

BOARD OF COUNTY COMMISSIONERS
SARPY COUNTY, NEBRASKA

RESOLUTION FLOOD PLAIN DEVELOPMENT
Steve Smith 21209 South Highway 50 Springfield, NE

WHEREAS, pursuant to Neb. Rev. Stat. § 23-104 (Reissue 2007), the County has the power to do all acts in relation to the concerns of the County necessary to the exercise of its corporate powers; and,

WHEREAS, pursuant to Neb. Rev. Stat. § 23-103 (Reissue 2007), the powers of the County as a body are exercised by the County Board; and,

WHEREAS, the County Board of Commissioners has the authority to adopt a Zoning Regulation, which shall have the force and effect of law pursuant to Neb. Rev. Stat. § 23-114 (Reissue 2007); and,

WHEREAS, said Zoning Regulations require the County Board of Commissioners to approve applications for development permits within any Flood Plain District; and

WHEREAS, Rebecca Horner, Planning Director has reviewed Steve Smith's application for a Flood Plain Development Permit for compliance with the Zoning Regulations on the property legally described in the attached Exhibit A; and,

WHEREAS, said application is in compliance with Section 30, Flood Plain District of Zoning Regulations and further, the Natural Resources District has no objection to the development permit; and,

WHEREAS, the Planning Director has made a recommendation of approval as noted in the attached Exhibit A, which Exhibit A includes the Planning Director report, the Natural Resources District comments, the site plan of the subject property and the no-rise certificate.

NOW, THEREFORE, BE IT RESOLVED BY THE SARPY COUNTY BOARD OF

COMMISSIONERS THAT the Flood Plain Development Permit Application for the property legally described in the attached Exhibit A is hereby approved.

Dated this 10th day of May, 2011.

Moved by Rusty Hike seconded by Jim Thompson, that the above Resolution be adopted. Carried.

YEAS:

Rusty Hike

NAYS:

none

ABSENT:

none

~~Jim Thompson~~
~~Tom Hickey~~
~~Jim Hulse~~
~~Jim Mann~~

ABSTAIN:

none



Debra Roughtaling
County Clerk

Sarpy County Board of Commissioners Report
Staff Report Prepared: May 2, 2011
County Board Meeting Date: May 10, 2011

Subject	Type	By
Floodplain Development Permit to reinforce the bank in the floodway on Tax Lot 1, located in Section 14, T12N, R11E, of the 6 th prime meridian in Sarpy County, NE.	Resolution	Rebecca Horner, AICP Planning Director

- Request
 - The applicant also requests to reinforce the bank of the Platte River within the floodway
- Comprehensive Development Plan
 - The Sarpy County Development Structure Plan indicates this area as Greenway.
- Zoning
 - The zoning district is AG, Agricultural.
 - The property is located in the Floodway zone.
 - The applicant was contacted for a violation of placement of fill in the floodway without a Floodplain Development Permit in January 2011. The applicant worked with the Planning Department to provide the necessary application and material to request a permit to place the fill along the bank.
 - The applicant provided a no-rise certification letter which was stamed and sealed by a registered professional engineer, which is attached
 - The request is in conformance with the Floodplain Regulations and the Zoning Regulations.
- Natural Resources District
 - The Papio-Missouri River Natural Resources District agrees with the no-rise certification and does not oppose the request. The NRD provided comments which are attached
- Recommendation
 - For the reasons stated above I recommend approval to the request to reinforce the bank in the floodway on Tax Lot 1, located in Section 14, T12N, R11E, of the 6th prime meridian in Sarpy County, NE.

Respectfully submitted by



Rebecca Horner, AICP
Planning Director

May 3, 2011

Rebecca Horner, Director
Sarpy County Planning Department
1210 Golden Gate Drive
Papillion, NE 68046



RE: Steve Smith – Heron Bay No Rise Certification

Dear Ms. Horner:

The District received a no rise certification for proposed improvements to an existing privately-owned dike located at 21209 South Highway 50 in Springfield, Nebraska. According to the Flood Insurance Rate Map for Sarpy County, Panel 31153C 0170 G, effective December 2, 2005, this property is located in the Zone AE floodway of the Platte River. The base flood elevation on this property is determined to be 1,021.0 feet (NAVD 1988).

The District has reviewed the no rise certification prepared by John F. Hartwell, P.E., CHMM, dated May 3, 2011 and offers the following comments:

- The no rise certification states that the proposed improvements will be located in the downstream ineffective flow area of the Highway 50 Bridge over the Platte River. Based on the calculation sheets provided with the certification, the District agrees with the no rise certification.

The District has no objections to this project. If you have any questions or concerns, please contact me at 444-6222 or at llaster@papionrd.org.

Sincerely,

Lori Ann Laster, CFM
Stormwater Management Engineer

Cc: Marlin Petermann, Amanda Grint, P-MRNRD



Steve Smith
21205 S. Hwy 50, Springfield

ADDITIONAL INFORMATION

SARPY COUNTY BOARD OF COMMISSIONERS

May 10, 2011

FLOOD PLAIN DEVELOPMENT PERMIT

Steve Smith

21209 S Highway 50

Reinforce bank of river



Sarpy County Planning Department

Rebecca Horner, Director Phone: (402)593-1555 Fax: (402) 593-1558

March 11, 2011

Steve and Shirley Smith
21209 South Highway 50
Springfield, NE 68059

Dear Mr. and Mrs. Smith

This letter is a follow up in reference to Mr. Smith's February 28, 2011 meeting with the Sarpy County Planning Department in which Mr. Smith furnished a copy of an application to the Army Corp containing a map and drawing along with a letter dated June 21, 2004 from Selma Kessler at Kirkham Michael stating her opinion regarding a no-rise certificate for the outdoor beer garden portion of Mr. Smith's property related to a 2004 law suit.

After reviewing the letter from Mrs. Kessler, it was determined that the letter is several years old and does not address the area involving the Platte River dike fill. A current, similar letter related to the proposed fill, including a map and signed by a registered engineer may be acceptable provided it addresses the following regulation

30.11 STANDARDS FOR THE FLOODWAY OVERLAY DISTRICT

The uses enumerated above shall only be permitted if certification by a registered professional engineer or architect is provided demonstrating that the development shall not result in any increase in water surface elevations along the floodway profile during occurrence of the base flood discharge. These uses are subject to the standards of Section 30.8 and 30.9. In Zone A unnumbered, obtain, review and reasonably utilize any flood elevation and floodway data available through Federal, State or other sources or of this regulation, in meeting the standards of this section.

The fill must be removed or the appropriate documentation requested above must be submitted to the Sarpy County Planning Department within 7 days of receipt of this letter.

Please note that failure to comply with this notice and bring the property into compliance may result in penalties and further legal action by the county prosecutor in a court of law. It is the intent of the zoning regulations to promote and maintain the safest living environment and highest quality of life for its citizens. Your cooperation to resolve the code violations on property you own is greatly appreciated.

If you have any questions regarding this notice or what is required to gain compliance, please contact the Planning Department at 402-593-1555.

Sincerely,

Rebecca Horner, AICP
Planning Director

Todd Swirczek
Planner

CC. Kerry Schmid, Deputy County Attorney
Amanda Grint, NRD



Sarpy County Planning Department

Rebecca Horner, Director Phone: (402)593-1555 Fax: (402) 593-1558

February 25, 2011

Steve and Shirley Smith
21209 South Highway 50
Springfield, NE 68059

CERTIFIED MAIL

Dear Mr. and Mrs. Smith:

This letter is a follow up in reference to Mr. Smith's January 18, 2011 meeting with the Sarpy County Planning Department in which it was agreed to by all parties that Mr. Smith would submit a no-rise certificate, call with a new timeline or remove the concrete fill from his property by February 18, 2011.

Since none of these options have been exercised at this time by Mr. Smith, **the fill must be removed or a no-rise certificate must be submitted to the Sarpy County Planning Department within 7 days of receipt of this letter.**

Please note that failure to comply with this notice and bring the property into compliance may result in penalties and further legal action by the county prosecutor in a court of law. It is the intent of the zoning regulations to promote and maintain the safest living environment and highest quality of life for its citizens. Your cooperation to resolve the code violations on property you own is greatly appreciated.

We have also copied and notified the Natural Resources District (NRD) and the Army Corp. of Engineers about the violation as dumping into the Platte River is a federal violation of the Clean Water Act.

If you have any questions regarding this notice or what is required to gain compliance, please contact the Planning Department at 402-593-1555.

Sincerely,

Rebecca Horner
Planning Director

Todd Swirczek
Planner

CC. Kerry Schmid, Deputy County Attorney
John Moeschen, Army Corp of Engineers
Lori Laster, NRD



Sarpy County Planning Department

Rebecca Horner, Director Phone: (402)593-1555 Fax: (402) 593-1558

January 4, 2011

Steve and Shirley Smith
21209 south Highway 50
Springfield, NE 68059

CERTIFIED MAIL

Dear Mr. and Mrs. Smith:

An anonymous violation complaint was received by the Sarpy County Planning Department regarding three properties that you own adjacent to Heron Bay Tavern. Sarpy County performed an investigation and found that fill, in the form of concrete sections, was being placed in the floodplain without a floodplain development permit as evidence by the accompanying pictures. As a result of the inspection, it was determined that the property is currently in violation of the following Sarpy County Zoning Regulation:

30.5.1 Permit Required:

No person, firm or corporation shall initiate any development or substantial improvement as defined in Section 44 of this regulation or cause the same to be done without first obtaining a separate permit for development

In addition, because the property is within the floodplain, filling within the floodplain must also comply with the Floodplain Development Regulations in section 30 of the Sarpy County Zoning regulations. As such, **fill must cease immediately and you must apply for all required permits or the fill must be removed within 7 days of receipt of this letter.** Application for the required permits does not guarantee approval

In an effort to bring your property into compliance with the zoning regulations, you must submit an application for a floodplain development permit. The floodplain development permit will be reviewed by the Sarpy County Board of Commissioners. Although you may apply for a permit, approval is not guaranteed

Please note that failure to comply with this notice and bring the property into compliance may result in penalties and further legal action by the county prosecutor in a court of law. It is the intent of the zoning regulations to promote and maintain the safest living environment and highest quality of life for its citizens. Your cooperation to resolve the code violations on property you own is greatly appreciated.

We have also copied and notified the Natural Resources District (NRD) and the Army Corp. of Engineers about the violation as dumping into the Platte River is a federal violation of the Clean Water Act.

If you have any questions regarding this notice or what is required to gain compliance, please contact the Planning Department at 402-593-1555.

Sincerely,

Rebecca Horner
Planning Director

Todd Swirczek
Planner

CC Kerry Schmid, Deputy County Attorney
John Moeschen, Army Corp of Engineers
Lori Laster, NRD

AQUATERRA
ENVIRONMENTAL SOLUTIONS, INC.

3 May 2011

Mr. Stephen L. Smith
21209 South Highway
Springfield, NE 68059

Re: Hydraulic Evaluation of Heron Bay and Adjoining Properties
Aquaterra Project # 4672.10

Dear Mr. Smith:

Aquaterra was retained to evaluate the efficacy of a hydraulic evaluation performed by Kirkham Michael Consulting Engineers in June 2004 with regard to your Heron Bay property and the two adjoining properties which lie immediately to the northeast. The undersigned has reviewed the letter by Ms. Selma C. Kessler, P.E. then of Kirkham Michael, conducted a site visit on 5 April 2011 and performed an independent engineering evaluation of the three subject properties relative to hydraulic properties of the adjoining Platte River and the State Highway 50 Bridge. That evaluation and the opinions formed from that evaluation are the purpose of this letter.

As Ms. Kessler states in her 21 June 2004 letter (Sheets 14 – 17) which are attached for ease of reference, "areas of ineffective flow are defined where embankments exist and result in contraction and expansion of (surface) water into and out of a structure. These ineffective areas are "blocked out" of the hydraulic cross sections when the water surface elevations are calculated" We have attached pertinent references which describe this phenomenon and how it is dealt with in the surface flow computational process by the US Army Corps of Engineers (USACoE). The USACoE is the governmental agency which has jurisdiction in determining flood characteristics of the Platte River in Nebraska (See HEC RAS excerpt on Sheets 3-6).

Aquaterra performed an analysis of this "ineffective flow area" over the expansion (downstream) reach in vicinity of the subject properties and given a b/B ratio (see Sheet 6) of 0.26, a S_{AB} of 4 ft/mi (see Sheet 7), a n_{OB} / n_C ratio of 2 (see Sheet 11), we have determined that an Expansion Ratio (ER) of 2 would likely exist during periods of high discharge (see Sheet 1). Given that the length of the expansion transition zone ($L_E = 3690$ ft see Sheet 4) is at least 10 time larger than the length of the shoreline of the properties of concern ($L_s = 385\pm$ ft see Sheet 2), it is our conclusion that the three properties (herein labeled Lots A, B and C) depicted on sheet 2 and identified as the Heron Bay property and

Mr. Stephen L. Smith

May 3, 2011

Page 2

the two tracts of land immediately northeast of the Heron Bay property lie wholly within the ineffective flow area, or beyond the expansion zone flow boundary. Based on this analysis, the existing dike, the Heron Bay restaurant / bar, and the two immediately adjoining homes and other appurtenant structures would therefore also lie beyond the expansion zone flow boundary, and therefore a 'No-Rise' condition would exist for improvements made to these structures / features.

If you have questions regarding this letter, please feel free to contact us at 402 884-6202.

Sincerely,

Aquaterra Environmental Solutions, Inc.




John F. Hartwell, P.E., CHMM

Senior Consultant

Registered Professional Engineer

Nebraska #E-5231



Michael J. Miller, CHMM

Branch Manager

cc: Ms. Rebecca Horner, Director of Planning, Sarpy County

Enclosures

AQUATERRA CALCULATION SHEET

ENVIRONMENTAL SOLUTIONS, INC.

PAGE 1 OF 17
PROJECT NO. 4672.1c.
Prepared by JFH Date 6 Apr 2011
Reviewed by _____ Date _____
Approved by _____ Date _____

CLIENT Mr S. Smith
PROJECT HERON DAY
Hydro EVAL

SUBJECT DETERMINATION
OF EXPANSION RATIO CE

$$b/B = 0.26 \quad \text{FROM SHEET 6}$$

$$S_{AB} = 4.0 \text{ ft/mi} \quad \text{FROM SHEET 7}$$

$$\eta_{os}/\eta_c = 0.07/0.035 = 2 \quad \text{FROM SHEET 11}$$

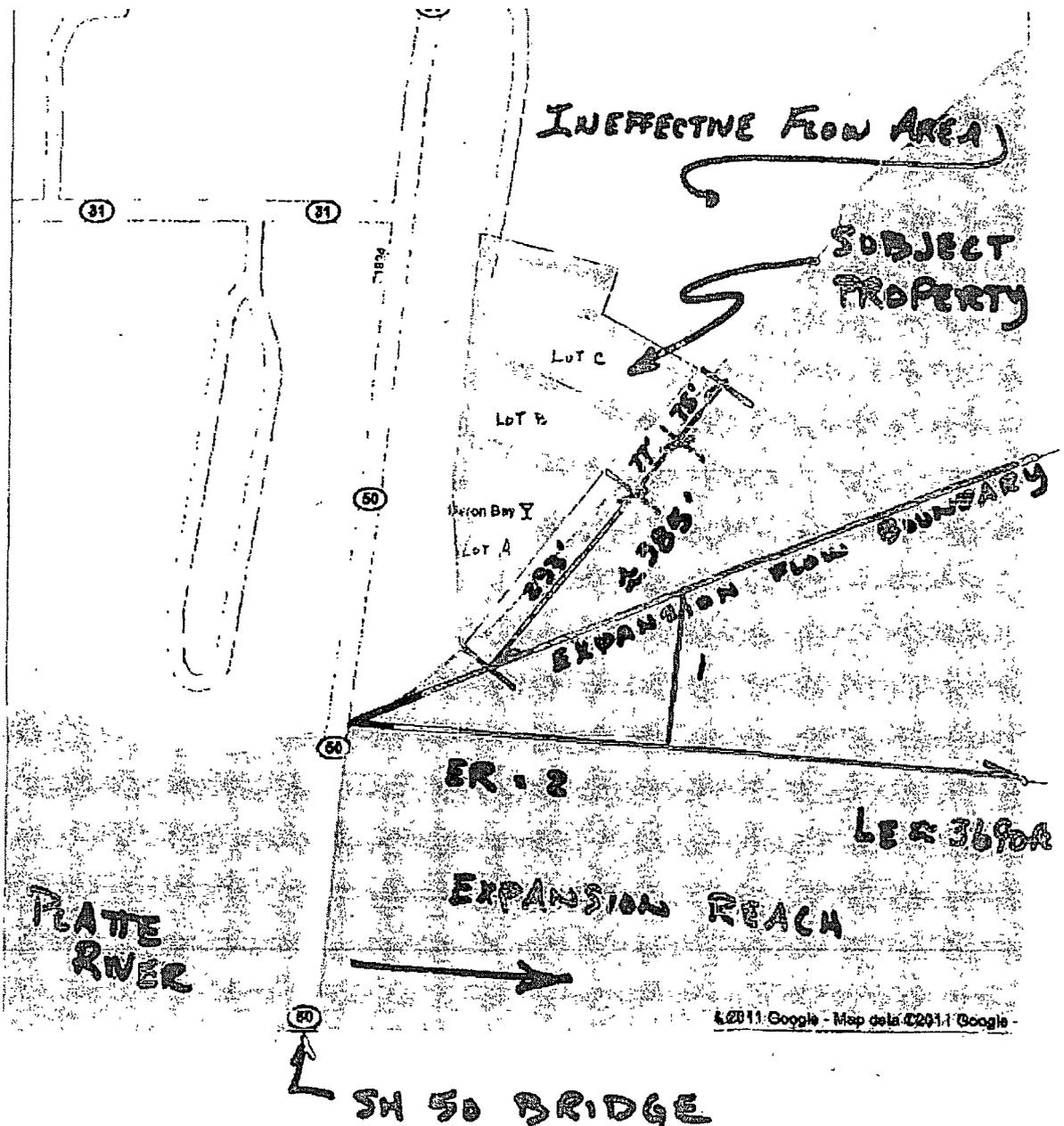
THEREFORE $C_{E \text{ LOWER DISCHARGE}} = ER = 1.3$ SEE SHEET 5

$C_{E \text{ HIGHER DISCHARGE}} = ER = 2.0$ " " " USE

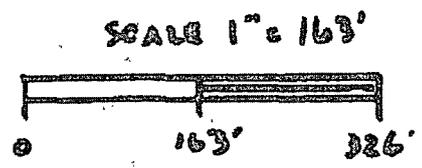
EXPANSION BOUNDARY DOWN STREAM OF SH 50 BRIDGE ON THE RIGHT BANK OF THE PLATTE RIVER IN VICINITY OF THE SUBJECT PROPERTIES IS DRAWN ON SHEET 2 USING AN $ER = 2.0$ FROM A BASE FLOW LINE APPROXIMATELY PERPENDICULAR TO THE AXIS OF THE SH 50 BRIDGE CONSISTENT WITH THE THELWEG ALIGNMENT IN THE IMMEDIATE VICINITY. THE SUBJECT PROPERTIES LIE WHOLLY BEYOND (OUTSIDE OF) THE HIGH WATER (FLOOD STAGE) EXPANSION BOUNDARY AS DRAWN ON SHEET 2, HEREWITH, AS L_E (THE EXPANSION TRANSITION ZONE LENGTH IS \gg THE SHORE LINE LENGTH ≈ 350 FT, AT 3690 FT. (SEE SHEET 4)

Google maps

Get Google Maps on your phone
Text the word "GMAPS" to 466453

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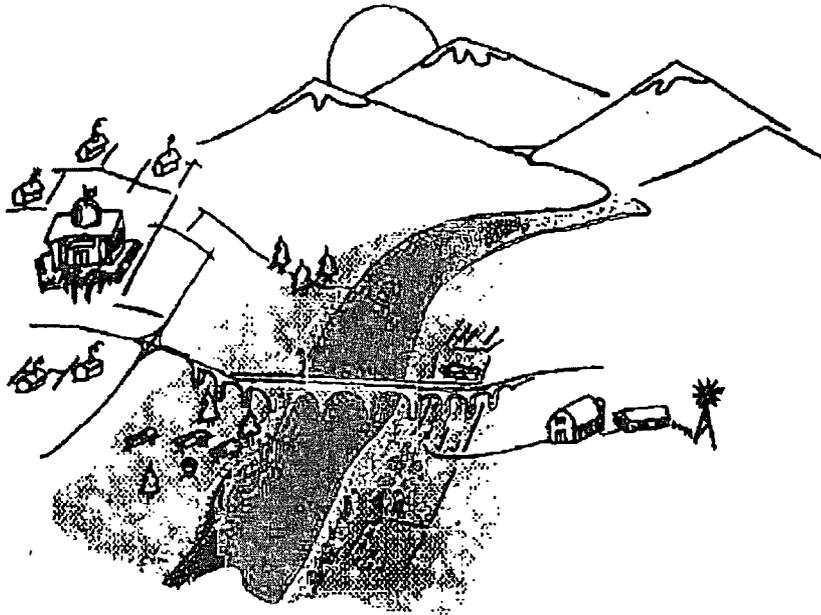




**US Army Corps
of Engineers**
Hydrologic Engineering Center

HEC-RAS

River Analysis System



User's Manual

Version 4.1
January 2010

Approved for Public Release Distribution Unlimited.

CPD-68

arch, low profile arch, high profile arch, and semi circular culverts. The HEC-RAS program has the ability to model multiple culverts at a single location. The culverts can have different shapes, sizes, elevations, and loss coefficients. The user can also specify the number of identical barrels for each culvert type.

Cross Section Locations

The bridge and culvert routines utilize four user defined cross sections in the computations of energy losses due to the structure. A plan view of the basic cross section layout is shown in Figure 6-11.

Cross section 1 is located sufficiently downstream from the structure so that the flow is not affected by the structure (i.e., the flow has fully expanded). This distance should generally be determined by field investigation during high flows. However, generally field investigation during high flows is not possible. The expansion distance will vary depending upon the degree of constriction, the shape of the constriction, the magnitude of the flow, and the velocity of the flow. Table 6-1 offers ranges of expansion ratios, which can be used for different degrees of constriction, different slopes, and different ratios of the overbank roughness to main channel roughness. Once an expansion ratio is selected, the distance to the downstream end of the expansion reach (the distance L_E) is found by multiplying the expansion ratio by the average obstruction length (the average of the distances A to B and C to D).

$$L_E = \left(\frac{B - b}{2} \right) ER = \left(\frac{4970 - 1280}{2} \right) 2 = 3690 \text{ ft}$$

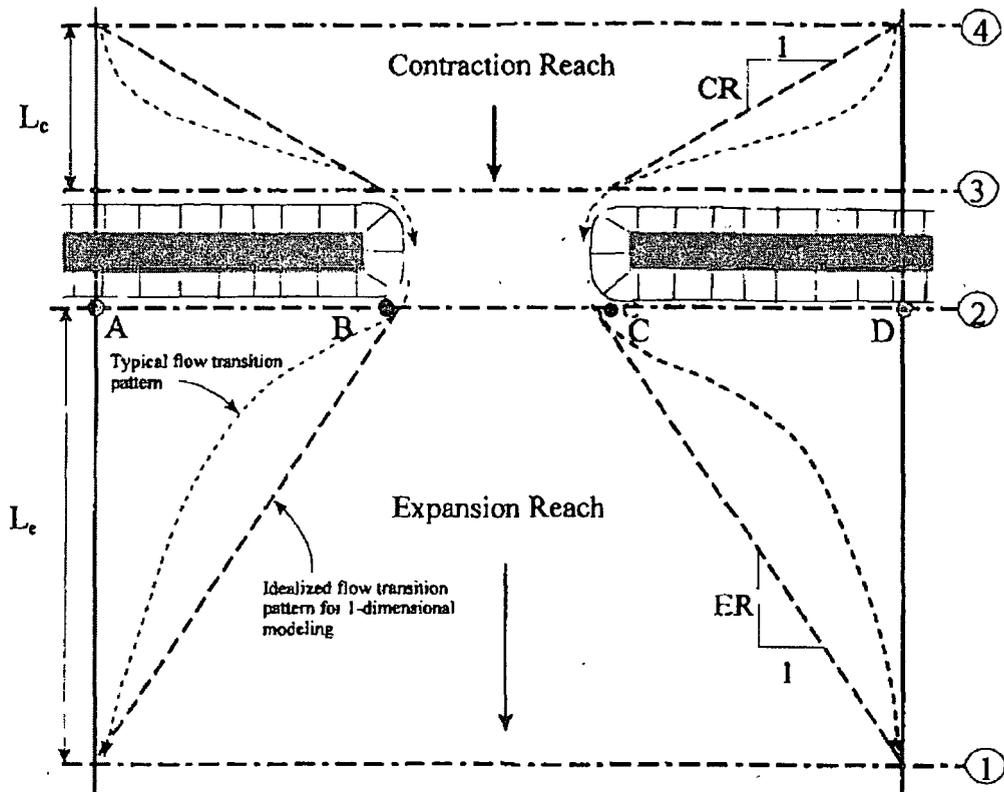


Figure 6-11 Cross Section Locations at a Bridge or Culvert

The average obstruction length is half of the total reduction in floodplain width caused by the two bridge approach embankments. In Table 6-1, b/B is the ratio of the bridge opening width to the total floodplain width, n_{ob} is the average Manning n value for the overbanks, n_c is the n value for the main channel, and S is the average longitudinal bed slope through the bridge reach. The values in the interior of the table are the ranges of the expansion ratio. For each range, the higher value is typically associated with a higher discharge.

Table 6-1 Ranges of Expansion Ratios

		nob / nc = 1	nob / nc = 2	nob / nc = 4
b/B = 0.10	S = 1 ft/mile	1.4 - 3.6	1.3 - 3.0	1.2 - 2.1
	5 ft/mile	1.0 - 2.5	0.8 - 2.0	0.8 - 2.0
	10 ft/mile	1.0 - 2.2	0.8 - 2.0	0.8 - 2.0
b/B = 0.25	S = 1 ft/mile	1.6 - 3.0	1.4 - 2.5	1.2 - 2.0
	5 ft/mile	1.5 - 2.5	1.3 - 2.0	1.3 - 2.0
	10 ft/mile	1.5 - 2.0	1.3 - 2.0	1.3 - 2.0
b/B = 0.50	S = 1 ft/mile	1.4 - 2.6	1.3 - 1.9	1.2 - 1.4
	5 ft/mile	1.3 - 2.1	1.2 - 1.6	1.0 - 1.4
	10 ft/mile	1.3 - 2.0	1.2 - 1.5	1.0 - 1.4

A detailed study of flow contraction and expansions at bridges was undertaken by the Hydrologic Engineering Center. The results of this study have been published as a research document entitled "Flow Transitions in Bridge Backwater Analysis" (RD-42 HEC, 1995). The purpose of this study was to provide better guidance to hydraulic engineers performing water surface profile computations through bridges. Specifically the study focused on determining the expansion reach length, L_e ; the contraction reach length, L_c ; the expansion energy loss coefficient, C_e ; and the contraction energy loss coefficient, C_c . A summary of this research, and the final recommendations, can be found in Appendix B of the HEC-RAS Hydraulic Reference manual.

The user should not allow the distance between cross section 1 and 2 to become so great that friction losses will not be adequately modeled. If the modeler feels that the expansion reach will require a long distance, then intermediate cross sections should be placed within the expansion reach in order to adequately model friction losses. The user will need to estimate ineffective flow areas for these intermediate cross sections.

Cross section 2 is located a short distance downstream from the bridge or culvert. This cross section should represent the natural ground (main channel and floodplain) just downstream of the bridge or culvert. This section is normally located near the toe of the downstream road embankment. This cross section should **Not** be placed immediately downstream of the face of the bridge deck or the culvert opening (for example some people wrongly place this cross section 1.0 foot downstream of the bridge deck or culvert opening). Even if the bridge has no embankment, this cross section should be placed far enough from the downstream face of the bridge to allow enough distance for some flow expansion due to piers, or pressurized



FLOOD PLAIN WIDTH @ SH 50 BRIDGE \approx 4970 FT = B

SH 50 BRIDGE @ PLATT RIVER OPENING WIDTH = 1280 FT = b

$$b/B = 0.26$$

Proj # 4672.10

Heron Bay - Hydraulic Evaluation

6-Apr-11

John F. Hartwell, P.E., CHMM

AQUATERRA

Determination of approximate stream Slope (s) for the Platte River near the State Highway 50 Bridge in Nebraska

Source: USGS and Google Earth 2011

Upstream Point A near I-80 bridge

Elevation at A = H_A = 1040 ft

Downstream Point B near Cedar Creek, NE

Elevation at B = H_B = 996 ft

See Attached Airphoto

Elevation Change = $\Delta H_{AB} = H_A - H_B = 44$ ft

Length of Reach $R_{AB} =$

58413 ft 11.06 mi

Slope over Reach (R_{AB}) = $\Delta H/R_{AB} = S_{AB} =$

44 ft / 58413 ft = 0.00075 ft/ft

4.0 ft/mi Use



Elev @ a = 1040 ft

b = 996 ft

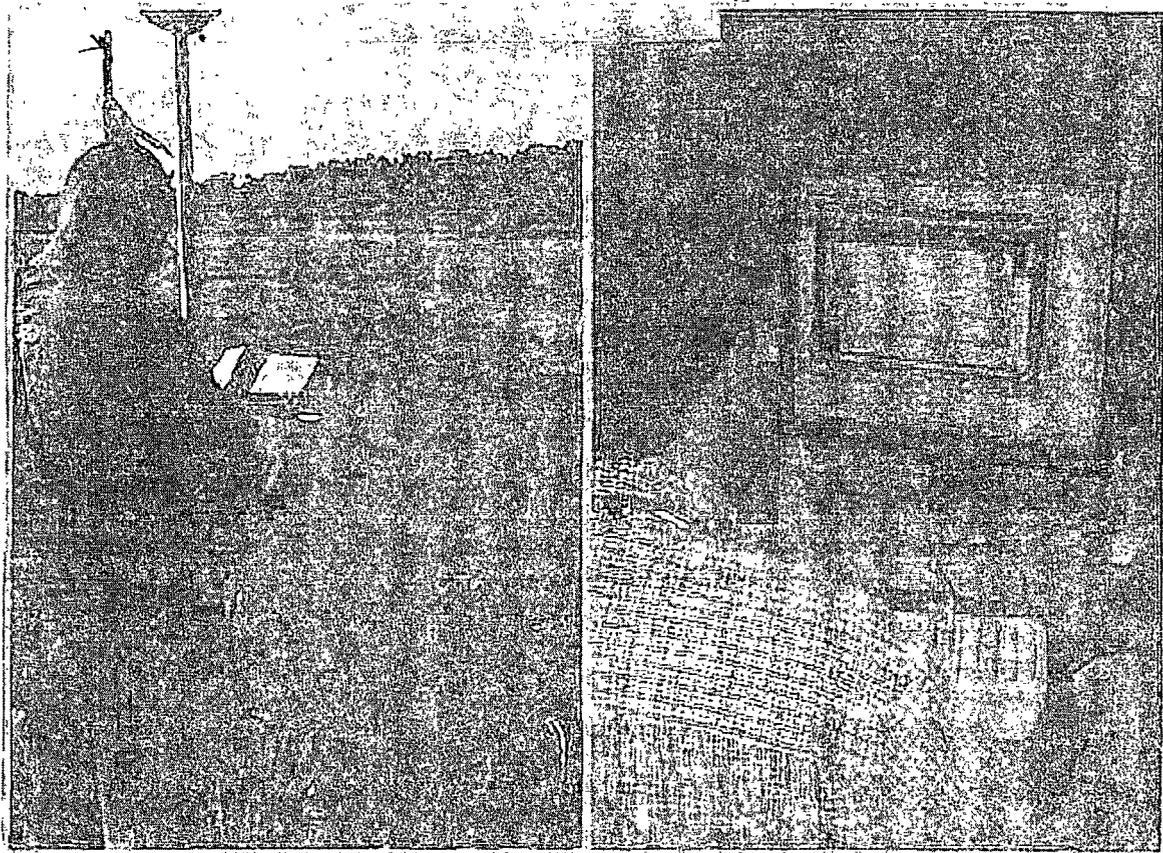
L = 58314 ft along thruway

$\therefore S = (1040 - 996) / 58314 \text{ ft} = 0.0008 \text{ ft/ft} \Rightarrow 4 \text{ ft/mi}$

RECLAMATION

Managing Water in the West

Platte River Sediment Transport and Riparian Vegetation Model



U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Denver, Colorado

March 2006

10

Platte River Sediment Transport and Riparian Vegetation Model

Report Prepared by:

PETER J. MURPHY, PH.D., P.E.

Sedimentation and River Hydraulics Group, Technical Service Center

LISA M. FOTHERBY, PH.D., P.E.

Sedimentation and River Hydraulics Group, Technical Service Center

TIMOTHY J. RANDLE, P.E.

Sedimentation and River Hydraulics Group, Technical Service Center

ROBERT SIMONS, PH.D., P.E.

Simons and Associates, Fort Collins, Colorado

Report Peer Reviewed by:

JIACHUN VICTOR HUANG, PH.D., P.E.

Sedimentation and River Hydraulics Group, Technical Service Center

ELAINA R. HOLBURN

Sedimentation and River Hydraulics Group, Technical Service Center

Platte River Sediment Transport and Riparian Vegetation Model

tests the sustainability of land management actions and provides an understanding of channel changes resulting from proposed flow conditions with no accompanying augmentation of the sediment supply.

The SedVeg models are largely deterministic, but do require the user to specify some coefficients. All of the specified coefficients in SedVeg Gen2 are within a reasonable range. For example, Manning's n roughness coefficients are based on a FEMA Flood Insurance report and range from 0.035 for the main channel to 0.07 for the forested flood plain. The model adjusts the roughness value between these limits depending on extent of vegetation growth. The sediment coefficients used for the SedVeg Gen2 Platte River analysis are shown in Table 4.5, and the vegetation coefficients are shown in Table 6.4.

In most cases, the sediment coefficients were identical to the values used in the calibrated and tested SedVeg Gen1 Platte River Model. With the exception of Stable Root Fraction, the vegetation coefficients were calibrated by Simons & Associates, who developed the vegetation code for the SedVeg Gen1 Platte River Model under contract to Reclamation.

Table 4.5. SedVeg Gen2 Platte River Model sediment transport coefficients used for the DEIS comparison of alternatives.

Description of Sediment Transport Coefficients	Coefficients Used
Number of Size Fractions (NF)	10
Sediment armor layer thickness ($C \cdot D_{90}$)	0.5
Fraction of sediment transport capacity input for North Platte River	0.13
Fraction of sediment transport capacity input for South Platte River	0.38
Rouse Number ($H/kappa$)	0.80
Range of Manning's roughness value for channel bed and banks, R_n	0.035 to 0.070
Manning's roughness value of thalweg	0.035
Maximum river bank slope for erosion control (BANKSLOP)	0.58
Maximum transverse bed slope between 2 points for erosion control (CRITSLOP)	0.32

$$n_c = 0.035$$

$$n_{ob} = 0.070$$

$$\therefore n_{ob}/n_c = 0.070/0.035 = 2$$

Stephen L. Smith

21209 South Highway. 50
Springfield, NE 68059
(402) 253-2616
Fax.: (402) 253-3185

Date: 3/24/11

From: Stephen L. Smith

To: Mike Miller, Aquaterra

No. of Pages: 5
(Includes cover page.)

Fax. No.: (402) 884-6203

MESSAGE:

Mike;

We are attempting to restore a Platte River dike between us and the river to its original condition on property adjacent to the east side of the Nebraska Highway 50 bridge over the Platte River, located in Sarpy County. It is a non-chartered dike. Accompanying this cover page is an opinion letter regarding no-rise evaluation of the property next to the Highway 50 bridge and prepared by Selma Kessler of Kirkham-Michael. Selma is no longer with Kirkham-Michael, as she went to work for the Omaha Public Works Department. The letter she composed was directed specifically to the bar property. The proposed dike project includes the two houses east of the bar as well. Selma's original drawings also encompassed the two house's properties in the shaded area she diagrams. The Sarpy County Planning Department is requesting an update of this letter and has said the opinion letter would be satisfactory instead of a no-rise certificate as long as it references the house properties as well. The cost for the dike repair is estimated at \$1,500.00.

I appreciate your time and attention to this matter. We look forward to hearing back from you.

Stephen L. Smith

This transmission is for a specific intended recipient. If you receive this facsimile in error for any reason, your assistance would be appreciated in destroying this facsimile and in maintaining the sanctity of the confidential nature of the information herein. Thank you for your time and cooperation in this matter. - Meron Bay

13

June 21, 2004

Steven Smith
Heron Bay
21215 South Hwy 50
Springfield, NE 68509

Re: Hydraulic Evaluation of Proposed Improvements

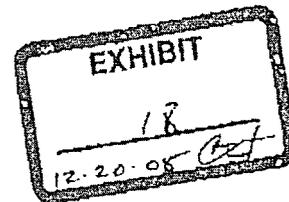
Dear Mr. Smith-

This letter is a follow up to my site visit to Heron Bay last Friday, June 18th and our conversation regarding the potential for an increase in elevations to the floodway along your property adjacent to the Platte River (Attachment 1). In the interest of time, I am providing my assessment based on professional experience rather than a detailed hydraulic analysis.

Based on the location of your business and proposed improvements relative to the Highway 50 road grade, I believe that the improvements are located in an area that does not actively convey floodwater, otherwise referred to as an ineffective flow area. During a bridge analysis, areas of ineffective flow are defined where embankments exist and result in contraction and expansion of water into and out of a structure. These ineffective areas are "blocked out" of the hydraulic cross sections when the water surface elevations are calculated. I have included a schematic illustrating contraction and expansion at a structure to demonstrate your property location relative to Highway 50, the Platte River and ineffective area (Attachment 2). The yellow triangular areas bounded by the road embankment, Lc and Le are considered to be ineffective. The hatched area in the northeast corner of the intersection of the bridge and the river represents your property. While the improvements are not to scale, they do provide a reasonable representation of their location in the ineffective area of the bridge.

The other element that negates the impact of your improvements on the water surface elevation is the very small cross sectional area associated with the improvements obstructing the overall river valley cross section. The pergola areas are constructed on 4"x4" and 6"x6" posts and are open on all four sides (Attachments 3-5). The cross sectional area of the deck addition is approximately 2' high by 6'. This minimal impact on the overall cross sectional area, combined with the likelihood that the improvements fall in the Highway 50 ineffective area contribute to my assessment that the improvements will not increase the elevation of the regulatory floodway profile.

S:\Heron Bay\June 21.doc



411 South 13th Street • Suite 101 • PO Box 83328 • Lincoln, NE 68501-3328 • (402) 477-4240 • FAX (402) 477-4268



If you require additional clarification regarding the technical basis as to why I believe a No-Rise condition exists for your particular situation, please feel free to contact me at 402-477-4240.

Sincerely,

KIRKHAM MICHEAL

A handwritten signature in cursive script that reads "Selma C. Kessler". The signature is written in black ink and is positioned below the typed name.

Selma C. Kessler, P.E.
Project Manager

sck

Enclosures

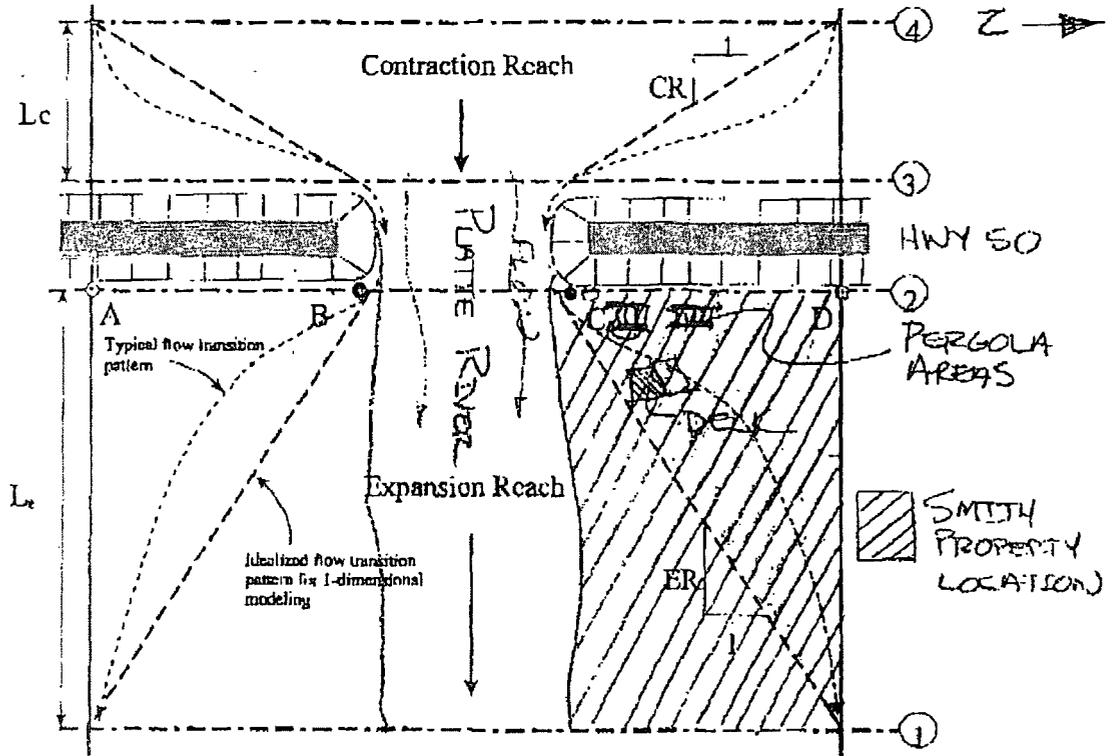
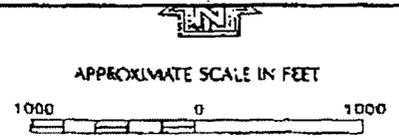
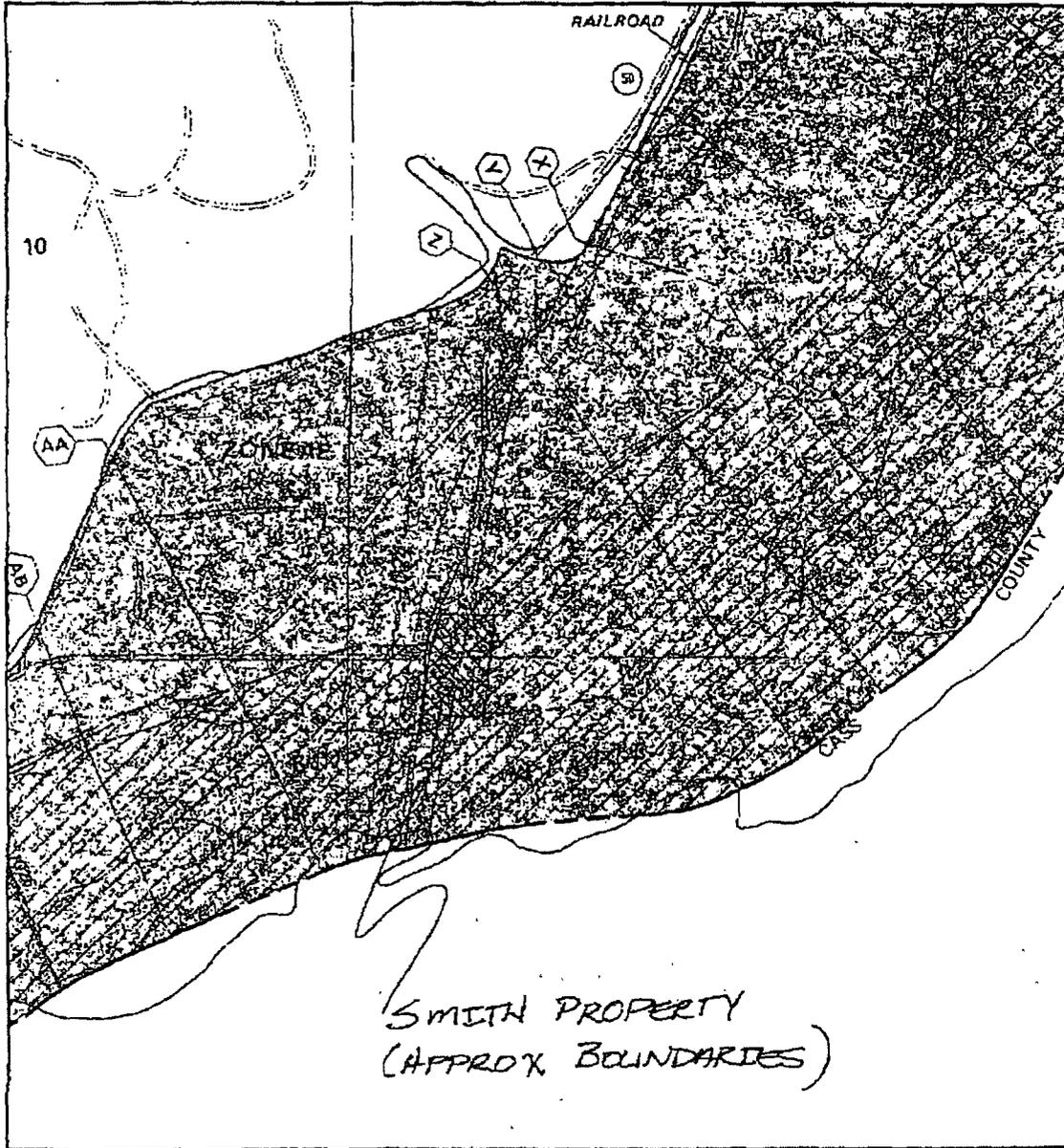


Figure 6.11 Cross Section Locations at a Bridge or Culvert

The average obstruction length is half of the total reduction in floodplain width caused by the two bridge approach embankments. In Table 6.1, b/B is the ratio of the bridge opening width to the total floodplain width, n_{cb} is the Manning n value for the overbank, n_c is the n value for the main channel, and S is the longitudinal slope. The values in the interior of the table are the ranges of the expansion ratio. For each range, the higher value is typically associated with a higher discharge.

Table 6.1
Ranges of Expansion Ratios

		$n_{cb} / n_c - 1$	$n_{cb} / n_c - 2$	$n_{cb} / n_c - 4$
$b/B = 0.10$	$S = 1$ ft/mile	1.4 - 3.6	1.3 - 3.0	1.2 - 2.1
	5 ft/mile	1.0 - 2.5	0.8 - 2.0	0.8 - 2.0
	10 ft/mile	1.0 - 2.2	0.8 - 2.0	0.8 - 2.0
$b/B = 0.25$	$S = 1$ ft/mile	1.6 - 3.0	1.4 - 2.5	1.2 - 2.0
	5 ft/mile	1.5 - 2.5	1.3 - 2.0	1.3 - 2.0
	10 ft/mile	1.5 - 2.0	1.3 - 2.0	1.3 - 2.0
$b/B = 0.50$	$S = 1$ ft/mile	1.4 - 2.6	1.3 - 1.9	1.2 - 1.4
	5 ft/mile	1.3 - 2.1	1.2 - 1.6	1.0 - 1.4
	10 ft/mile	1.3 - 2.0	1.2 - 1.5	1.0 - 1.4



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

SARPY COUNTY,
NEBRASKA AND
INCORPORATED AREAS

COMMUNITY	NUMBER	PANEL	DATE
UNINCORPORATED AREAS	1101	1	01/20

MAP NUMBER:
3115360120 F

EFFECTIVE DATE:
JANUARY 19, 1995



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made as a result of the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msa.fema.gov

ATTACHED MAP

03/24/11 4:13 PM

17

AQUATERRA
ENVIRONMENTAL SOLUTIONS, INC.

APR 11 2011

8 April 2011

SARASOTA COUNTY
PLANNING DEPARTMENT

Mr. Stephen L. Smith
21209 South Highway
Springfield, NE 68059

Re: Hydraulic Evaluation of Heron Bay and Adjoining Properties
Aquaterra Project # 4672.10

Dear Mr. Smith:

Aquaterra was retained to evaluate the efficacy of a hydraulic evaluation performed by Kirkham Michael Consulting Engineers in June 2004 with regard to your Heron Bay property and the two adjoining properties which lie immediately to the northeast. The undersigned has reviewed the letter by Ms. Selma C. Kessler, P.E. then of Kirkham Michael, conducted a site visit on 5 April 2011 and performed an independent engineering evaluation of the three subject properties relative to hydraulic properties of the adjoining Platte River and the State Highway 50 Bridge. That evaluation and the opinions formed from that evaluation are the purpose of this letter.

As Ms. Kessler states in her 21 June 2004 letter (Sheets 14 – 17) which are attached for ease of reference, "areas of ineffective flow are defined where embankments exist and result in contraction and expansion of (surface) water into and out of a structure. These ineffective areas are "blocked out" of the hydraulic cross sections when the water surface elevations are calculated." We have attached pertinent references which describe this phenomenon and how it is dealt with in the surface flow computational process by the US Army Corps of Engineers (USACoE). The USACoE is the governmental agency which has jurisdiction in determining flood characteristics of the Platte River in Nebraska (See HEC RAS excerpt on Sheets 3-6).

Aquaterra performed an analysis of this "ineffective flow area" over the expansion (downstream) reach in vicinity of the subject properties and given a b/B ratio (see Sheet 6) of 0.26, a S_{AB} of 4 ft/mi (see Sheet 7), a n_{OB} / n_C ratio of 2 (see Sheet 11), we have determined that an Expansion Ratio (ER) of 2 would likely exist during periods of high discharge (see Sheet 1). Given that the length of the expansion transition zone ($L_E = 3690$ ft see Sheet 4) is at least 10 time larger than the length of the shoreline of the properties of concern ($L_s = 385 \pm$ ft see Sheet 2), it is our conclusion that the three properties (herein labeled Lots A, B and C) depicted on sheet 2 and identified as the Heron Bay property and

Mr. Stephen L. Smith

April 8, 2011

Page 2

the two tracts of land immediately northeast of the Heron Bay property lie wholly within the ineffective flow area, or beyond the expansion zone flow boundary. Based on this analysis, the existing dike, the Heron Bay restaurant / bar, and the two immediately adjoining homes and other appurtenant structures would therefore also lie beyond the expansion zone flow boundary, and therefore a 'No-Rise" condition would exist for improvements made to these structures / features.

If you have questions regarding this letter, please feel free to contact us at 402 884-6202.

Sincerely,

Aquaterra Environmental Solutions, Inc.



John F. Hartwell, P.E., CHMM
Senior Consultant



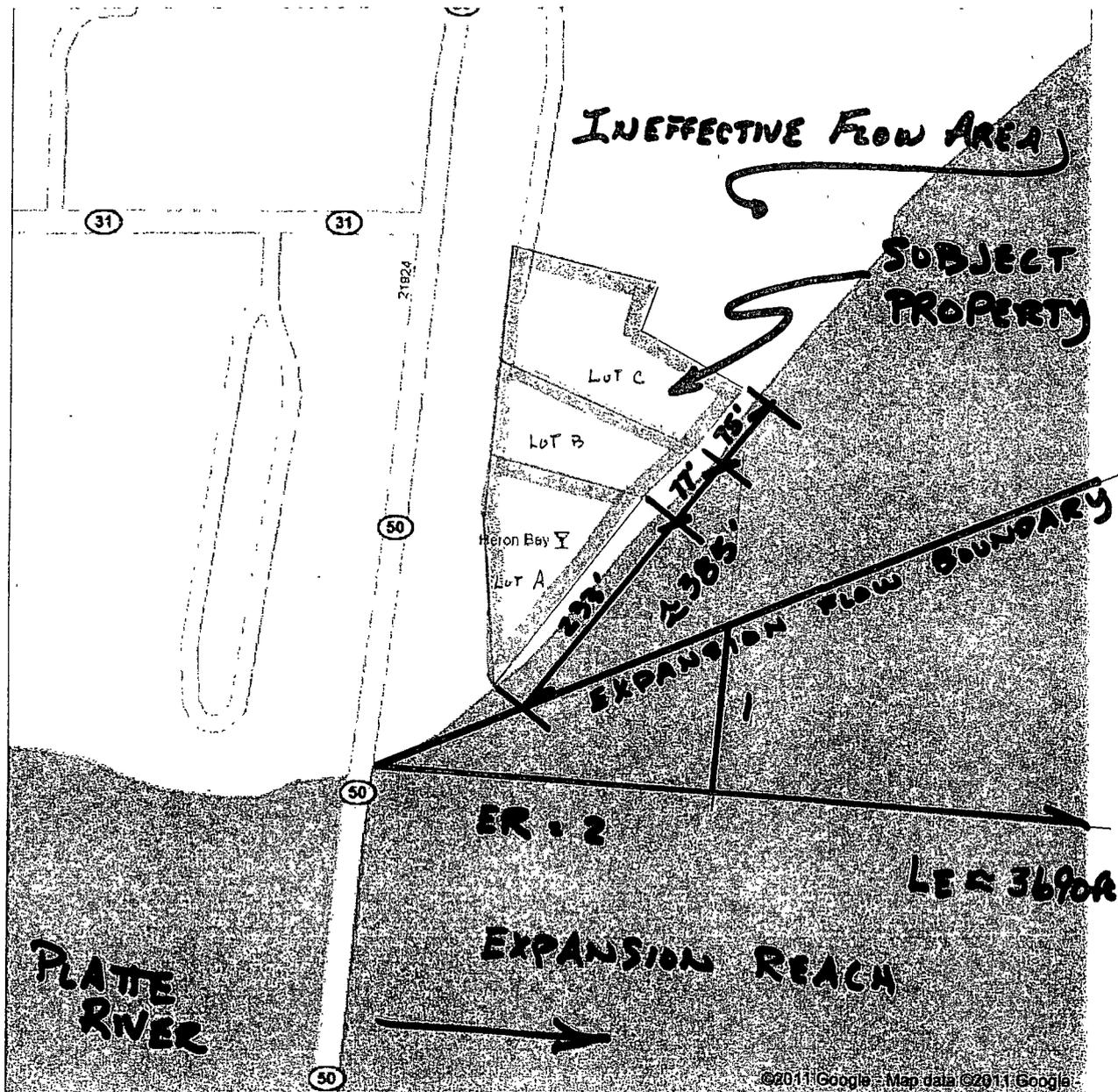
Michael J. Miller, CHMM
Branch Manager

cc: Ms. Rebecca Horner, Director of Planning, Sarpy County

Enclosures

Google maps

Get Google Maps on your phone
Text the word "GMAPS" to 466453

SH 50 BRIDGE

SCALE 1" = 163'

