Zone A re	visions) or the bound	laries of the 1%- and 0.2%-
						gnment of all cross sections easements and boundaries;
boun	daries of the requester's	property; certification	on of a registered	professional enginee		subject State; location and
	ription of reference marks;			D, NAVD, etc.). DD) Data Submitted (p	preferred)	
Topographic Information:						
Soul	rce:			Dat	e:	
Vertical Datum: Spatial Projection:						
Accı	ıracy:					
FBFN at the	I must tie-in with the effect e same scale as the origin	tive floodplain and re nal, annotated to sho	gulatory floodway b w the boundaries o	oundaries. Please atta of the revised 1%-and	ach a copy of the ef d 0.2%-annual-chance	on the revised FIRM and/or fective FIRM and/or FBFM, e floodplains and regulatory
	way that tie-in with the bo stream limits of the area o		tive 1%-and 0.2%-a	annual-chance floodpl	ain and regulatory flo	oodway at the upstream and
			nnotated FIRM and	/or FBFM (Required)		

	D. COMMON REGULATORY REQUIREMENTS*
1.	For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) or Special Flood Hazard Areas (SFHAs) increase compared to the effective BFEs?
	If Yes, please attach proof of property owner notification . Examples of property owner notifications can be found in the MT-2 Form 2 Instructions.
2.	For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
	 The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
	 The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.
3.	Does the request involve the placement or proposed placement of fill?
	If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.
4.	Does the request involve the placement or proposed placement of fill?
	If Yes, attach evidence of regulatory floodway revision notification . As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.
5.	For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA). For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.



Item 4

Floodplain Analysis (HEC-HMS, Basin Map)



Item 4. HEC-HMS, Basin Map

The basin map is broken into two sections, the large basin map and the small basin map. The large basin map consists of all basins that contribute to the culvert intake located at the Wyoming location. The small basin map consists of all basins located within the North Domingo Community Development and add to the culvert flow just before entering the Kinney Dam.

The large basin map has five basins which include: East of Los Altos, Ventura to Los Altos, Barstow to Ventura, Carmel, and Anaheim. For more details, see the large basin map Exhibit 1 and the HEC-HMS report. East of Los Altos basin starts at Los Altos and continues into the mountains. The remaining basins are fully developed with subdivisions and retail structures and is accounted for in the impervious percentage in each basin. These basins combine in totality when the flow enters the culvert at Wyoming.

The small basin map has six basins which include: Community Center, Pool, Tennis Courts, Northside/Fire Station, Park, and NDB Park Pond. Each basin within the North Domingo Baca Development discharges into the culvert and terminates in the Kinney Dam. For more details, see the small basin map exhibit 2 and the HEC-HMS report.

Kinney Pond is designed with a weir elevation of 5325'. If the runoff reaches above this elevation within the pond, the weir will discharge runoff and continue discharging up to an elevation of 5336'. The existing condition is fully built out and is able to be routed through the Kinney Dam efficiently. the HEC-HMS output report indicates runoff will reach a peak elevation of 5325' and does not require the weir to alleviate the pond volume. HEC-HMS results are listed below in the output table.

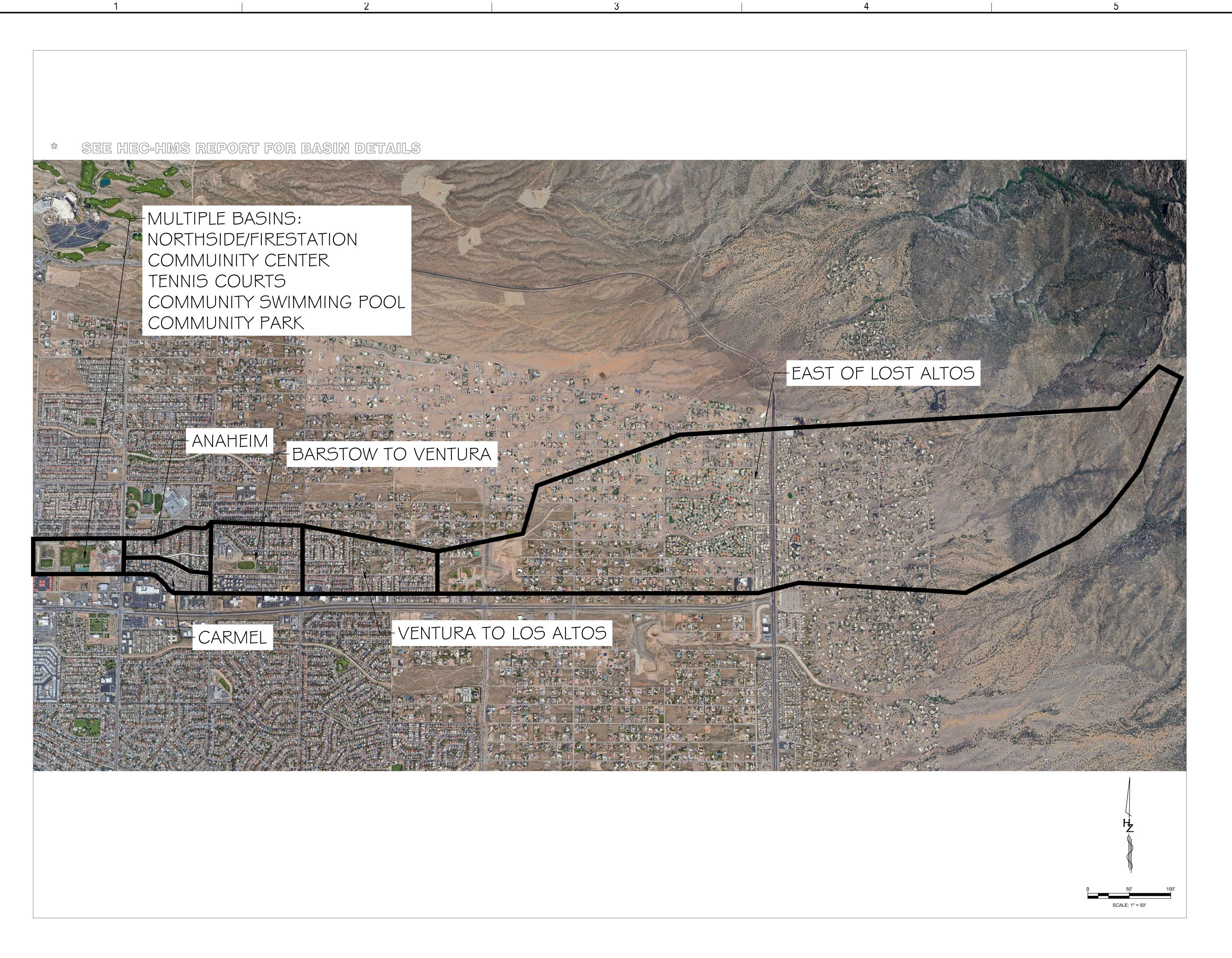
Global Results Summary

diobal Results Summary				
Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Volume (IN)	
East of los altos	3.6	1710.58	1.67	
Ventura to Los Altos	0.22	516.3	3.31	
Junction - 5	3.82	1741.82	1.76	
Barstow to Ventura	0.19	445.9	3.31	
Junction - 4	4.01	1772.08	1.83	





Anaheim	0.06	146.31	3.49
Carmel	0.05	121.98	3.49
Junction - 3	4.12	1785.65	1.87
Com center	0.01	26.6	3.49
Junction - 2	4.13	1786.07	1.88
Northside/fire	0.02	36.34	2.31
Tennis	0.01	19.38	3.49
Pool	0.01	20.39	3.49
Junction - 1	4.17	1787.62	1.89
Park	0.02	31.41	2.23
Ndb park pond	4.19	1098.41	1.85
Ndb outfall	4.19	1098.41	1.85



HZ ZOLLARS

333 Rio Rancho Dr. NE, Suite 101 Rio Rancho, New Mexico 87124 505.892.5141 www.huitt-zollars.com

> NORTH DOMINGO BACA LOMR

PROJECT NO.:

DRAWN BY: STAFF

REVIEWED BY: STAFF

APPROVED BY: STAFF

ISSUE DRAWING LOG:

NORTH DOMINGO BACA LARGE BASIN MAP

> LOMR EXHIBIT 1

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* SEE HEC-HMS REPORT FOR BASIN DETAILS



NORTH DOMINGO BACA

LOMR

PROJECT NO.:

DRAWN BY: STAFF

REVIEWED BY: STAFF

ISSUE DRAWING LOG:

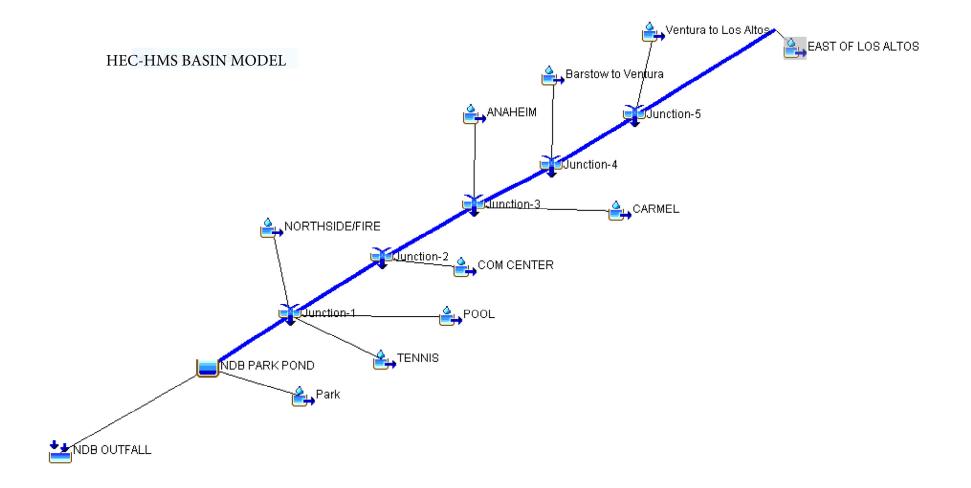
APPROVED BY:

STAFF

NORTH DOMINGO BACA SMALL BASIN MAP

> LOMR EXHIBIT 2

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Project: Ndb

Simulation Run: Run I

Simulation Start: 17 January 2024, 24:00 Simulation End: 18 January 2024, 24:00

HMS Version: 4.9

Executed: 07 June 2024, 15:37

Global Parameter Summary - Subbasin

Area (MI²)

Element Name	Area (MI²)
East of los altos	3.6
Ventura to Los Altos	0.22
Barstow to Ventura	0.19
Anaheim	0.06
Carmel	0.05
Com center	0.01
Northside/fire	0.02
Tennis	0.01
Pool	0.01
Park	0.02

Downstream

Element Name	Downstream
East of los altos	Reach 6
Ventura to Los Altos	Junction - 5
Barstow to Ventura	Junction - 4
Anaheim	Junction - 3
Carmel	Junction - 3
Com center	Junction - 2
Northside/fire	Junction - I
Tennis	Junction - I
Pool	Junction - 1
Park	Ndb park pond

Loss Rate: Scs

Element Name	Percent Impervious Area	Curve Number
East of los altos	Ю	77
Ventura to Los Altos	75	90
Barstow to Ventura	75	90
Anaheim	90	92
Carmel	90	92
Com center	90	92
Northside/fire	58	60
Tennis	90	92
Pool	90	92
Park	10	85

Transform: Scs

Element Name	Lag	Unitgraph Type
East of los altos	58	Standard
Ventura to Los Altos	IO	Standard
Barstow to Ventura	IO	Standard
Anaheim	IO	Standard
Carmel	IO	Standard
Com center	IO	Standard
Northside/fire	IO	Standard
Tennis	IO	Standard
Pool	5.2	Standard
Park	IO	Standard

Global Parameter Summary - Reach

Downstream

Element Name	Downstream
Reach 6	Junction - 5
Reach 5	Junction - 4
Reach 4	Junction - 3
Reach 3	Junction - 2
Reach 2	Junction - 1
Reach 1	Ndb park pond

Route: Muskingum Cunge

Element Name	Method	Channel	Length (FT)	Energy Slope (FT/FT)	mannings	Width		Initial Variable	Space - Time Method	Index Parameter Type	Index Flow	Maximun Depth Iterations
Reach 6	Muskingum Cunge	Trapezoid	3870	0	0.01	24	I	Combined Inflow	Automatic DX and DT	Index Flow	1700	20
Reach 5	Muskingum Cunge	Trapezoid	3870	o	0.01	24	I	Combined Inflow	Automatic DX and DT	Index Flow	1700	20
Reach 4	Muskingum Cunge	Trapezoid	2700	0	0.01	24	I	Combined Inflow	Automatic DX and DT	Index Flow	2005	20
Reach 3	Muskingum Cunge	Trapezoid	452	0	0.01	24	I	Combined Inflow	Automatic DX and DT	Index Flow	2300	20
Reach 2	Muskingum Cunge	Trapezoid	968	0	0.01	24	I	Combined Inflow	Automatic DX and DT	Index Flow	2358	20
Reach I	Muskingum Cunge	Trapezoid	707	0	0.01	24	I	Combined Inflow	Automatic DX and DT	Index Flow	2430	20

Global Results Summary

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
East of los altos	3.6	1710.58	18Jan2024, 13:05	1.67
Reach 6	3.6	1706.04	18Jan2024, 13:10	1.67
Ventura to Los Altos	0.22	516.3	18Jan2024, 12:15	3.31
Junction - 5	3.82	1741.82	18Jan2024, 13:10	1.76
Reach 5	3.82	1741.18	18Jan2024, 13:10	1.76

Barstow to Ventura	0.19	445.9	18Jan2024, 12:15	3.31
Junction - 4	4.01	1772.08	18Jan2024, 13:10	1.83
Reach 4	4.01	1767.42	18Jan2024, 13:10	1.83
Anaheim	0.06	146.31	18Jan2024, 12:10	3.49
Carmel	0.05	121.98	18Jan2024, 12:10	3.49
Junction - 3	4.12	1785.65	18Jan2024, 13:10	1.87
Reach 3	4.12	1784.26	18Jan2024, 13:10	1.87
Com center	0.01	26.6	18Jan2024, 12:10	3.49
Junction - 2	4.13	1786.07	18Jan2024, 13:10	1.88
Reach 2	4.13	1782.82	18Jan2024, 13:10	1.88
Northside/fire	0.02	36.34	18Jan2024, 12:15	2.31
Tennis	0.01	19.38	18Jan2024, 12:10	3.49
Pool	0.01	20.39	18Jan2024, 12:10	3.49
Junction - 1	4.17	1787.62	18Jan2024, 13:10	1.89
Reach 1	4.17	1784.85	18Jan2024, 13:10	1.89
Park	0.02	31.41	18Jan2024, 12:15	2.23
Ndb park pond	4.19	1098.41	18Jan2024, 13:55	1.85
Ndb outfall	4.19	1098.41	18Jan2024, 13:55	1.85

Subbasin: EAST OF LOS ALTOS

Area (MI²): 3.6 Downstream: Reach 6

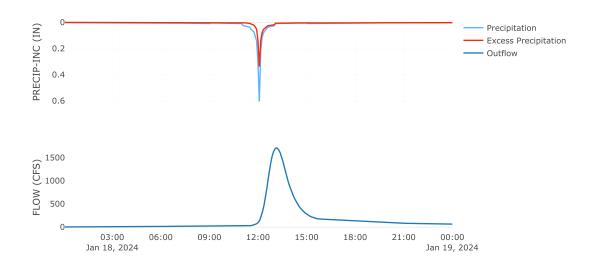
Loss Rate: Scs

	Loss Rate. Ses
Percent Impervious Area	IO
Curve Number	77
	Transform: Scs
Lag	58
Unitgraph Type	Standard

Results: EAST OF LOS ALTOS

Peak Discharge (CFS)	1710.58
Time of Peak Discharge	18Jan2024, 13:05
Volume (IN)	1.67
Precipitation Volume (AC - FT)	687.29
Loss Volume (AC - FT)	361.1
Excess Volume (AC - FT)	326.19
Direct Runoff Volume (AC - FT)	319.99
Baseflow Volume (AC - FT)	0

Precipitation and Outflow



Reach: Reach 6

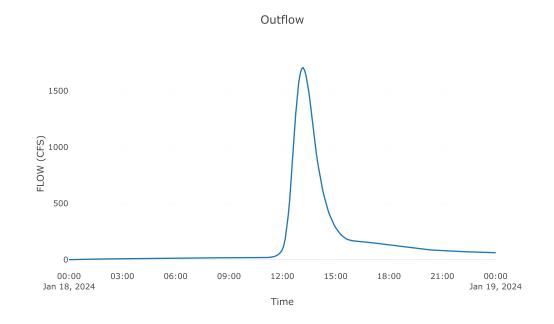
Downstream: Junction - 5

Route: Muskingum Cunge

Method	Muskingum Cunge
Channel	Trapezoid
Length (FT)	3870
Energy Slope (FT/FT)	0
Mannings n	0.01
Bottom Width (FT)	24
Side Slope (FT/FT)	I
Initial Variable	Combined Inflow
Space - Time Method	Automatic DX and DT
Index Parameter Type	Index Flow
Index Flow	1700
Maximum Depth Iterations	20
Maximum Route Step Iterations	30

Results: Reach 6

Peak Discharge (CFS)	1706.04
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.67
Peak Inflow (CFS)	1710.58
Inflow Volume (AC - FT)	319.99



Subbasin: Ventura to Los Altos

Area (MI^2) : 0.22

Downstream: Junction - 5

Loss Rate: Scs

Percent Impervious Area	75
Curve Number	90

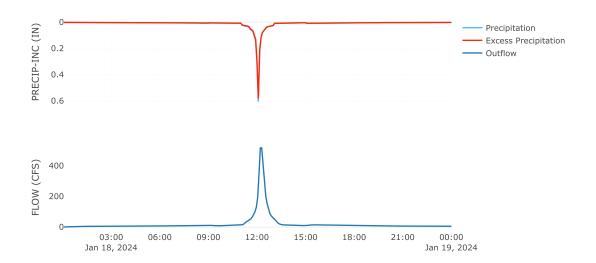
Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: Ventura to Los Altos

Peak Discharge (CFS)	516.3
Time of Peak Discharge	18Jan2024, 12:15
Volume (IN)	3.31
Precipitation Volume (AC - FT)	42
Loss Volume (AC - FT)	3.I
Excess Volume (AC - FT)	38.9
Direct Runoff Volume (AC - FT)	38.82
Baseflow Volume (AC - FT)	0

Precipitation and Outflow

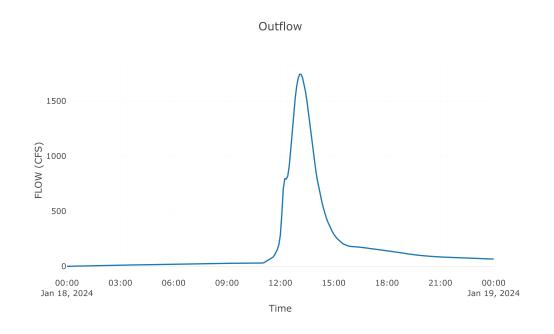


Junction: Junction-5

Downstream : Reach 5

Results: Junction-5

Peak Discharge (CFS)	1741.82
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.76



Reach: REACH 5

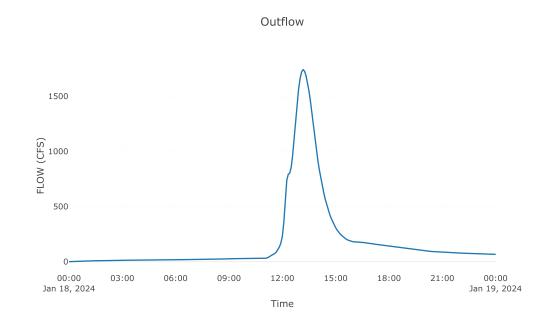
Downstream: Junction - 4

Route: Muskingum Cunge

Method	Muskingum Cunge
Channel	Trapezoid
Length (FT)	3870
Energy Slope (FT/FT)	0
Mannings n	0.01
Bottom Width (FT)	24
Side Slope (FT/FT)	I
Initial Variable	Combined Inflow
Space - Time Method	Automatic DX and DT
Index Parameter Type	Index Flow
Index Flow	1700
Maximum Depth Iterations	20
Maximum Route Step Iterations	30

Results: REACH 5

Peak Discharge (CFS)	1741.18
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	I.76
Peak Inflow (CFS)	1741.82
Inflow Volume (AC - FT)	358.5



Subbasin: Barstow to Ventura

Area (MI²): 0.19

Downstream: Junction - 4

Loss Rate: Scs

Percent Impervious Area	75
Curve Number	90

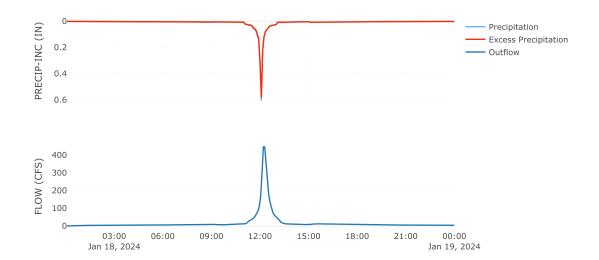
Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: Barstow to Ventura

Peak Discharge (CFS)	445.9
Time of Peak Discharge	18Jan2024, 12:15
Volume (IN)	3.31
Precipitation Volume (AC - FT)	36.27
Loss Volume (AC - FT)	2.68
Excess Volume (AC - FT)	33.6
Direct Runoff Volume (AC - FT)	33.52
Baseflow Volume (AC - FT)	0

Precipitation and Outflow

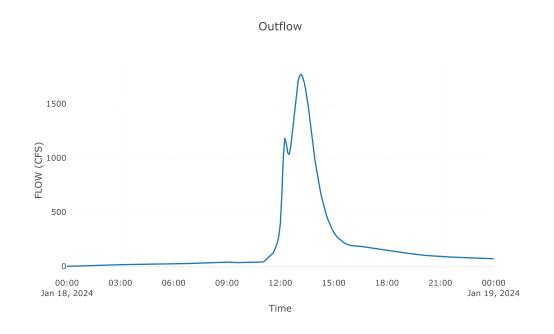


Junction: Junction-4

Downstream : Reach 4

Results: Junction-4

Peak Discharge (CFS)	1772.08
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.83



Reach: REACH 4

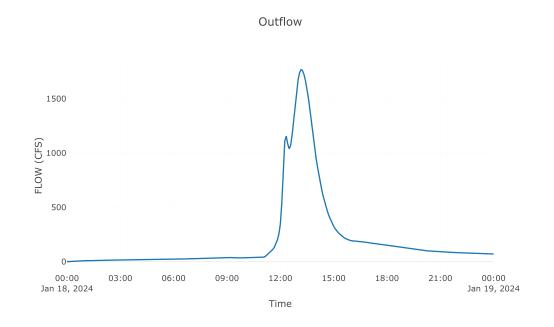
Downstream: Junction - 3

Route: Muskingum Cunge

Method	Muskingum Cunge
Channel	Trapezoid
Length (FT)	2700
Energy Slope (FT/FT)	0
Mannings n	0.01
Bottom Width (FT)	24
Side Slope (FT/FT)	I
Initial Variable	Combined Inflow
Space - Time Method	Automatic DX and DT
Index Parameter Type	Index Flow
Index Flow	2005
Maximum Depth Iterations	20
Maximum Route Step Iterations	30

Results: REACH 4

Peak Discharge (CFS)	1767.42
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	I.83
Peak Inflow (CFS)	1772.08
Inflow Volume (AC - FT)	391.7



Subbasin: ANAHEIM

Area (MI²): 0.06

Downstream: Junction - 3

Loss Rate: Scs

Percent Impervious Area	90
Curve Number	92

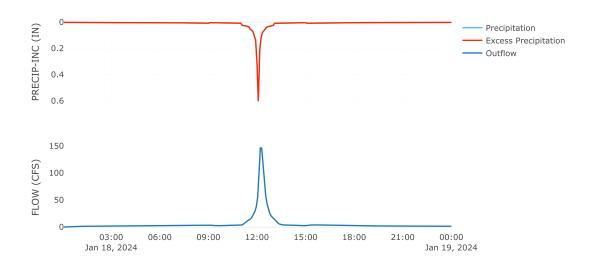
Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: ANAHEIM

Peak Discharge (CFS)	146.31
Time of Peak Discharge	18Jan2024, 12:10
Volume (IN)	3.49
Precipitation Volume (AC - FT)	11.48
Loss Volume (AC - FT)	0.28
Excess Volume (AC - FT)	II.2I
Direct Runoff Volume (AC - FT)	11.18
Baseflow Volume (AC - FT)	0

Precipitation and Outflow



Subbasin: CARMEL

Area (MI²): 0.05

Downstream: Junction - 3

Loss Rate: Scs

Percent Impervious Area	90
Curve Number	92

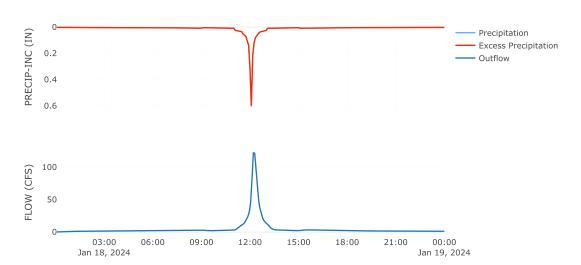
Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: CARMEL

Peak Discharge (CFS)	121.98
Time of Peak Discharge	18Jan2024, 12:10
Volume (IN)	3.49
Precipitation Volume (AC - FT)	9.57
Loss Volume (AC - FT)	0.23
Excess Volume (AC - FT)	9.34
Direct Runoff Volume (AC - FT)	9.32
Baseflow Volume (AC - FT)	0

Precipitation and Outflow

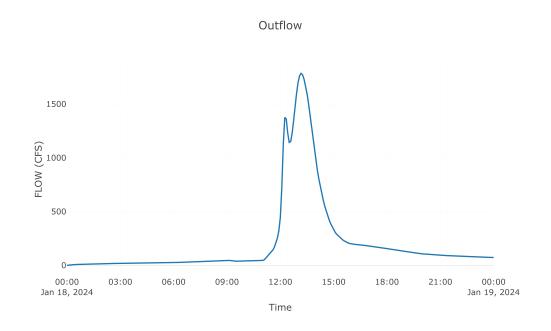


Junction: Junction-3

Downstream : Reach 3

Results: Junction-3

Peak Discharge (CFS)	1785.65
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.87



Reach: REACH 3

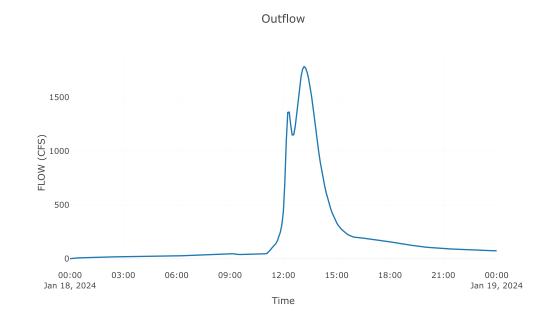
Downstream: Junction - 2

Route: Muskingum Cunge

Method	Muskingum Cunge
Channel	Trapezoid
Length (FT)	452
Energy Slope (FT/FT)	0
Mannings n	0.01
Bottom Width (FT)	24
Side Slope (FT/FT)	I
Initial Variable	Combined Inflow
Space - Time Method	Automatic DX and DT
Index Parameter Type	Index Flow
Index Flow	2300
Maximum Depth Iterations	20
Maximum Route Step Iterations	30

Results: REACH 3

Peak Discharge (CFS)	1784.26
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	I.87
Peak Inflow (CFS)	1785.65
Inflow Volume (AC - FT)	411.97



Subbasin: COM CENTER

Area (MI^2) : 0.01

Downstream: Junction - 2

Loss Rate: Scs

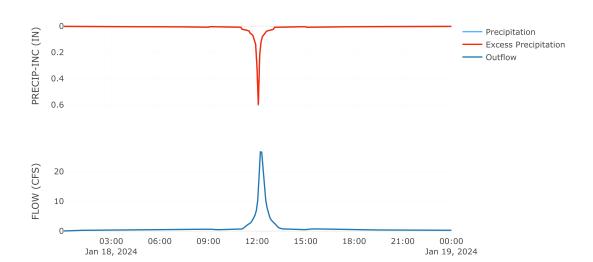
Percent Impervious Area	90
Curve Number	92

Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: COM CENTER

Peak Discharge (CFS)	26.6
Time of Peak Discharge	18Jan2024, 12:10
Volume (IN)	3.49
Precipitation Volume (AC - FT)	2.09
Loss Volume (AC - FT)	0.05
Excess Volume (AC - FT)	2.04
Direct Runoff Volume (AC - FT)	2.03
Baseflow Volume (AC - FT)	0

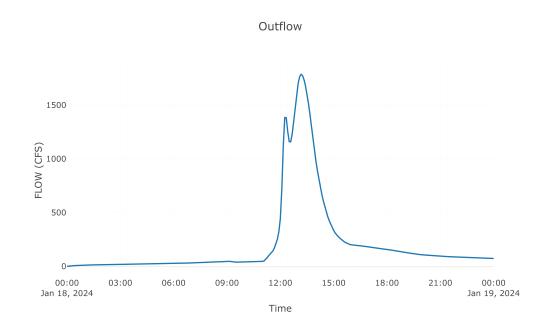


Junction: Junction-2

Downstream : Reach 2

Results: Junction-2

Peak Discharge (CFS)	1786.07
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.88



Reach: REACH 2

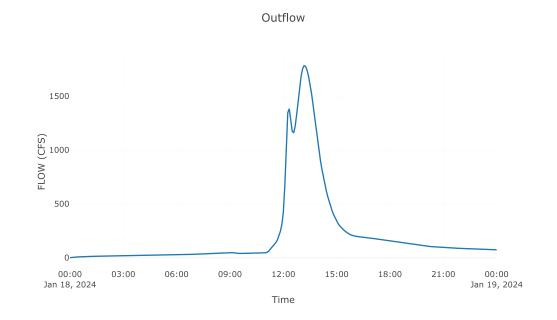
Downstream: Junction - I

Route: Muskingum Cunge

Method	Muskingum Cunge
Channel	Trapezoid
Length (FT)	968
Energy Slope (FT/FT)	0
Mannings n	0.01
Bottom Width (FT)	24
Side Slope (FT/FT)	I
Initial Variable	Combined Inflow
Space - Time Method	Automatic DX and DT
Index Parameter Type	Index Flow
Index Flow	2358
Maximum Depth Iterations	20
Maximum Route Step Iterations	30

Results: REACH 2

Peak Discharge (CFS)	1782.82
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.88
Peak Inflow (CFS)	1786.07
Inflow Volume (AC - FT)	413.99



Subbasin: NORTHSIDE/FIRE

Area (MI^2) : 0.02

Downstream: Junction - I

Loss Rate: Scs

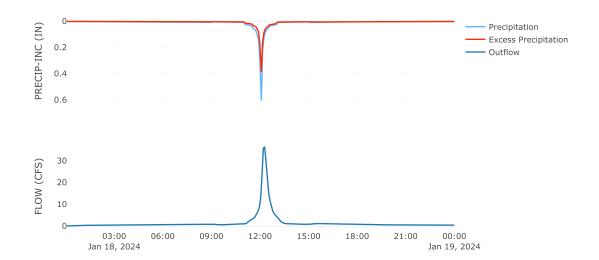
Percent Impervious Area	58
Curve Number	60

Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: NORTHSIDE/FIRE

Peak Discharge (CFS)	36.34
Time of Peak Discharge	18Jan2024, 12:15
Volume (IN)	2.31
Precipitation Volume (AC - FT)	4.43
Loss Volume (AC - FT)	I.57
Excess Volume (AC - FT)	2.86
Direct Runoff Volume (AC - FT)	2.86
Baseflow Volume (AC - FT)	0



Subbasin: TENNIS

Area (MI^2) : 0.01

Downstream: Junction - I

Loss Rate: Scs

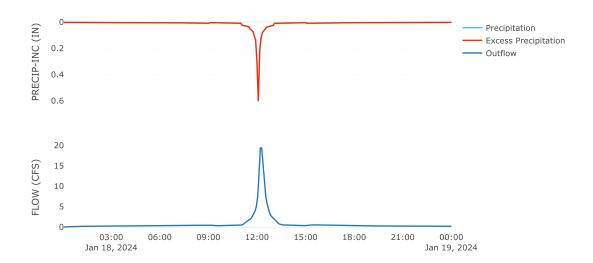
Percent Impervious Area	90
Curve Number	92

Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: TENNIS

Peak Discharge (CFS)	19.38
Time of Peak Discharge	18Jan2024, 12:10
Volume (IN)	3.49
Precipitation Volume (AC - FT)	1.52
Loss Volume (AC - FT)	0.04
Excess Volume (AC - FT)	1.48
Direct Runoff Volume (AC - FT)	1.48
Baseflow Volume (AC - FT)	0



Subbasin: POOL

Area (MI^2) : 0.01

Downstream: Junction - I

Loss Rate: Scs

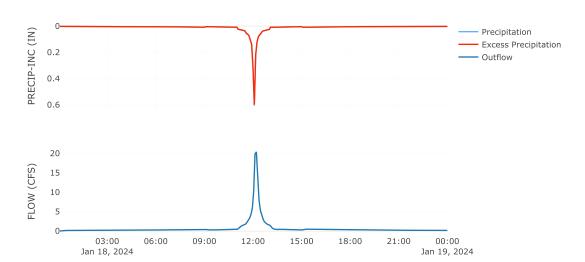
Percent Impervious Area	90
Curve Number	92

Transform: Scs

Lag	5.2
Unitgraph Type	Standard

Results: POOL

Peak Discharge (CFS)	20.39
C ()	
Time of Peak Discharge	18Jan2024, 12:10
Volume (IN)	3.49
Precipitation Volume (AC - FT)	1.31
Loss Volume (AC - FT)	0.03
Excess Volume (AC - FT)	1.28
Direct Runoff Volume (AC - FT)	1.28
Baseflow Volume (AC - FT)	0

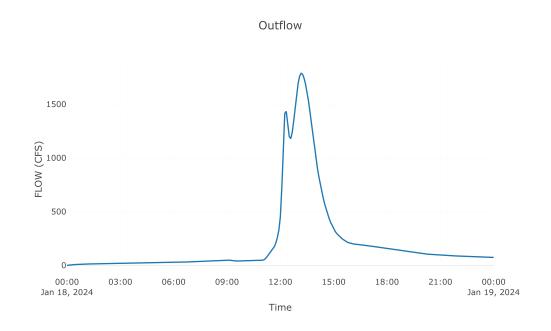


Junction: Junction-1

Downstream : Reach 1

Results: Junction-1

Peak Discharge (CFS)	1787.62
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.89



Reach: REACH 1

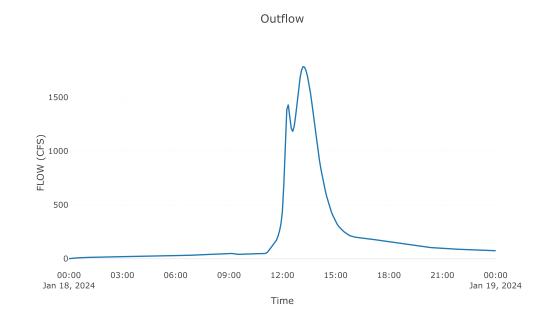
Downstream : Ndb park pond

Route: Muskingum Cunge

	o o
Method	Muskingum Cunge
Channel	Trapezoid
Length (FT)	707
Energy Slope (FT/FT)	0
Mannings n	0.01
Bottom Width (FT)	24
Side Slope (FT/FT)	I
Initial Variable	Combined Inflow
Space - Time Method	Automatic DX and DT
Index Parameter Type	Index Flow
Index Flow	2430
Maximum Depth Iterations	20
Maximum Route Step Iterations	30

Results: REACH 1

Peak Discharge (CFS)	1784.85
Time of Peak Discharge	18Jan2024, 13:10
Volume (IN)	1.89
Peak Inflow (CFS)	1787.62
Inflow Volume (AC - FT)	419.56



Subbasin: Park

Area (MI^2) : 0.02

Downstream : Ndb park pond

Loss Rate: Scs

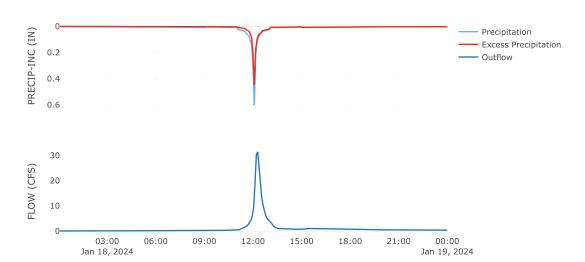
Percent Impervious Area	10
Curve Number	85

Transform: Scs

Lag	IO
Unitgraph Type	Standard

Results: Park

Peak Discharge (CFS)	31.41
Time of Peak Discharge	18Jan2024, 12:15
Volume (IN)	2.23
Precipitation Volume (AC - FT)	3.36
Loss Volume (AC - FT)	1.26
Excess Volume (AC - FT)	2.1
Direct Runoff Volume (AC - FT)	2.09
Baseflow Volume (AC - FT)	0

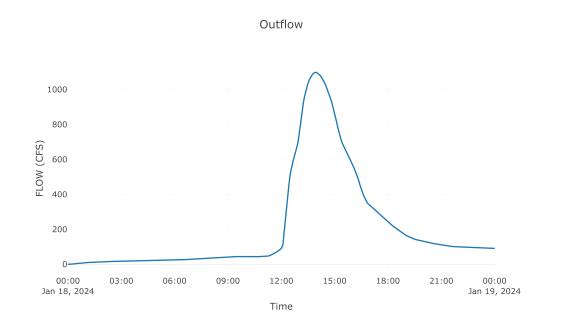


Reservoir: NDB PARK POND

 $\textbf{Downstream}: \textbf{Ndb} \ outfall$

Results: NDB PARK POND

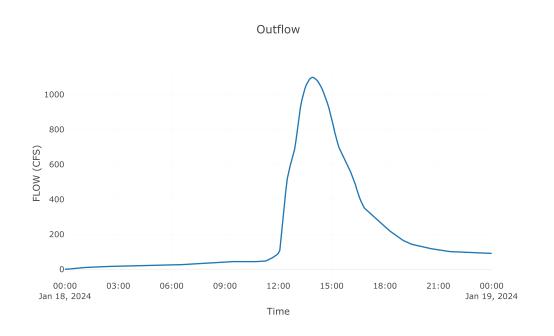
Peak Discharge (CFS)	1098.41
Time of Peak Discharge	18Jan2024, 13:55
Volume (IN)	1.85
Peak Inflow (CFS)	1787.33
Time of Peak Inflow	18Jan2024, 13:10
Inflow Volume (AC - FT)	421.62
Maximum Storage (AC - FT)	120.87
Peak Elevation (FT)	5325.04
Discharge Volume (AC - FT)	412.14



Sink: NDB OUTFALL

Results: NDB OUTFALL

Peak Discharge (CFS)	1098.41
Time of Peak Discharge	18Jan2024, 13:55
Volume (IN)	I.85





PROJECT	North	Dom ing	0	Baca	LOMR	
		U				

R312254,01

HEC- KMS Calculations



Item 5

Floodplain Analysis (HEC-RAS, Upstream Channel)



Item 5. HEC-RAS, Upstream Channel

The analysis for the culvert design utilizes HEC-RAS to assure the design is adequate to handle the peak flow. The culvert cross section was determined by using the immediate upstream channel cross section. The cross-section dimensions will be held through the culvert beginning at the Wyoming location down to the outfall into Kinney Dam pond. See the HEC-RAS report for more details.

The peak flow was generated using HEC-HMS and is 1787 cfs. The peak flow maintains an elevation that is lower then the top of the culvert and will efficiently be directed towards Kinney Dam. These results indicate that the culvert is currently functioning as a sustainable drainage device.

HEC-RAS HEC-RAS 6.5 February 2024 U.S. Army Corps of Engineers Hydrologic Engineering Center 609 Second Street Davis, California

Χ	Х	XXXXXX	XX	XX		XX	XX	Х	X	XXXX
Χ	Χ	X	Χ	Х		Χ	Х	Χ	Χ	Χ
Χ	Χ	X	Χ			Χ	Х	Χ	Χ	Χ
XXX	XXXX	XXXX	Χ		XXX	XX	XX	XXX	XXX	XXXX
Χ	Χ	X	Χ			Χ	Χ	Χ	Χ	Х
Χ	Х	X	Χ	Х		Х	Х	Χ	Χ	Х
Χ	Х	XXXXXX	XX	XX		Х	Х	Х	Х	XXXXX

PROJECT DATA

Project Title: North Domingo Baca Project File: NorthDomingoBaca.prj Run Date and Time: 6/7/2024 9:48:10 AM

Project in English units

PLAN DATA

Plan Title: NDB Plan Data

Plan File : h:\Transfer\Corie\Aquatic Center\HEC-RAS\NorthDomingoBaca.p01

Geometry Title: Culvert Geometry

Geometry File: h:\Transfer\Corie\Aquatic Center\HEC-RAS\NorthDomingoBaca.g01

Flow Title : NDB Flow Data

Flow File : h:\Transfer\Corie\Aquatic Center\HEC-RAS\NorthDomingoBaca.f01

Plan Summary Information:

Bridges = 0 Lateral Structures = 0

Computational Information

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

Computation Options

Critical depth computed only where necessary

Conveyance Calculation Method: At breaks in n values only

Friction Slope Method: Average Conveyance

Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: NDB Flow Data

Flow File : h:\Transfer\Corie\Aquatic Center\HEC-RAS\NorthDomingoBaca.f01

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2	PF 3	PF 4
Culvert	1	2127	500	1000	1500	1787.6

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Culvert	1	PF 1	Normal S = 0.001	Critical
Culvert	1	PF 2	Normal $S = 0.001$	Critical
Culvert	1	PF 3	Normal $S = 0.001$	Critical
Culvert	1	PF 4	Normal $S = 0.001$	Critical

GEOMETRY DATA

Geometry Title: Culvert Geometry

Geometry File: h:\Transfer\Corie\Aquatic Center\HEC-RAS\NorthDomingoBaca.g01

CROSS SECTION

RIVER: Culvert

REACH: 1 RS: 2127

INPUT

Description: NDB Culvert

Station Elevation Data num= 4

 Sta
 Elev
 Sta
 Elev
 Sta
 Elev
 Sta
 Elev

 0
 5386
 5
 5380
 29
 5380
 34
 5386

Manning's n Values num= 3

Sta n Val Sta n Val Sta n Val 0 .013 0 .013 34 .013

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

0 34 452 452 452 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5383.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.		0.013	
W.S. Elev (ft)	5382.30	Reach Len. (ft)	452.00	452.00	452.00
Crit W.S. (ft)	5382.30	Flow Area (sq ft)		59.71	
<pre>E.G. Slope (ft/ft)</pre>	0.002143	Area (sq ft)		59.71	
Q Total (cfs)	500.00	Flow (cfs)		500.00	
Top Width (ft)	27.84	Top Width (ft)		27.84	
Vel Total (ft/s)	8.37	Avg. Vel. (ft/s)		8.37	
Max Chl Dpth (ft)	2.30	Hydr. Depth (ft)		2.14	
Conv. Total (cfs)	10800.1	Conv. (cfs)		10800.1	
Length Wtd. (ft)	452.00	Wetted Per. (ft)		30.00	
Min Ch El (ft)	5380.00	Shear (lb/sq`ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		2.23	
Frctn Loss (ft)	3.19	Cum Volume (acre-ft)		1.30	
C & E Loss (ft)	1.81	Cum SA (acres)		1.26	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft) Vel Head (ft)	5385.25 1.64	Element Wt. n-Val.	Left OB	Channel 0.013	Right OB
W.S. Elev (ft)	5383.60	Reach Len. (ft)	452.00	452.00	452.00
Crit W.S. (ft)	5383.60	Flow Area (sq ft)		97.29	
<pre>E.G. Slope (ft/ft)</pre>	0.001942	Area (sq ft)		97.29	
Q Total (cfs)	1000.00	Flow (cfs)		1000.00	
Top Width (ft)	30.01	Top Width (ft)		30.01	
Vel Total (ft/s)	10.28	Avg. Vel. (ft/s)		10.28	
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)		3.24	
Conv. Total (cfs)	22690.6	Conv. (cfs)		22690.6	
Length Wtd. (ft)	452.00	Wetted Per. (ft)		33.38	
Min Ch El (ft)	5380.00	Shear (lb/sq ft)		0.35	
Alpha	1.00	Stream Power (lb/ft s)		3.63	
Frctn Loss (ft)	2.71	Cum Volume (acre-ft)		2.08	
C & E Loss (ft)	1.93	Cum SA (acres)		1.31	

Warning: Slope too shallow for slope area to converge during supercritical flow calculations (normal depth is above critical depth). Water surface set to critical depth.

E.G. Elev (ft)	5386.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.07	Wt. n-Val.		0.013	
W.S. Elev (ft)	5384.66	Reach Len. (ft)	452.00	452.00	452.00
Crit W.S. (ft)	5384.67	Flow Area (sq ft)		129.89	
<pre>E.G. Slope (ft/ft)</pre>	0.001853	Area (sq ft)		129.89	
Q Total (cfs)	1500.00	Flow (cfs)		1500.00	
Top Width (ft)	31.76	Top Width (ft)		31.76	
Vel Total (ft/s)	11.55	Avg. Vel. (ft/s)		11.55	
Max Chl Dpth (ft)	4.66	Hydr. Depth (ft)		4.09	
Conv. Total (cfs)	34844.8	Conv. (cfs)		34844.8	
Length Wtd. (ft)	452.00	Wetted Per. (ft)		36.13	
Min Ch El (ft)	5380.00	Shear (1b/sq ft)		0.42	
Alpha	1.00	Stream Power (lb/ft s)		4.80	
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)		4.13	
C & E Loss (ft)	2.00	Cum SA (acres)		1.42	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	5387.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.28	Wt. n-Val.		0.013	
W.S. Elev (ft)	5385.21	Reach Len. (ft)	452.00	452.00	452.00
Crit W.S. (ft)	5385.21	Flow Area (sq ft)		147.55	
<pre>E.G. Slope (ft/ft)</pre>	0.001812	Area (sq ft)		147.55	
Q Total (cfs)	1787.60	Flow (cfs)		1787.60	
Top Width (ft)	32.68	Top Width (ft)		32.68	
Vel Total (ft/s)	12.12	Avg. Vel. (ft/s)		12.12	
Max Chl Dpth (ft)	5.21	Hydr. Depth (ft)		4.52	
Conv. Total (cfs)	41991.3	Conv. (cfs)		41991.3	
Length Wtd. (ft)	452.00	Wetted Per. (ft)		37.55	
Min Ch El (ft)	5380.00	Shear (lb/sq ft)		0.44	
Alpha	1.00	Stream Power (lb/ft s)		5.39	
Frctn Loss (ft)	2.36	Cum Volume (acre-ft)		3.11	
C & E Loss (ft)	2.04	Cum SA (acres)		1.37	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

CROSS SECTION

RIVER: Culvert

REACH: 1 RS: 1675

INPUT

Description: NDB Culvert Station Elevation Data num=

Sta Elev Sta Elev Sta Elev Sta Elev 0 5364.6 5 5358.6 29 5358.6 34 5364.6

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .013 0 .013 34 .013

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 34 968 968 968 .1 .3

E.G. Elev (ft)	5377.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	18.18	Wt. n-Val.		0.013	
W.S. Elev (ft)	5359.20	Reach Len. (ft)	968.00	968.00	968.00
Crit W.S. (ft)	5360.90	Flow Area (sq ft)		14.62	
<pre>E.G. Slope (ft/ft)</pre>	0.188614	Area (sq ft)		14.62	
Q Total (cfs)	500.00	Flow (cfs)		500.00	

Top Width (ft)	24.99	Top Width (ft)	24.99
Vel Total (ft/s)	34.21	Avg. Vel. (ft/s)	34.21
Max Chl Dpth (ft)	0.60	Hydr. Depth (ft)	0.58
Conv. Total (cfs)	1151.3	Conv. (cfs)	1151.3
Length Wtd. (ft)	968.00	Wetted Per. (ft)	25.55
Min Ch El (ft)	5358.60	Shear (lb/sq ft)	6.74
Alpha	1.00	Stream Power (lb/ft s)	230.40
Frctn Loss (ft)	41.93	Cum Volume (acre-ft)	0.92
C & E Loss (ft)	4.15	Cum SA (acres)	0.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft) Vel Head (ft)	5380.61 20.91	Element Wt. n-Val.	Left OB	Channel 0.013	Right OB
W.S. Elev (ft)	5359.69	Reach Len. (ft)	968.00	968.00	968.00
Crit W.S. (ft)	5362.20	Flow Area (sq ft)		27.26	
<pre>E.G. Slope (ft/ft)</pre>	0.100941	Area (sq ft)		27.26	
Q Total (cfs)	1000.00	Flow (cfs)		1000.00	
Top Width (ft)	25.82	Top Width (ft)		25.82	
Vel Total (ft/s)	36.68	Avg. Vel. (ft/s)		36.68	
Max Chl Dpth (ft)	1.09	Hydr. Depth (ft)		1.06	
Conv. Total (cfs)	3147.5	Conv. (cfs)		3147.5	
Length Wtd. (ft)	968.00	Wetted Per. (ft)		26.85	
Min Ch El (ft)	5358.60	Shear (lb/sq ft)		6.40	
Alpha	1.00	Stream Power (lb/ft s)		234.71	
Frctn Loss (ft)	41.08	Cum Volume (acre-ft)		1.44	
C & E Loss (ft)	3.79	Cum SA (acres)		1.02	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft) Vel Head (ft)	5382.27 22.09	Element Wt. n-Val.	Left OB	Channel 0.013	Right OB
W.S. Elev (ft)	5360.17	Reach Len. (ft)	968.00	968.00	968.00
Crit W.S. (ft)	5363.26	Flow Area (sq ft)		39.78	
<pre>E.G. Slope (ft/ft)</pre>	0.068431	Area (sq ft)		39.78	
Q Total (cfs)	1500.00	Flow (cfs)		1500.00	
Top Width (ft)	26.62	Top Width (ft)		26.62	
Vel Total (ft/s)	37.71	Avg. Vel. (ft/s)		37.71	
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)		1.49	
Conv. Total (cfs)	5734.1	Conv. (cfs)		5734.1	
Length Wtd. (ft)	968.00	Wetted Per. (ft)		28.09	
Min Ch El (ft)	5358.60	Shear (lb/sq ft)		6.05	
Alpha	1.00	Stream Power (lb/ft s)		228.12	
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)		3.25	
C & E Loss (ft)	0.00	Cum SA (acres)		1.12	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross

sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

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

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

E.G. Elev (ft)	5383.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	22.66	Wt. n-Val.		0.013	
W.S. Elev (ft)	5360.43	Reach Len. (ft)	968.00	968.00	968.00
Crit W.S. (ft)	5363.81	Flow Area (sq ft)		46.82	
E.G. Slope (ft/ft)	0.058307	Area (sq ft)		46.82	

```
Q Total (cfs)
                          1787.60
                                      Flow (cfs)
                                                                            1787.60
Top Width (ft)
                            27.06
                                      Top Width (ft)
                                                                              27.06
Vel Total (ft/s)
                            38.18
                                                                               38.18
                                      Avg. Vel. (ft/s)
Max Chl Dpth (ft)
                             1.83
                                      Hydr. Depth (ft)
                                                                               1.73
Conv. Total (cfs)
                           7403.0
                                      Conv. (cfs)
                                                                             7403.0
Length Wtd. (ft)
Min Ch El (ft)
                           968.00
                                      Wetted Per. (ft)
                                                                              28.77
                                      Shear (lb/sq ft)
                           5358.60
                                                                               5.92
                                      Stream Power (lb/ft s)
                             1.00
Alpha
                                                                             226,14
Frctn Loss (ft)
                            38.26
                                      Cum Volume (acre-ft)
                                                                               2.10
C & E Loss (ft)
                             2.51
                                      Cum SA (acres)
                                                                               1.06
```

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross

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

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

CROSS SECTION

RIVER: Culvert

REACH: 1 RS: 707

Description: NDB Culvert

Station Elevation Data num=

Elev Elev Elev Sta Elev Sta Sta Sta 0 5331.75 5 5325.75 29 5325.75 34 5331.75

Manning's n Values num= Sta n Val Sta n Val Sta n Val 0 .013 0 .013 34 .013

Lengths: Left Channel Coeff Contr. Bank Sta: Left Right Right Expan. 707 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5331.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.25	Wt. n-Val.		0.013	
W.S. Elev (ft)	5326.96	Reach Len. (ft)	707.00	707.00	707.00
Crit W.S. (ft)	5328.05	Flow Area (sq ft)		30.25	
E.G. Slope (ft/ft)	0.018110	Area (sq ft)		30.25	
Q Total (cfs)	500.00	Flow (cfs)		500.00	
Top Width (ft)	26.02	Top Width (ft)		26.02	
Vel Total (ft/s)	16.53	Avg. Vel. (ft/s)		16.53	
Max Chl Dpth (ft)	1.21	Hydr. Depth (ft)		1.16	
Conv. Total (cfs)	3715.4	Conv. (cfs)		3715.4	
Length Wtd. (ft)	707.00	Wetted Per. (ft)		27.15	
Min Ch El (ft)	5325.75	Shear (lb/sq ft)		1.26	
Alpha	1.00	Stream Power (lb/ft s)		20.82	
Frctn Loss (ft)	20.53	Cum Volume (acre-ft)		0.42	
C & E Loss (ft)	0.41	Cum SA (acres)		0.42	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

the need for additional cross sections.

E.G. Elev (ft)	5335.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.14	Wt. n-Val.		0.013	
W.S. Elev (ft)	5327.47	Reach Len. (ft)	707.00	707.00	707.00
Crit W.S. (ft)	5329.35	Flow Area (sq ft)		43.69	
E.G. Slope (ft/ft)	0.022664	Area (sq ft)		43.69	
Q Total (cfs)	1000.00	Flow (cfs)		1000.00	
Top Width (ft)	26.86	Top Width (ft)		26.86	
Vel Total (ft/s)	22.89	Avg. Vel. (ft/s)		22.89	
Max Chl Dpth (ft)	1.72	Hydr. Depth (ft)		1.63	
Conv. Total (cfs)	6642.6	Conv. (cfs)		6642.6	
Length Wtd. (ft)	707.00	Wetted Per. (ft)		28.47	

Min Ch El (ft)	5325.75	Shear (lb/sq ft)	2.17
Alpha	1.00	Stream Power (lb/ft s)	49.69
Frctn Loss (ft)	21.01	Cum Volume (acre-ft)	0.65
C & E Loss (ft)	0.37	Cum SA (acres)	0.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the

water surface that had the least amount of error between computed and assumed values. Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross

sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	5332.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.07	Wt. n-Val.		0.013	
W.S. Elev (ft)	5330.41	Reach Len. (ft)	707.00	707.00	707.00
Crit W.S. (ft)	5330.42	Flow Area (sq ft)		129.99	
<pre>E.G. Slope (ft/ft)</pre>	0.001849	Area (sq ft)		129.99	
Q Total (cfs)	1500.00	Flow (cfs)		1500.00	
Top Width (ft)	31.77	Top Width (ft)		31.77	
Vel Total (ft/s)	11.54	Avg. Vel. (ft/s)		11.54	
Max Chl Dpth (ft)	4.66	Hydr. Depth (ft)		4.09	
Conv. Total (cfs)	34881.5	Conv. (cfs)		34881.5	
Length Wtd. (ft)	707.00	Wetted Per. (ft)		36.14	
Min Ch El (ft)	5325.75	Shear (1b/sq ft)		0.42	
Alpha	1.00	Stream Power (lb/ft s)		4.79	
Frctn Loss (ft)	3.91	Cum Volume (acre-ft)		1.37	
C & E Loss (ft)	2.18	Cum SA (acres)		0.47	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft) Vel Head (ft)	5342.33 14.30	Element Wt. n-Val.	Left OB	Channel 0.013	Right OB
W.S. Elev (ft)	5328.03	Reach Len. (ft)	707.00	707.00	707.00
Crit W.S. (ft) E.G. Slope (ft/ft)	5330.96 0.028542	Flow Area (sq ft) Area (sq ft)		58.92 58.92	
Q Total (cfs)	1787.60	Flow (cfs)		1787.60	
Top Width (ft)	27.79	Top Width (ft)		27.79	
Vel Total (ft/s)	30.34	Avg. Vel. (ft/s)		30.34	
Max Chl Dpth (ft) Conv. Total (cfs)	2.28 10581.0	Hydr. Depth (ft) Conv. (cfs)		2.12 10581.0	
Length Wtd. (ft)	707.00	Wetted Per. (ft)		29.92	
Min Ch El (ft)	5325.75	Shear (lb/sq ft)		3.51	
Alpha	1.00	Stream Power (lb/ft s)		106.45	
Frctn Loss (ft)	22.48	Cum Volume (acre-ft)		0.92	
C & E Loss (ft)	0.22	Cum SA (acres)		0.45	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

CROSS SECTION

RIVER: Culvert

REACH: 1 RS: 1

INPUT

Description: NDB Culvert Station Elevation Data

Elev Elev Sta

5307 5301 29 5301 34 5307 Manning's n Values Sta n Val Sta n Val n Val Sta .013 .013 .013

Coeff Contr. Expan. Bank Sta: Left Right Lengths: Left Channel Right 34 a 0 a .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5310.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.39	Wt. n-Val.		0.013	Ü
W.S. Elev (ft)	5301.87	Reach Len. (ft)			
Crit W.S. (ft)	5303.30	Flow Area (sq ft)		21.51	
<pre>E.G. Slope (ft/ft)</pre>	0.053946	Area (sq ft)		21.51	
Q Total (cfs)	500.00	Flow (cfs)		500.00	
Top Width (ft)	25.45	Top Width (ft)		25.45	
Vel Total (ft/s)	23.24	Avg. Vel. (ft/s)		23.24	
Max Chl Dpth (ft)	0.87	Hydr. Depth (ft)		0.85	
Conv. Total (cfs)	2152.7	Conv. (cfs)		2152.7	
Length Wtd. (ft)		Wetted Per. (ft)		26.27	
Min Ch El (ft)	5301.00	Shear (lb/sq ft)		2.76	
Alpha	1.00	Stream Power (lb/ft s)		64.11	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	5314.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	11.80	Wt. n-Val.		0.013	_
W.S. Elev (ft)	5302.44	Reach Len. (ft)			
Crit W.S. (ft)	5304.60	Flow Area (sq ft)		36.29	
E.G. Slope (ft/ft)	0.040651	Area (sq ft)		36.29	
Q Total (cfs)	1000.00	Flow (cfs)		1000.00	
Top Width (ft)	26.40	Top Width (ft)		26.40	
Vel Total (ft/s)	27.56	Avg. Vel. (ft/s)		27.56	
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		1.37	
Conv. Total (cfs)	4959.8	Conv. (cfs)		4959.8	
Length Wtd. (ft)		Wetted Per. (ft)		27.75	
Min Ch El (ft)	5301.00	Shear (lb/sq ft)		3.32	
Alpha	1.00	Stream Power (lb/ft s)		91.46	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft) Vel Head (ft)	5326.38 23.87	Element Wt. n-Val.	Left OB	Channel 0.013	Right OB
W.S. Elev (ft)	5302.52	Reach Len. (ft)			
Crit W.S. (ft)	5305.66	Flow Area (sq ft)		38.28	
<pre>E.G. Slope (ft/ft)</pre>	0.077275	Area (sq ft)		38.28	
Q Total (cfs)	1500.00	Flow (cfs)		1500.00	
Top Width (ft)	26.53	Top Width (ft)		26.53	
Vel Total (ft/s)	39.19	Avg. Vel. (ft/s)		39.19	
Max Chl Dpth (ft)	1.52	Hydr. Depth (ft)		1.44	
Conv. Total (cfs)	5396.0	Conv. (cfs)		5396.0	
Length Wtd. (ft)		Wetted Per. (ft)		27.94	
Min Ch El (ft)	5301.00	Shear (lb/sq ft)		6.61	
Alpha Frctn Loss (ft)	1.00	Stream Power (lb/ft s) Cum Volume (acre-ft)		258.96	
C & E Loss (ft)		Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	5319.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	16.51	Wt. n-Val.		0.013	
W.S. Elev (ft)	5303.13	Reach Len. (ft)			
Crit W.S. (ft)	5306.21	Flow Area (sq ft)		54.84	
<pre>E.G. Slope (ft/ft)</pre>	0.035636	Area (sq ft)		54.84	
Q Total (cfs)	1787.60	Flow (cfs)		1787.60	
Top Width (ft)	27.55	Top Width (ft)		27.55	
Vel Total (ft/s)	32.59	Avg. Vel. (ft/s)		32.59	
Max Chl Dpth (ft)	2.13	Hydr. Depth (ft)		1.99	
Conv. Total (cfs)	9469.4	Conv. (cfs)		9469.4	
Length Wtd. (ft)		Wetted Per. (ft)		29.54	
Min Ch El (ft)	5301.00	Shear (1b/sq ft)		4.13	
Alpha	1.00	Stream Power (lb/ft s)		134.63	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

SUMMARY OF MANNING'S N VALUES

River:Culvert

Reach	River Sta.	n1	n2	n3
1	2127	.013	.013	.013
1	1675	.013	.013	.013
1	707	.013	.013	.013
1	1	. 013	. 013	. 013

SUMMARY OF REACH LENGTHS

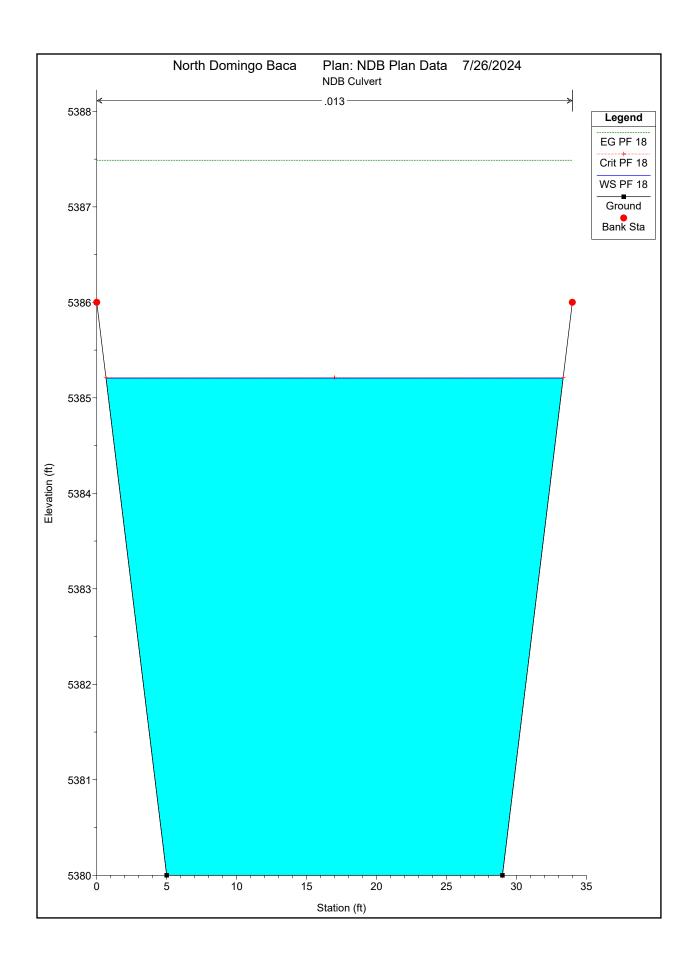
River: Culvert

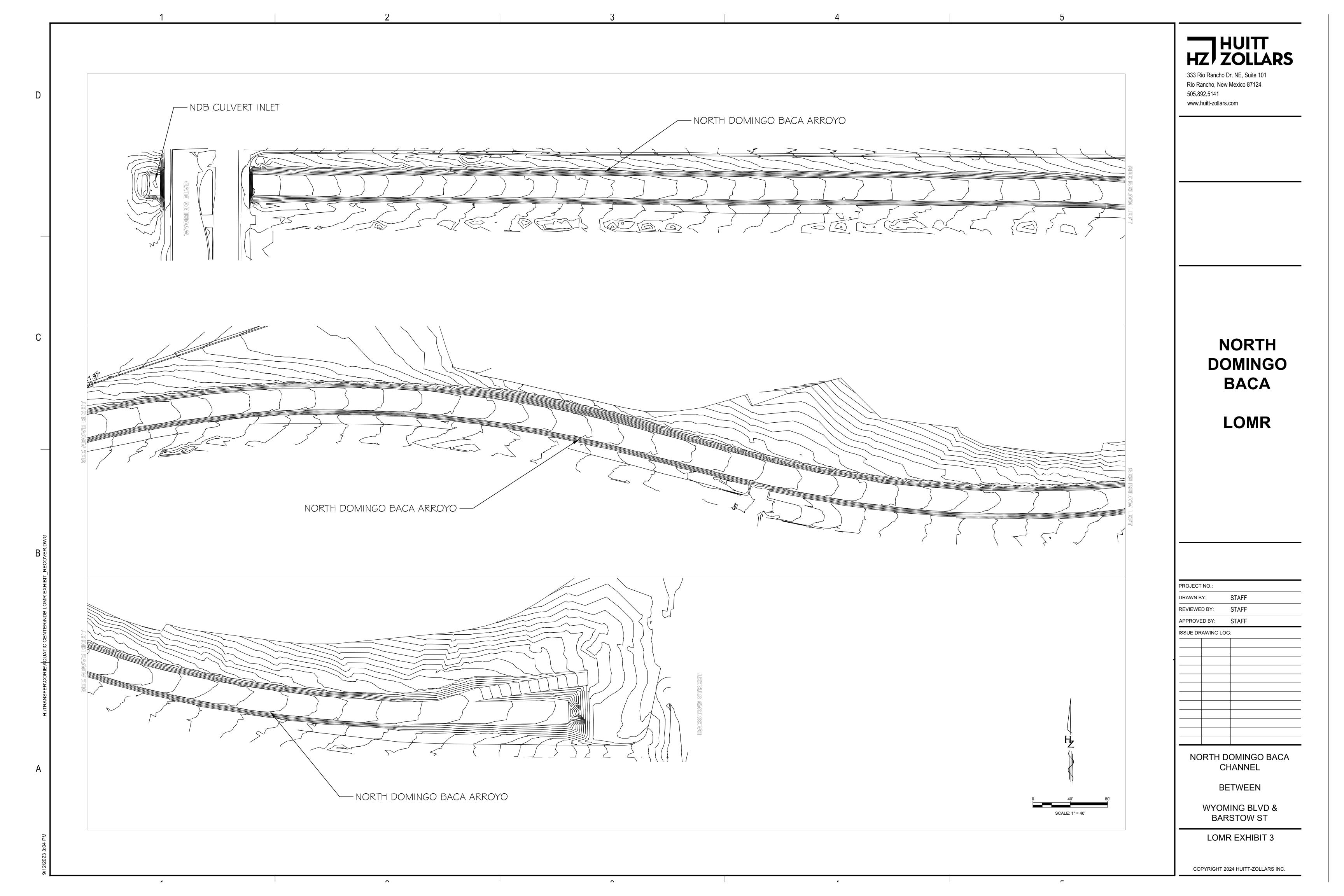
Reach	River Sta.	Left	Channel	Right
1	2127	452	452	452
1	1675	968	968	968
1	707	707	707	707
1	1	а	а	a

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Culvert

	Reach	River Sta.	Contr.	Expan.
1		2127	.1	.3
1		1675	.1	.3
1		707	.1	.3
1		1	.1	.3







Item 6

Pond Volume

409 5333.69' MAG NDB - DETENTION POND Average Area Volume Volume Accumulative Volum Accumulative Volume 415 5337.58' MAG 13621 13621 0.31 408 5309.32' MAG 5302.0 97450 97450 2.24 5304.0 111622 116658 116658 2.68 125593 125593 2.88 5306.0 129493 132794 132794 3.05 139125 139125 3.19 5308.0 142156 151125 151125 3.47 5310.0 157165 157165 3.61 163302 163302 3.75 1296273 5312.0 175542 175542 4.03 37.68 5314.0 178507 221585 221585 5.09 42.77 274854 274854 6.31 2137726 5318.0 325314 339713 339713 7.80 5320.0 344195 348512 348512 8.00 357150 357150 8.20 4126430 5322.0 361470 365837 365837 8.40 103.13 374755 374755 8.60 111.73 120.55 5251055 384034 8.82

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> NORTH DOMINGO BACA

> > LOMR

PROJECT NO.:

DRAWN BY: STAFF

REVIEWED BY: STAFF

APPROVED BY: STAFF

ISSUE DRAWING LOG:

KINNEY DAM POND VOLUME

LOMR EXHIBIT 4

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Item 7

National Flood Hazard Layer Firmette (Existing & Proposed)

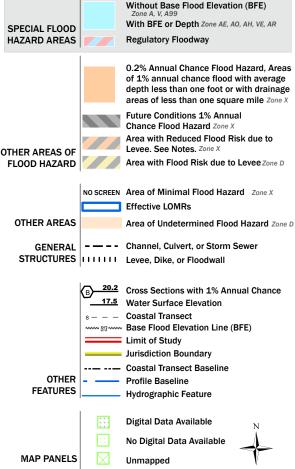
National Flood Hazard Layer FIRMette





Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The pin displayed on the map is an approximate point selected by the user and does not represent

an authoritative property location.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/5/2024 at 6:09 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette



Legend

FLOOD HAZARD

Without Base Flood Elevation (BFE)
Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR SPECIAL FLOOD Regulatory Floodway HAZARD AREAS 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average

> areas of less than one square mile Zone X **Future Conditions 1% Annual** Chance Flood Hazard Zone X

Area with Reduced Flood Risk due to Levee. See Notes. Zone X Area with Flood Risk due to Levee Zone D

depth less than one foot or with drainage

NO SCREEN Area of Minimal Flood Hazard Zone X Effective LOMRs **OTHER AREAS** Area of Undetermined Flood Hazard Zone D

GENERAL - - - Channel, Culvert, or Storm Sewer STRUCTURES | Levee, Dike, or Floodwall

> (B) 20.2 Cross Sections with 1% Annual Chance 17.5 Water Surface Elevation **Coastal Transect** Base Flood Elevation Line (BFE)

Limit of Study Jurisdiction Boundary --- Coastal Transect Baseline OTHER Profile Baseline **FEATURES** Hydrographic Feature

> **Digital Data Available** No Digital Data Available

MAP PANELS



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/5/2024 at 6:09 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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> NORTH **DOMINGO BACA**

> > LOMR

PROJECT NO.: STAFF REVIEWED BY: APPROVED BY: STAFF ISSUE DRAWING LOG:

NORTH DOMINGO BACA **REVISED FIRM**

LOMR EXHIBIT 5

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106°34'7"W 35°10'58"N **OTHER AREAS OF** ISCHARGE CONTAINED IN City of A 350002 AREA OF MINIMAL FLOOD HAZARD 106°33'29"W 35°10'28"N Feet 1:6,000 500 1,000 250 1,500 2,000 Basemap Imagery Source: USGS National Map 2023



Item 8

References



Item 8. References

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