BOARD OF COUNTY COMMISSIONERS SARPY COUNTY, NEBRASKA

RESOLUTION FLOOD PLAIN DEVELOPMENT
City of Lincoln Water Systems Department, Well 14-1 – Tax Lot 1 04-12-10 Unclaimed Island, Sarpy County Nebraska

WHEREAS, pursuant to Neb. Rev. Stat. § 23-104 (Reissue 2012), 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 2012), 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 2012); and,

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

WHEREAS, the City of Lincoln Water Systems Department applied for a Flood Plain Development Permit in order to construct a 20 foot diameter caisson for a horizontal water collector well (Well 14-1) on property within the Platte River floodway generally located in SW Section 4, Township 12N, Range 10E – Tax Lot 1 04-12-10 Unclaimed Island as described in the attached Exhibit A; and,

WHEREAS, the Sarpy County Planning Department staff reviewed the City of Lincoln Water Systems Department's application for a Flood Plain Development Permit for compliance with the Zoning Regulations on the property described in the attached Exhibit A; and,

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

WHEREAS, the Planning Department staff made a recommendation of approval as noted in the attached Exhibit A, which Exhibit A includes the Planning Department report, the Natural Resources District comments, and the elevation certificate.

NOW, THEREFORE, BE IT RESOLVED BY THE SARPY COUNTY BOARD OF COMMISSIONERS THAT the Flood Plain Development Permit Application for the property described in the attached Exhibit A is hereby approved.

The above Resolution was approved by a vote of the Sarpy County Board of Commissioners at a public meeting duly held in accordance with applicable law on the 11th day of June 2013.

Sarpy County Board Chairman

Attest
SEAL
County Clerk Chief Deputy

EXHIBIT A

Planning Department Report
City of Lincoln Water Systems Floodplain Development Permit Application (FDP 13-0010)
County Board Meeting Date: June 11, 2013

Subject	Type	Prepared By
Floodplain Development Permit for construction of **Well 14-1** for the City of Lincoln Water Systems within the Platte River floodway (generally located in SW Section 04, Township 12N, Range 10E – Tax Lot 1 04-12-10 Unclaimed Island)	Resolution	Bruce Fountain, AICP, EDFP Director, Planning & Building Dept.

➢ **Application Overview**

- The City of Lincoln Water Systems Department has requested approval of a floodplain development permit to construct a 20 foot diameter caisson for a horizontal water collector well – Well 14-1.

➢ **Comprehensive Development Plan**

- The Sarpy County Development Structure Plan (Future Land Use Map) indicates the area adjacent to the Platte River in this vicinity as Greenway

➢ **Zoning / Floodplain Regulations**

- The area adjacent to this location within the Platte River is zoned AG-FP (Agricultural - Floodplain)
- The property is located within the Floodway on the banks of the Platte River (see attached map).
- The caisson will store public water utility pumps and is not a structure for human habitation.
- The caisson structure for the water collector well has concrete walls that are relatively impervious to flood water up to the top of the caisson structure at elevation 1062.5 feet, which is above the 100-year flood elevation of 1058.5 feet. Therefore, the structure has low flood damage potential.
- Modeling study results indicate the structure does not comprise a significant obstruction to water flows and does not increase upstream flood elevations; therefore, the proposed structure is in conformance with no-rise criteria as required in the Sarpy County Zoning Regulations.
- This request as proposed is in conformance with the Sarpy County Floodplain and Zoning Regulations.

➢ **Natural Resources District**

- The Papio Missouri River Natural Resources District (PMNRD) concurs with the no-rise certification that the proposed project will not impact the 100-year flood elevations, floodway elevations, or floodway widths on the Platte River at published sections in the current effective Flood Insurance Study for Sarpy County and will not impact the 100-year flood elevations, floodway elevations, or floodway width at unpublished cross-sections in the vicinity of the propose project.
- The PMNRD has no objections to the proposed application. Their review letter is attached.

➢ **Recommendation**

- Staff recommends the Floodplain Development Permit for this project be approved as it is in compliance with the Sarpy County Zoning and Floodplain Regulations and the PMNRD has no objections to the project.

PAPIO-MISSOURI RIVER
NATURAL
RESOURCES
DISTRICT
8901 S. 154th Street
Omaha, NE 68138-3621
402-444-6222
www.papionrd.org

June 4, 2013

Bruce Fountain, Director
Sarpy County Planning Department
1210 Golden Gate Drive
Papillion, NE 68046

RE: City of Lincoln Application for Floodplain Development

Dear Mr. Fountain:

The District received information regarding the proposed installation of two caisson structures for horizontal water collector wells along the Platte River south of Highway 6 in Sarpy County, Nebraska. According to the Flood Insurance Rate Map for Sarpy County, Panel 31153C 0145 G, effective December 2, 2005, this project is located in the Zone AE floodway of the Platte River.

The District has reviewed a no-rise certification prepared by Carter Hubbard, P.E., dated May 21, 2013, along with the hydraulic model, and flood proofing certificates prepared by John B. Day, P.E., dated June 3, 2013 and offers the following comments:

- This permit is for the installation of the caisson structures only. No other structures will be built at this time.
- The District concurs with the no-rise certification that the proposed project will not impact the 100-year flood elevations, floodway elevations, or floodway widths on the Platte River at published sections in the current effective Flood Insurance Study for Sarpy County and will not impact the 100-year flood elevations, floodway elevations, or floodway widths at unpublished cross-sections in the vicinity of the proposed project.

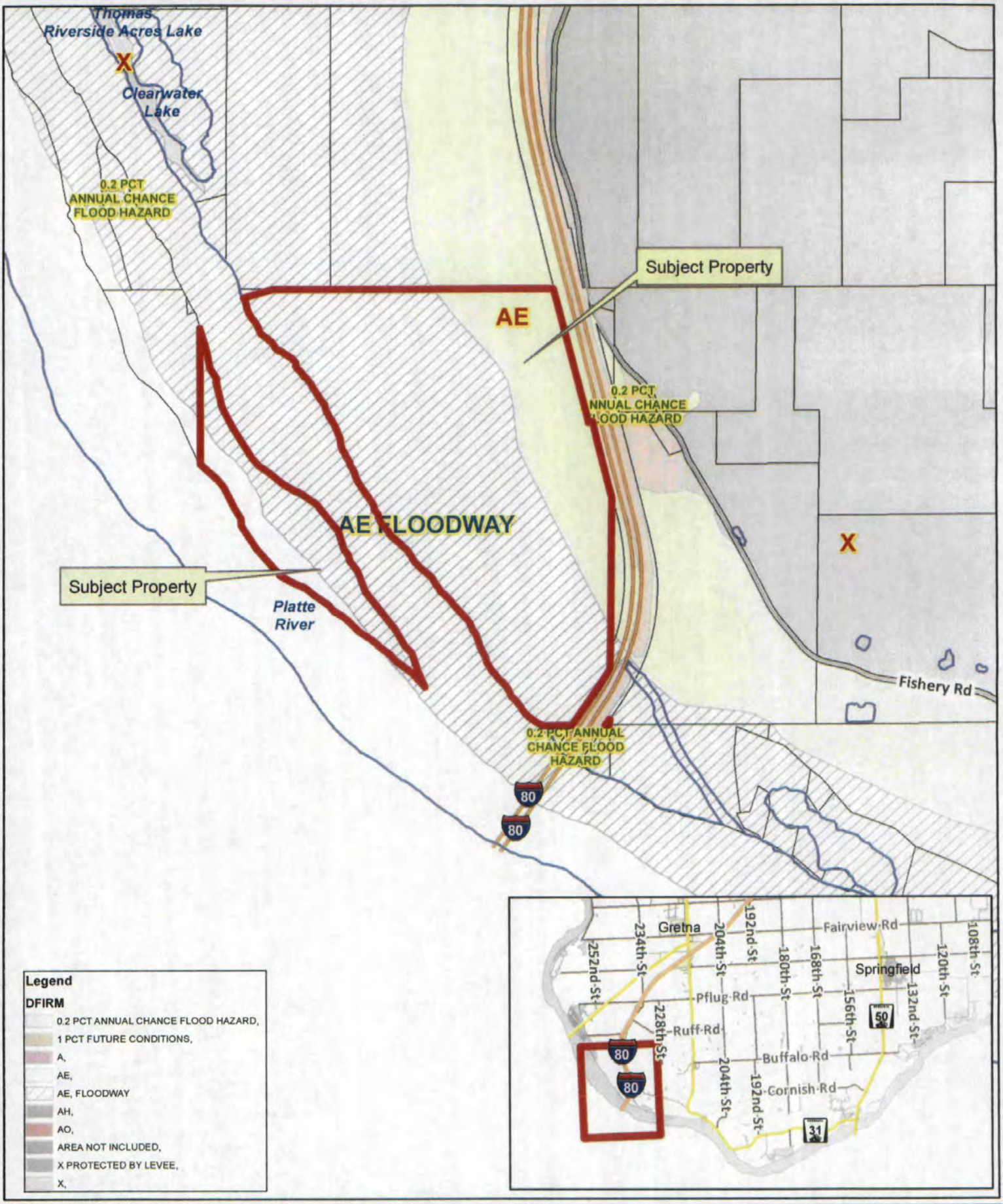
The District has no objections to this project. If you have any questions or concerns, please contact me at (402) 444-6222 or at llaster@papionrd.org.

Sincerely,

Lori Ann Laster, CFM
Stormwater Management Engineer

Cc: Marlin Petermann, Amanda Grint, P-MRNRD

\llaster\Documents\Floodplain Development Permits\Reach 10-2\130604-Lincoln Water System.docx Reach: 10-2



Vicinity Map - Flood Zones

Ruff Rd

City of Lincoln Water Systems

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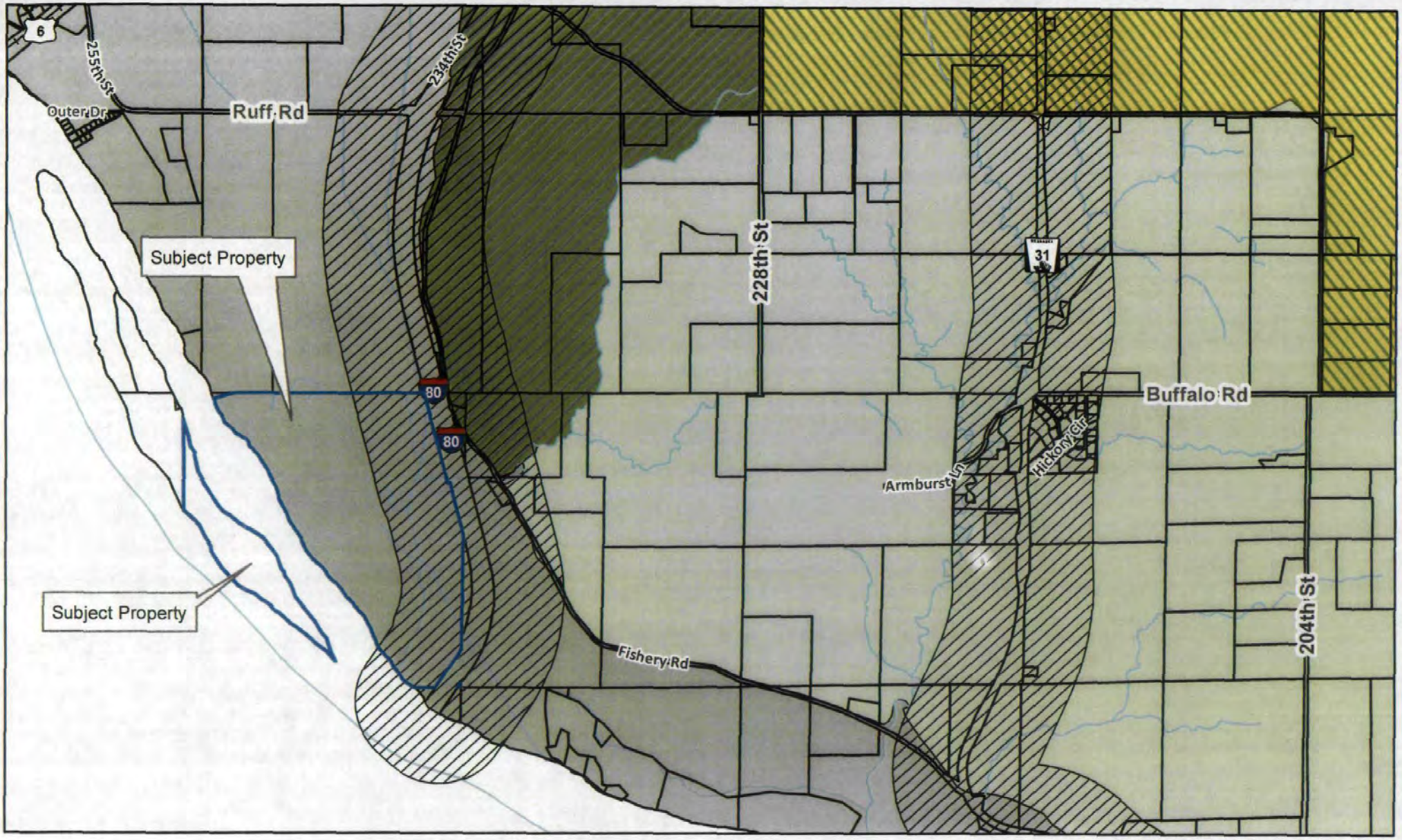


Current FLU - Sarpy Co

0 0.2 0.4 0.8Miles

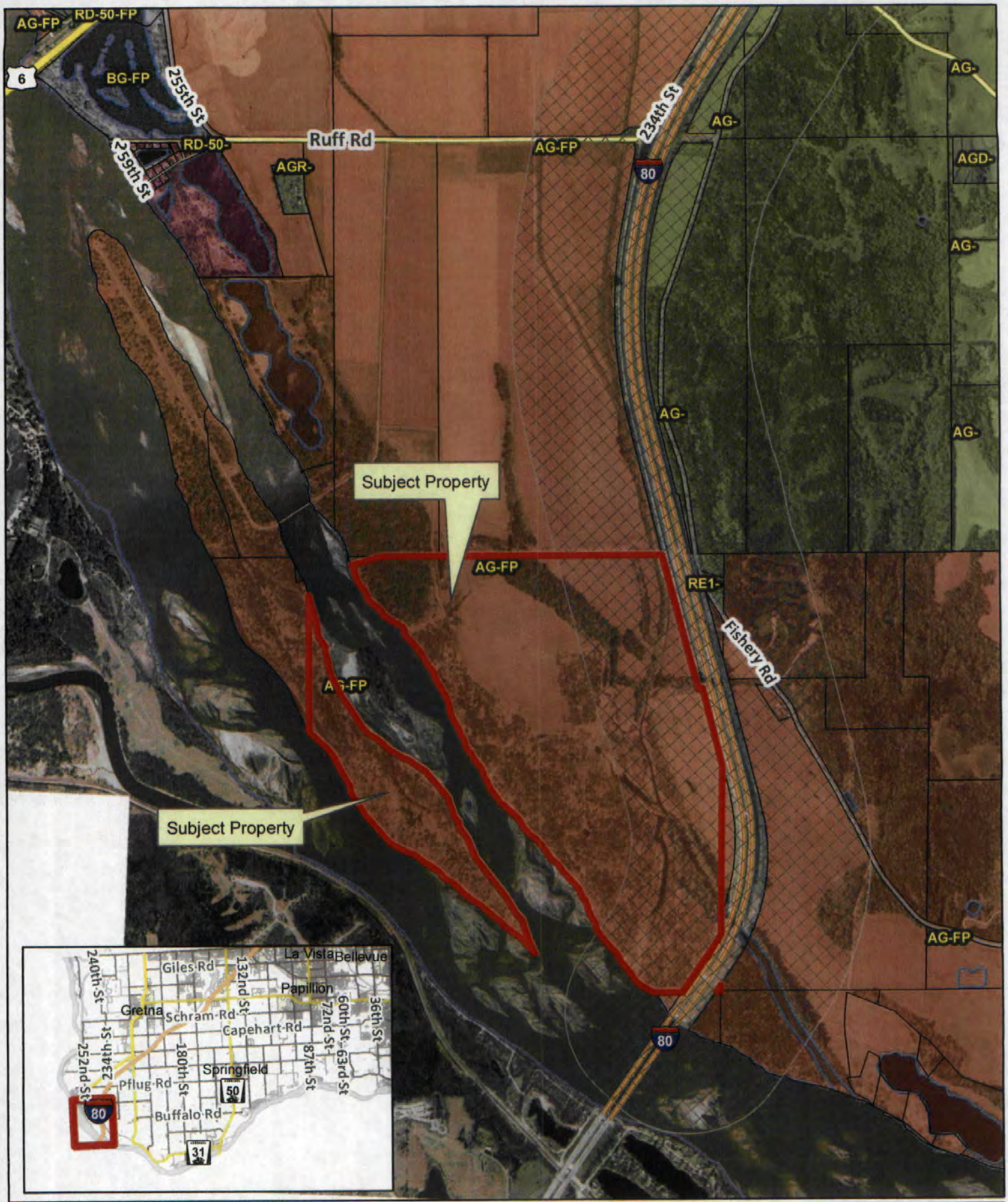
Vicinity Map - City of Lincoln Water Systems

Comprehensive Development Plan
Figure 5.1: Development Structure Plan
Sarpy County, Nebraska

Legend

- Highway Corridor Overlay
- Bellevue Future Growth
- Business Park
- Civic
- Conservation Residential
- Estate Residential
- Greenway
- Industrial
- Light Industrial/Storage
- Long Term Residential Growth
- Mixed Use
- Mixed Use Center
- New Richfield Village
- Park/School Site
- Pflug Interchange Development
- Residential - Community Systems
- Urban Residential
- Urban Residential II
- Cross County Arterial
- City Limit
- City ETJ

Amended 3-07-2012



Vicinity Map - Zoning

Ruff Rd

City of Lincoln Water Systems

Sarpy Highway Corridor Overlay

N
W
E
S

OLSSON ASSOCIATES

May 21, 2013

Mr. Bruce Fountain
Sarpy County
Planning and Building Department
1210 Golden Gate Drive
Papillion, Nebraska 68046

RE: City of Lincoln
Lincoln Water Systems: Water Supply Upgrade
Floodplain Development Permit
OA Project #: 013-0604

Dear Mr. Fountain:

On behalf of the City of Lincoln, I am submitting a Floodplain Development Permit. The purpose of the project is to upgrade the water supply for the Lincoln Water System with two horizontal collector wells. The project is located along the Platte River, adjacent to Moss Island between Interstate 80 and Highway 6. The project consists of working near the channel to install the well caissons.

The project lies within FEMA's 100-year regulatory floodplain and floodway as illustrated on the Flood Insurance Rate Map (FIRM, No. 31153C0145G, effective date December 2, 2005). Hydraulic modeling has been completed for this project and the results show the new well caissons will not create an increase in the base flood elevations of the floodplain or the floodway. The caissons will be used to house public utility pumps and have a low flood-damage potential that will not obstruct flood flows. The structures are not intended for human habitation. I certify that this project will not create an increase in the base flood elevations along the Platte River.

Enclosed with this letter are two Floodplain Development Permit applications, two NFIP elevation certificates, one $200 check for application fees, copy of the FIRM map, copy of the Flood Insurance Study, multiple copies of the construction plans, site area maps, and property information.

We look forward to the approval of this permit and anticipate starting construction as soon as we obtain your permission. Please feel free to call me at 402.458.5948 should you have any questions about this permit request.

Sincerely,

Carter Hubbard, PE, CFM

cc: File

F:\Projects\013-0604_WTRS\FloodplainDevelopmentPermit.docx

1111 Lincoln Mall, Suite 111
Lincoln, NE 68508

TEL 402.474.6311
FAX 402.474.5160

www.olssonassociates.com

05-22-13A10:35 RCVD

OLSSON
ASSOCIATES

Site Data:

Location: Section 04, Township 12N, Range 10E

NFIP Panel: 31153C0145G

Type of Development: Non-residential New Construction

Description of Development:

City of Lincoln is upgrading the Lincoln Water Systems water supply with two horizontal collection wells. The wells are located near Moss Island in between Interstate 80 and Highway 6 on the Platte River. The wells will be 20-foot in diameter and will have a maximum elevation 10-foot above existing grade.

Name of Flooding Source: Platte River

Hydraulic modeling Results:

Upstream Project	STATION 135700	WSE_{100} (ft)	WSE_{FW} (ft)	Q_{100} (cfs)
	Flood Insurance Study[1]	-	-	-
	Existing Conditions[2]	1060.2 (1061.0)	1060.5 (1061.3)	187,000
	Proposed Conditions[2]	1060.2 (1061.0)	1060.5 (1061.3)	187,000

Project Location	STATION 134300	WSE_{100} (ft)	WSE_{FW} (ft)	Q_{100} (cfs)
Well 14 – 2	Flood Insurance Study[1]	-	-	-
	Existing Conditions[2]	1059.3 (1060.1)	1059.6 (1060.4)	250,000
	Proposed Conditions[2]	1059.3 (1060.1)	1059.6 (1060.4)	250,000

Project Location	STATION 132900	WSE_{100} (ft)	WSE_{FW} (ft)	Q_{100} (cfs)
Well 14 – 1 (FIS Y)	Flood Insurance Study[1]	1059.3	1059.6	250,000
	Existing Conditions[2]	1058.5 (1059.3)	1058.8 (1059.6)	250,000
	Proposed Conditions[2]	1058.5 (1059.3)	1058.8 (1059.6)	250,000

Downstream Project	STATION 130875	WSE_{100} (ft)	WSE_{FW} (ft)	Q_{100} (cfs)
U/S Interstate 80	Flood Insurance Study[1]	-	-	-
	Existing Conditions[2]	1057.7 (1058.5)	1058.2 (1059.0)	250,000
	Proposed Conditions[2]	1057.7 (1058.5)	1058.2 (1059.0)	250,000

[1]Flood Insurance Study based on NAVD88 datum
[2]Model for existing and proposed conditions based on NGVD29 datum
* Conversion to NAVD88 in parenthesis (Conversion from NGVD29 to NAVD88 is approximately 0.8ft)

1111 Lincoln Mall, Suite 111
Lincoln, NE 68508

TEL 402.474.6311
FAX 402.474.5160

www.olssonassociates.com

SARPY COUNTY PLANNING & BUILDING DEPT.

1210 GOLDEN GATE DRIVE PAPILLION, NE 68046
PHONE: 402-593-1555 FAX: 402-593-1558
E-MAIL: PLANNING@SARPY.COM

FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

In order for your application to be considered **COMPLETE**, please answer all applicable questions and provide the following:

1. Completed Floodplain Development Permit Application
2. Non-refundable fee of $100.00 made payable to Sarpy County Treasurer
3. Two (2) full size site/construction plan drawings
4. Two (2) reduced size site/construction plan drawings (8.5 x 11)
5. One (1) electronic copy of the site/construction plan drawings in PDF form
6. A completed FEMA National Flood Insurance Program (NFIP) Elevation Certificate certified, signed and sealed by land surveyor, engineer, or architect authorized by law to certify elevation information.

PLANNING STAFF USE ONLY:

APPLICATION #: FPD 13-0016

DATE RECEIVED: 5-22-2013

APPLICATION FEE: $ 100.00 RECEIPT NO. 1998

RECEIVED BY: CE

NOTES: _____

RECOMMENDATIONS:

PLANNING & BUILDING DEPT: ☐ APPROVAL ☐ DENIAL

SARPY COUNTY BOARD: ☐ APPROVAL ☐ DENIAL

RESOLUTION #: _____ DATE: _____

PROPERTY OWNER INFORMATION: **(If multiple owners, please attach separate sheet)**

NAME: City of Lincoln (Jerry Obrist) E-MAIL: jobrist@lincoln.ne.gov

ADDRESS: 2021 N. 27th Street CITY/STATE/ZIP: Lincoln, NE 68503

MAILING ADDRESS: (IF DIFFERENT) _____ CITY/STATE/ZIP: _____

PHONE: 402.441.5930 FAX: 402.441.8493

ENGINEERING/SURVEYING OR OTHER CONSULTING PROFESSIONAL'S INFORMATION:

NAME: Olsson Associates (Carter Hubbard) E-MAIL: chubbard@olssonassociates.com

ADDRESS: 1111 Lincoln Mall, Suite 111 CITY/STATE/ZIP: Lincoln, NE 68508

MAILING ADDRESS: (IF DIFFERENT) _____ CITY/STATE/ZIP: _____

PHONE: 402.458.5948 FAX: 402.474.5160

CONSTRUCTION INFORMATION: ***(This individual/company is responsible for meeting building code regulations.)***

NAME: _____ E-MAIL: _____

ADDRESS: _____ CITY/STATE/ZIP: _____

MAILING ADDRESS: (IF DIFFERENT) _____ CITY/STATE/ZIP: _____

PHONE: _____ FAX: _____

05-22-13A10:37 RCVD

PROJECT DESCRIPTION: *Describe the project in detail, including physical features of the site, proposed improvements, proposed uses or business, operating hours, number of employees, anticipated customers, etc. – Attach additional sheets if necessary.*

***PLEASE NOTE:** A detailed project description is essential to the reviewing process of this request.*

Well 14-1: A 20-foot diameter caisson is to be installed at longitude -96.3057 and latitude 41.096 for a horizontal water collector well. The caisson structure has concrete walls that are relatively impervious to flood water up to the top of the caisson structure at elevation 1062.5-feet, which is above the 100-year elevation of 1058.5-feet. Thus, the structure has low-flood damage potential. HEC-RAS modeling results indicate the structure does not comprise a significant obstruction to flows and does not increase upstream flood elevations; thus, the proposed structure is in conformance with no-rise criteria. The caisson will store public water utility pumps and is not a structure for human habitation.

PROJECT SITE INFORMATION: *Complete each section in its entirety. If a question is not applicable to your project, please indicate this to show that each question has been carefully considered.*

PROPERTY ADDRESS: Well 14-1

ASSESSOR'S PARCEL NUMBER: 011586549 **ADDITIONAL PARCEL NUMBERS** n/a

GENERAL LOCATION: SW Section 04, Township 12N, Range 10E

(example 189th & Giles Rd – include subdivision name)

LEGAL DESCRIPTION: *(Describe property to wit:)* Tax Lot 1 04-12-10 (Unclaimed Island)

SIZE OF PROPERTY: 49.5 AC *acres/sq. ft.* **CURRENT ZONING:** AG FP

NAME OF ADJACENT WATERWAY: Platte River

PROPERTY LIES WITHIN: FLOODWAY: ☑ **FLOOD FRINGE:** ☐ **FLOOD ZONE DESIGNATION:** AE

LOWEST FLOOR ELEVATION IS TO BE _____ **FEET ABOVE MEAN SEA LEVEL.** (Including Basement)

SOURCE OF UTILITY SERVICES: **Water -** _____ **Sewer -** _____

Gas - _____ **Electric -** _____

ADDITIONAL INFORMATION: *Please use this space to provide any other information you feel is appropriate for Sarpy County to consider during review of your application. Attach extra sheets if necessary.*

The existing grade elevation is approximately 1052-feet and the proposed caisson top elevation is 1062.5-feet. The caisson will have a bottom elevation of approximately 974-feet (bedrock).

PLEASE NOTE THE FOLLOWING PROCEDURES:

1. **The Planning Department will review the application material along with other appropriate departments and/or agencies and provide a recommendation report to the County Board.**
2. **County Board will hold a public hearing and make a final decision on the Floodplain Development Permit.**
3. Prior to the final building inspection a Finished Construction Elevation Certificate or other verification will be required to be submitted to the Planning & Building Department to assure compliance with the Floodplain Development Permit.

The applicant (or authorized agent) has prepared this application and certifies that the facts stated herein and exhibits attached hereto are true and correct.

Applicant Signature _____ Date 05/21/13

I, the undersigned, understand a sign will be posted on my property and will remain until the public hearing process at the Planning Commission and County Board is complete. I further understand the Floodplain Development Permit process as stated above and I authorize Sarpy County staff to enter the property for inspection related to the specific request during this process.

Owner Signature (or authorized agent) _____ Date _____

Owner Signature (or authorized agent) _____ Date _____

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

FLOODPROOFING CERTIFICATE
FOR NON-RESIDENTIAL STRUCTURES

OMB No. 1660-0008
Expiration Date: July 31, 2015

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME
Lincoln Water Systems - City of Lincoln

STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER

OTHER DESCRIPTION (Lot and Block Numbers, etc.)
Well 14-1: SW Section 04, Township 12N, Range 10E

FOR INSURANCE COMPANY USE

POLICY NUMBER

COMPANY NAIC NUMBER

CITY
Unincorporated Sarpy County

STATE
NE

ZIP CODE

SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (In AO Zones, Use Depth)
310190	31153C0145	G	05/03/2012	AE	1059.8 ft

Indicate elevation datum used for Base Flood Elevation shown above: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____

SECTION II – FLOODPROOFING INFORMATION (By a Registered Professional Engineer or Architect)

Elevations are based on: ☒ Construction Drawings ☐ Building Under Construction ☐ Finished Construction

Floodproofing Design Elevation Information:

Building is floodproofed to an elevation of 1062.5 feet (In Puerto Rico only: ____ . ____ meters). ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____
(Elevation datum used must be the same as that used for the Base Flood Elevation.)

Height of floodproofing on the building above the lowest adjacent grade is 10.5 feet (In Puerto Rico only: _____ meters).

For Unnumbered A Zones Only:

Highest adjacent (finished) grade next to the building (HAG) ____ . ____ feet (In Puerto Rico only: ____ . ____ meters)

☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____

(NOTE: For insurance rating purposes, the building's floodproofed design elevation must be at least 1 foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium.)

SECTION III – CERTIFICATION (By a Registered Professional Engineer or Architect)

Non-Residential Floodproofed Construction Certification:

I certify that, based upon development and/or review of structural design, specifications, and plans for construction, the design and methods of construction are in accordance with accepted standards of practice for meeting the following provisions:

The structure, together with attendant utilities and sanitary facilities, is watertight to the floodproofed design elevation indicated above, with walls that are substantially impermeable to the passage of water.

All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces.

I certify that the information on this certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME
John B. Day

LICENSE NUMBER (or Affix Seal)
E-10648

TITLE
Professional Engineer

COMPANY NAME
Olsson Associates

ADDRESS
1111 Lincoln Mall, Suite 111

CITY
Lincoln

STATE
NE

ZIP CODE
68508

SIGNATURE
John B. Day

DATE
6/6/13

PHONE
402.458.5693

Copies should be made of this Certificate for: 1) community official, 2) insurance agent/company, and 3) building owner.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

FLOODPROOFING CERTIFICATE
FOR NON-RESIDENTIAL STRUCTURES

OMB No. 1660-0008
Expiration Date: July 31, 2015

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME	FOR INSURANCE COMPANY USE
Lincoln Water Systems - City of Lincoln	
STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER	POLICY NUMBER
OTHER DESCRIPTION (Lot and Block Numbers, etc.)	COMPANY NAIC NUMBER
Well 14-2: N1/2 NE1/4 & Tax Lots A-D & Gov Lots 4-7 04-12-10	
CITY / STATE / ZIP CODE	
Unincorporated Sarpy County / NE	

SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (In AO Zones, Use Depth)
310190	31153C0145	G	05/03/2012	AE	1059.8 ft

Indicate elevation datum used for Base Flood Elevation shown above: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____

SECTION II – FLOODPROOFING INFORMATION (By a Registered Professional Engineer or Architect)

Elevations are based on: ☒ Construction Drawings ☐ Building Under Construction ☐ Finished Construction

Floodproofing Design Elevation Information:

Building is floodproofed to an elevation of 1062.0 feet (In Puerto Rico only: ____ . ____ meters). ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____
(Elevation datum used must be the same as that used for the Base Flood Elevation.)

Height of floodproofing on the building above the lowest adjacent grade is 10.0 feet (In Puerto Rico only: _____ meters).

For Unnumbered A Zones Only:

Highest adjacent (finished) grade next to the building (HAG) ____ . ____ feet (In Puerto Rico only: ____ . ____ meters)

☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____

(NOTE: For insurance rating purposes, the building's floodproofed design elevation must be at least 1 foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium.)

SECTION III – CERTIFICATION (By a Registered Professional Engineer or Architect)

Non-Residential Floodproofed Construction Certification:

I certify that, based upon development and/or review of structural design, specifications, and plans for construction, the design and methods of construction are in accordance with accepted standards of practice for meeting the following provisions:

The structure, together with attendant utilities and sanitary facilities, is watertight to the floodproofed design elevation indicated above, with walls that are substantially impermeable to the passage of water.

All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces.

I certify that the information on this certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME	LICENSE NUMBER (or Affix Seal)		
John B. Day	E-10648		
TITLE	COMPANY NAME		
Professional Engineer	Olsson Associates		
ADDRESS	CITY	STATE	ZIP CODE
1111 Lincoln Mall, Suite 111	Lincoln	NE	68508
SIGNATURE	DATE	PHONE	
John B. Day	6/3/13	402.458.5693	

Copies should be made of this Certificate for: 1) community official, 2) insurance agent/company, and 3) building owner.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

ELEVATION CERTIFICATE

IMPORTANT: Follow the instructions on pages 1–9.

OMB No. 1660-0008
Expiration Date: July 31, 2015

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE

A1. Building Owner's Name: City of Lincoln - Lincoln Water Systems — Policy Number:

A2. Building Street Address (Including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.: Well 14-1 — Company NAIC Number:

City: Unincorporated Sarpy County — State: NE — ZIP Code: 68028

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.): Tax Lot 1 04-12-10 on Island

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): Non-residential

A5. Latitude/Longitude: Lat. 41 036 Long. -96.3057 Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number: 2

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s): n/a sq ft
- b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade: n/a
- c) Total net area of flood openings in A8.b: n/a sq in
- d) Engineered flood openings? ☐ Yes ☒ No

A9. For a building with an attached garage:
- a) Square footage of attached garage: n/a sq ft
- b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade: n/a
- c) Total net area of flood openings in A9.b: n/a sq in
- d) Engineered flood openings? ☐ Yes ☒ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State
Sarpy County 310190	Sarpy County	Nebraska

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)
31153C0145	G	05/03/2012	12/02/2005	AE	1058.5 ft

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
☒ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other/Source:

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: ____ / ____ / ____ ☐ CBRS ☐ OPA

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☒ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: ____ Vertical Datum: ____

Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: ____
Datum used for building elevations must be the same as that used for the BFE.

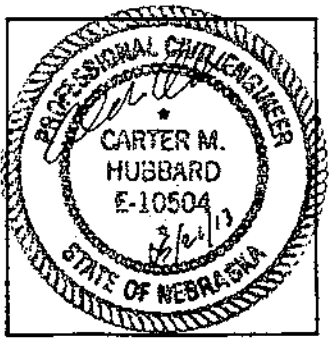
		Check the measurement used.
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	974.0	☒ feet ☐ meters
b) Top of the next higher floor	1062.5	☒ feet ☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	____	☒ feet ☐ meters
d) Attached garage (top of slab)	____	☒ feet ☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	____	☒ feet ☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	1052.0	☒ feet ☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	____	☒ feet ☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	____	☒ feet ☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

☐ Check here if comments are provided on back of form.
☐ Check here if attachments.

Were latitude and longitude in Section A provided by a licensed land surveyor? ☐ Yes ☒ No



Certifier's Name	License Number		
Carter Hubbard	E-10504		
Title	**Company Name**		
Senior Engineer	Olsson Associates		
Address	**City**	**State**	**ZIP Code**
1111 Lincoln Mall Suite 111	Lincoln	NE	68508
Signature	**Date**	**Telephone**	
Carter Hubbard	05/21/13	(402) 458-5948	

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. Well 14-1			Policy Number:
City Unincorporated Sarpy County	State NE	ZIP Code 68028	Company NAIC Number:

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments: Elevation certificate based on preliminary design drawings. Note, structure is a horizontal collector well with a central caisson structure. Lateral collectors and the bottom of the caisson are well below the base flood elevation. Mechanical equipment is located at the bottom of the caisson. Structure is relatively impervious to floodwaters up to the top of the central caisson, or 1062.5 feet, which is above the 100-year elevation of 1058.5 feet.

Signature: [signature] Date: 05/21/13

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).

a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ . _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ . _____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.

E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 8–9 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____ . _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E3. Attached garage (top of slab) is _____ . _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is _____ . _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner or Owner's Authorized Representative's Name

Address | City | State | ZIP Code

Signature | Date | Telephone

Comments

☐ Check here if attachments.

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate Of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____ . _____ ☐ feet ☐ meters Datum _____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____ . _____ ☐ feet ☐ meters Datum _____

G10. Community's design flood elevation: _____ . _____ ☐ feet ☐ meters Datum _____

Local Official's Name | Title

Community Name | Telephone

Signature | Date

Comments

☐ Check here if attachments.

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. Well 14-1			Policy Number:
City Unincorporated Sarpy County	State NE	ZIP Code 68028	Company NAIC Number:

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.

BUILDING PHOTOGRAPHS

Continuation Page

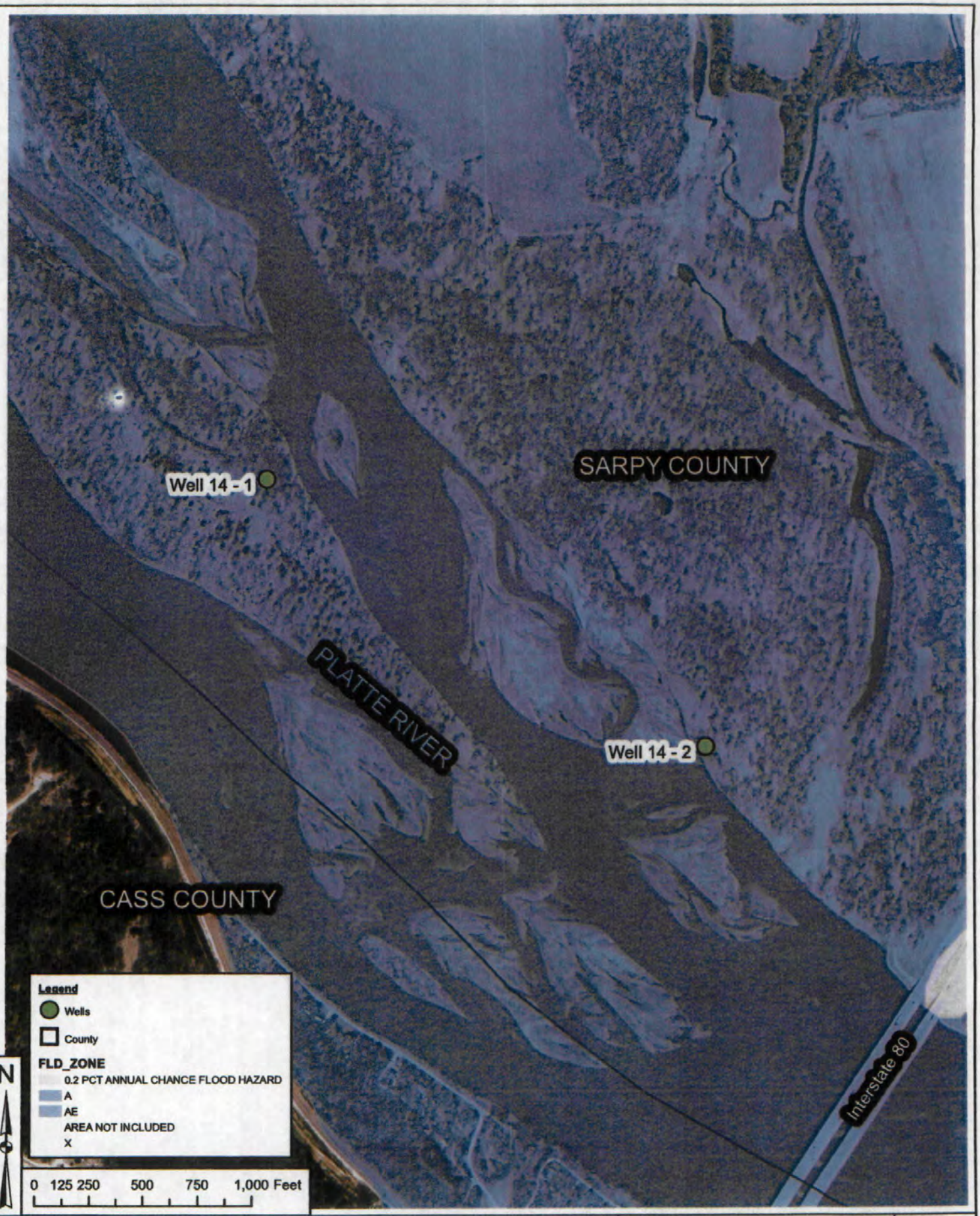
IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. Well 14-1			Policy Number:
City Unincorporated Sarpy County	State NE	ZIP Code 68028	Company NAIC Number:

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8.

PROJECT: 013-0604	HORIZONTAL COLLECTOR WELL LOCATIONS City of Lincoln: Water Supply Upgrade Ashland, Nebraska	EXHIBIT 1
DRAWN BY: RGF / CHECKED BY: CMH		
DATE: May 16, 2013		

OLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.olssonassociates.com

05-22-13A10:37 RCVD



PATH: P:\projects\013-0604_WTR\RAS\LW5_Ashland\Floodmap.mxd USER: rfarnum DATE: May 16, 2013

PROJECT: 013-0604	HORIZONTAL COLLECTOR WELL LOCATIONS City of Lincoln: Water Supply Upgrade Ashland, Nebraska	EXHIBIT
DRAWN BY: RGF / CHECKED BY: CMH		2
DATE: May 16, 2013		

OLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.olssonassociates.com

05-22-13A10:37 RCVD

05-22-13A10:38 RCVD

LINCOLN WATER SYSTEM
WATER SUPPLY UPGRADE - HORIZONTAL COLLECTOR WELLS
HCW 3 & 4 - CAISSON & LATERALS

CITY PROJECT NO. _____

CITY SPECIFICATION NO. _____

VICINITY MAP
NO SCALE

NOTES:

1. CONTRACTOR SHALL PROVIDE THEIR OWN LOCK DAISY-CHAINED WITH THE EXISTING GATE LOCK FOR ENTRANCE TO THE SITE. GATE SHALL BE KEPT CLOSED AND LOCKED AT ALL TIMES TO PREVENT UNWANTED ACCESS TO THE WELLFIELDS.
2. EXISTING ISLAND BRIDGE IS 12'± WIDE AND RATED FOR AASHTO H5-20. CONTRACTOR SHALL VERIFY THAT ALL EQUIPMENT AND DELIVERIES CAN PASS THE BRIDGE AND NOT EXCEED LOAD RATINGS.
3. CONSTRUCTION OF HCW-4 (14-1) AND ASSOCIATED ACCESS ROAD, MONITORING WELLS AND OTHER RELATED ITEMS TO BE BID SEPARATELY AS AN ADDITIVE ALTERNATE. SEE SECTION 01025 FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTOR SHALL AVOID DISTURBING ANY AREAS DEFICIED AS WETLANDS.
5. ACCESS ROADS SHALL FOLLOW THE ALIGNMENT OF THE EXISTING HAUL ROUTES.

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEBRASKA. THESE PLANS MEET THE REQUIREMENTS OF THE CITY ENGINEER'S OFFICE DESIGN REQUIREMENTS.

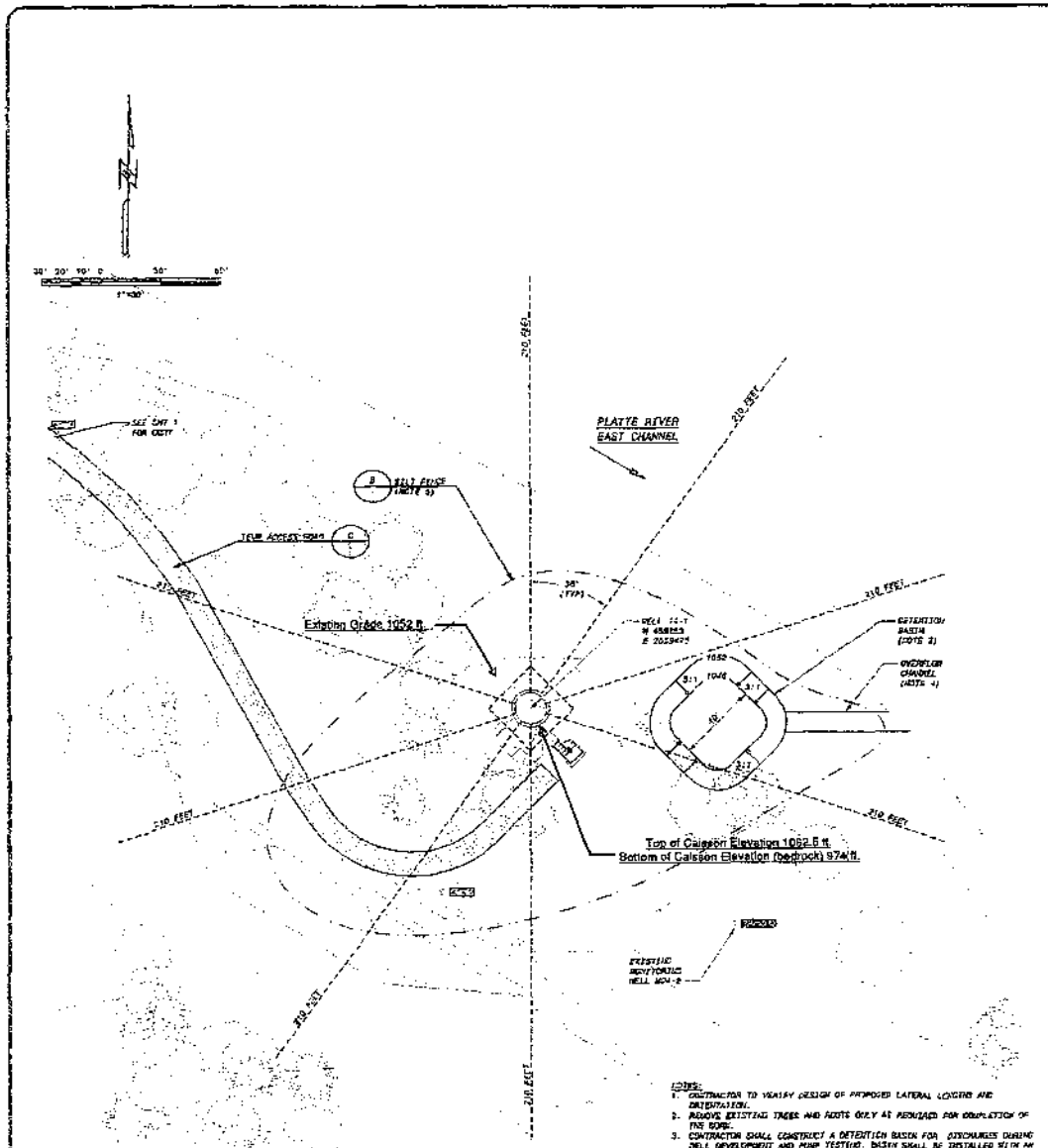
RICHARD J. HANSEN, P.E. DATE

BLACK & VEATCH
Building a world of difference.
Black & Veatch Corporation
Kansas City, Missouri

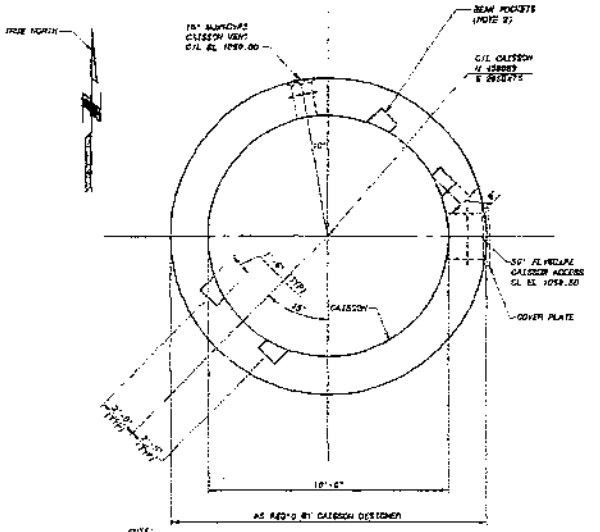
OLSSON ASSOCIATES

SITE PLAN
1" = 200'-0"

DATE	REVISIONS AND RECORD OF ISSUE	DES	BY	CK	APP

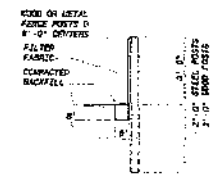


NOTES:
1. CONTRACTOR TO VERIFY DESIGN OF PROPOSED LATERAL LENGTHS AND ORIENTATION.
2. REMOVE EXISTING TREES AND ROOTS ONLY AS REQUIRED FOR COMPLETION OF THE WORK.
3. CONTRACTOR SHALL CONSTRUCT A DETENTION BASIN FOR DISCHARGES DURING WELL DEVELOPMENT AND PUMP TESTING. BASIN SHALL BE INSTALLED WITH AN IMPERMEABLE LINER AND REQUIRED FOLLOWING COMPLETION OF ALL TESTING.
4. AN OVERFLOW CHANNEL APPROXIMATELY 10'W AND 18" DEEP SHALL BE CONSTRUCTED BETWEEN THE BASIN AND THE RIVER FOR DISCHARGE. THE CHANNEL SHOULD SLOPE TO THE RIVER AND BE INSTALLED WITH AN IMPERMEABLE LINER. CONTRACTOR SHALL MONITOR RIVER BANK FOR EROSION DURING WELL DEVELOPMENT AND TESTING AND SHALL PROVIDE TEMPORARY RIP-RAP OR OTHER MEANS OF STABILIZATION AS REQUIRED.
5. SILT FENCE SHALL ENCOMPASS ALL DISTURBED AREAS ON THE PROJECT SITE.



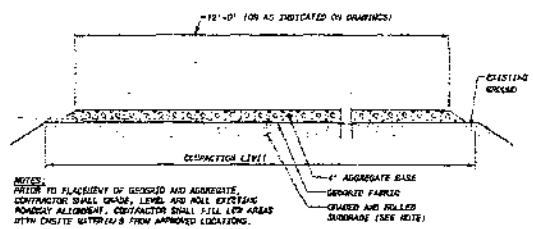
NOTE:
1. LATERAL AND PORT ORIENTATION LOCATION AND DETAILS NOT SHOWN. TO BE PROVIDED BY CAISSON DESIGNER IN ACCORDANCE WITH SPECIFICATIONS.
2. BEAM POCKETS PROVIDED TO SUPPORT WELL HOUSE FLOOR SLAB FORM DECK AND TO BE DIM 18" IN DEPTH.

CAISSON TOP PLAN (A)
1/4" = 1'-0"



SECTION

SILT FENCE (B)
NO SCALE



NOTES:
PRIOR TO PLACEMENT OF GEOGRID AND AGGREGATE, CONTRACTOR SHALL GRADE, LEVEL AND ROLL EXISTING ROADWAY ALIGNMENT. CONTRACTOR SHALL FILL LOW AREAS WITH ONSITE WATER(A) 5 FROM APPROVED LOCATIONS.

TYPICAL ACCESS ROADWAY (C)
NO SCALE

BLACK & VEATCH
Black & Veatch Corporation

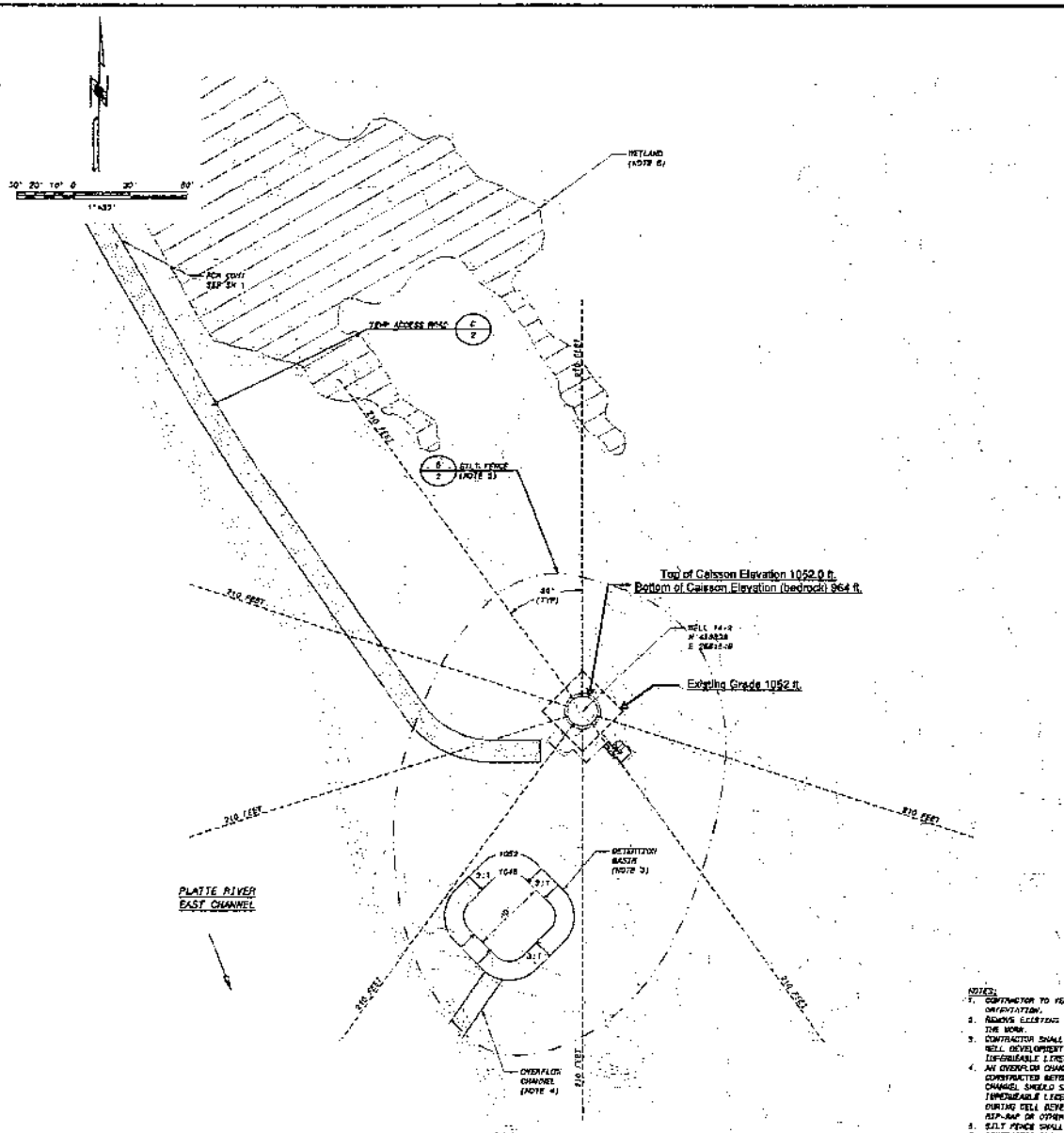
OLSSON ASSOCIATES

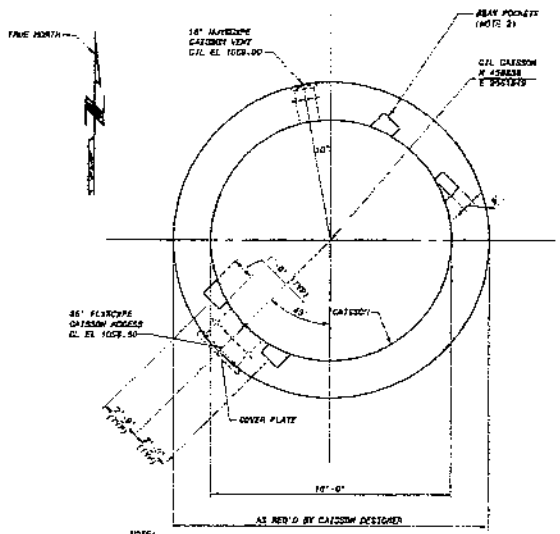
WATER SUPPLY UPGRADE
HORIZONTAL COLLECTOR WELLS

HOW 3 & 4 - CASSION AND LATERALS
14-1 SITE PLAN

PROJECT NO.
179459

SHEET
2 OF 3





NOTES:
1. LATERAL AND PORT ORIENTATION LOCATION AND DETAILS NOT SHOWN. TO BE PROVIDED BY CAISSON DESIGNER IN ACCORDANCE WITH SPECIFICATIONS.
2. BEAM POCKETS PROVIDED TO SUPPORT WELL HOUSE FLOOR SLAB FORM DECK AND TO BE MIN 18" IN DEPTH.

CAISSON TOP PLAN (A)
1/4" = 1'-0"

NOTES:
1. CONTRACTOR TO VERIFY DESIGN OF PROPOSED LATERAL LENGTHS AND ORIENTATION.
2. REMOVE EXISTING TREES AND ROOTS ONLY AS REQUIRED FOR COMPLETION OF THE WORK.
3. CONTRACTOR SHALL CONSTRUCT A DETENTION BASIN FOR DISCHARGES DURING WELL DEVELOPMENT AND PUMP TESTING. BASIN SHALL BE INSTALLED WITH AN IMPERMEABLE LINER AND REMOVED FOLLOWING COMPLETION OF ALL TESTING.
4. AN OVERFLOW CHANNEL APPROXIMATELY 10'W AND 18" DEEP SHALL BE CONSTRUCTED BETWEEN THE BASIN AND THE RIVER FOR DISCHARGE. THE CHANNEL SHOULD SLOPE TO THE RIVER AND BE INSTALLED WITH AN IMPERMEABLE LINER. CONTRACTOR SHALL MONITOR RIVER BANK FOR EROSION DURING WELL DEVELOPMENT AND TESTING AND SHALL PROVIDE TEMPORARY RIP-RAP OR OTHER MEANS OF STABILIZATION AS REQUIRED.
5. SILT FENCE SHALL ENCOMPASS ALL DISTURBED AREAS ON THE PROJECT SITE.
6. CONTRACTOR SHALL AVOID DISTURBING ANY AREAS DEPICTED AS WETLANDS.
7. CONSTRUCTION OF HCW-4 (14-1) AND ASSOCIATED ACCESS ROAD, MONITORING WELLS AND OTHER RELATED ITEMS TO BE BID SEPARATELY AS AN ADDITIVE ALTERNATIVE. SEE SECTION 01025 FOR ADDITIONAL REQUIREMENTS.

BLACK & VEATCH
Black & Veatch Corporation
OLSSON ASSOCIATES

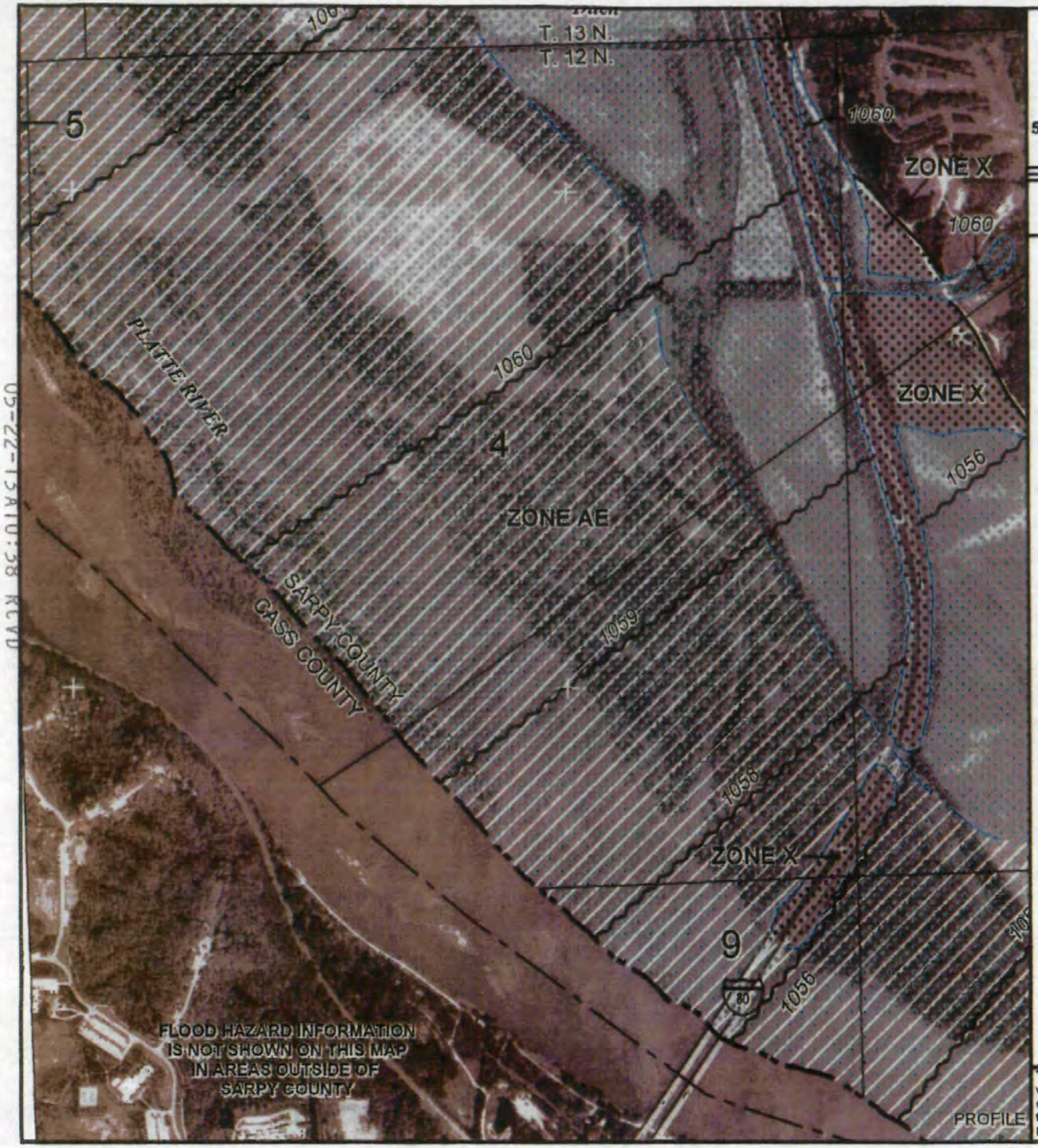
WATER SUPPLY UPGRADE
HORIZONTAL COLLECTOR WELLS

HCW 3 & 4 - CASSION AND LATERALS
14-2 SITE PLAN

PROJECT NO.
179459

SHEET
3 OF 3

	14-1 (PW-2)	14-2 (PW-11)
Minimum Capacity, gpm		
Winter Conditions	11,000	10,000
Summer Conditions	13,500	12,000
Water Temperature, deg F	45-60	45-60
Elevations, msl		
Well House Floor Slab	1066.0	1065.5
Top of Caisson	1062.5	1062.0
Existing Grade	1052.0	1052.0
Avg. Static Groundwater Level		
Summer	1045.2	1044.6
Winter	1046.2	1045.6
Lateral Centerline	990.0	992.0
Top of Plug	987.0	989.0
Minimum Caisson Inside Diameter, ft	16	16
Laterals		
Min Number of Ports	10	10
Min Number of Laterals	8	8
Min Total Length of all Laterals, including blank pipe sections, ft	1,680	1,680
Min Inside Diameter, in	12	12
Max Entrance Velocity, ft/min (at lateral screen openings, assuming screen 50% blocked)	2	2



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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0145G

FIRM

FLOOD INSURANCE RATE MAP

SARPY COUNTY, NEBRASKA AND INCORPORATED AREAS

PANEL 145 OF 255

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SARPY COUNTY	310190	0145	G

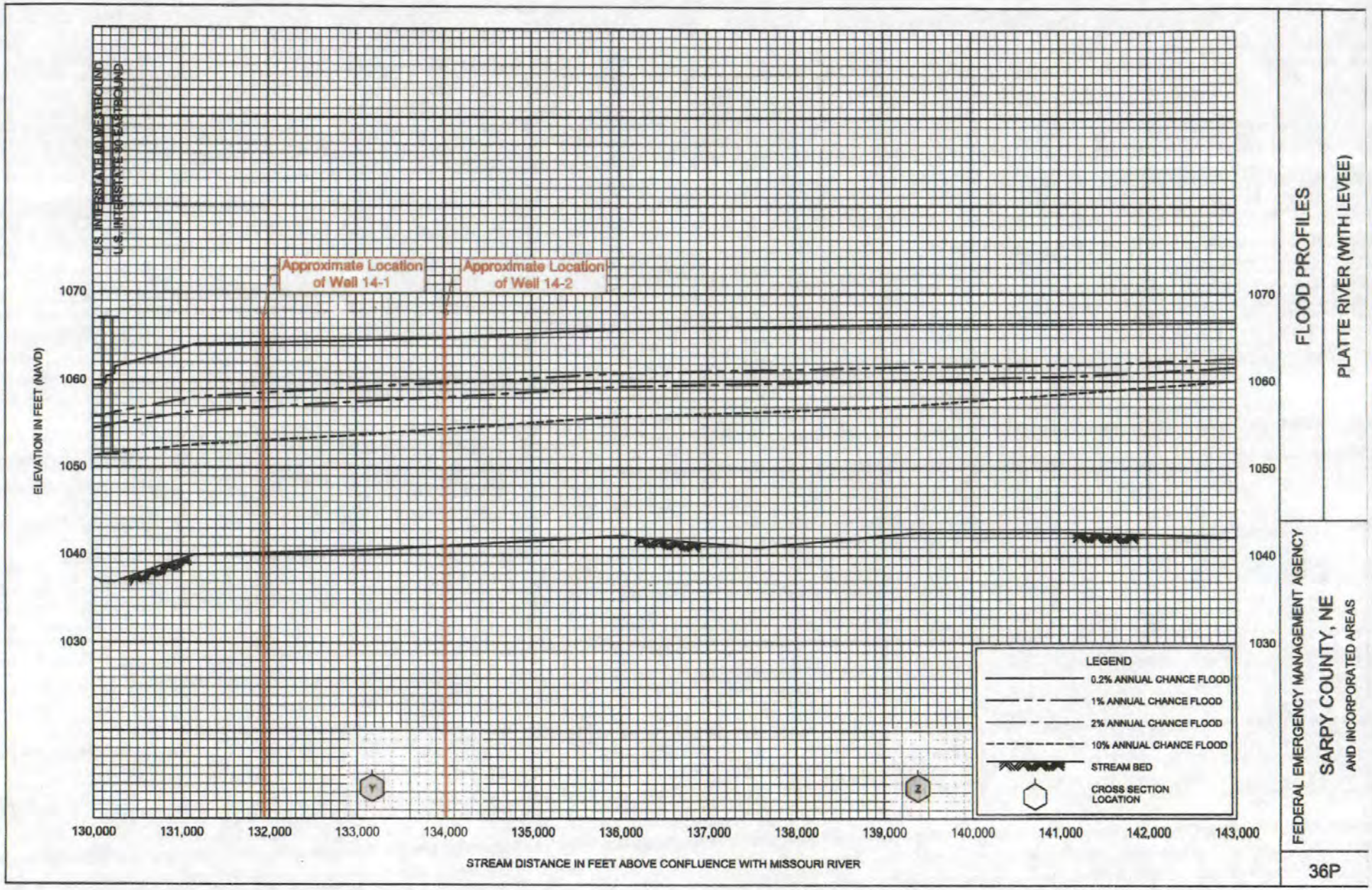
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
31153C0145G

MAP REVISED
DECEMBER 2, 2005

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 subsequent to 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.msc.fema.gov



FLOOD PROFILES

PLATTE RIVER (WITH LEVEE)

FEDERAL EMERGENCY MANAGEMENT AGENCY

SARPY COUNTY, NE

AND INCORPORATED AREAS

36P

05-22-13A10:38 RCVD

Table 5 - Summary of Discharges (Existing Conditions)

Flooding Source and Location	Drainage Area (sq. miles)	Existing Conditions Peak Discharges[1] (cfs) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Midland Creek (continued)					
At Shadow Lake	2.3	580	610	620	1,010
At Midlands Lake	0.9	700	840	890	1,230
At 84th Street	0.7	890	1,230	1,370	1,860
Missouri River					
At the southern Sarpy County boundary	322,800	125,000	170,000	190,000	250,000
Mud Creek					
At the confluence with Papillion Creek	10.7	3,600	5,900	7,100	11,000
Approximately 2,000 feet upstream of confluence with Papillion Creek	10.4	3,600	5,900	7,100	11,000
Approximately 2,100 feet upstream of confluence with Papillion Creek	9.8	2,900	4,850	5,900	9,200
Approximately 6,300 feet upstream of confluence with Papillion Creek	9.3	2,750	4,650	5,600	8,800
Approximately 6,400 feet upstream of confluence with Papillion Creek	8.1	1,820	3,300	4,400	7,300
Approximately 100 feet downstream of Cornhusker Road	7.9	1,820	3,300	4,400	7,300
Approximately 400 feet upstream of Kasper Street	7.0	1,320	2,550	3,300	5,600
At Childs Road	6.5	1,020	1,900	2,500	4,500
At Chandler Road	5.8	240	800	1,450	3,100
Approximately 2,700 feet upstream of Chandler Road	5.6	0	550	1,100	2,500
Papillion Creek / Big Papillion Creek					
At confluence with Missouri River	402	19,800	30,700	35,900*	49,100
Just downstream of confluence of West Branch Papillion Creek	377	25,000	38,600	45,300	61,300
Just upstream of confluence of West Branch Papillion Creek	239	12,200	18,600	21,300	28,400
At Sarpy-Douglas County Boundary	232	18,900	28,850	33,000	44,000
Platte River					
At confluence with Missouri River	90,000	114,000	205,000	250,000	405,000
Approximately 5,150 feet upstream of U.S. Interstate 80	89,800	87,000	151,000	187,000	300,000
Just upstream of confluence of Elkhorn River	82,900	62,000	106,000	132,000	220,000

05-22-13A10:38 RCVD

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
PLATTE RIVER (Continued)								
R	105,845	2,277/1,500	20,304	12.3	1,035.7	1,035.7	1,036.3	0.6
S	110,420	1,593/605	20,306	12.3	1,041.2	1,041.2	1,041.3	0.1
T	114,570	2,043/845	30,843	8.1	1,045.7	1,045.7	1,046.4	0.7
U	117,295	2,533/1,380	34,716	7.2	1,047.3	1,047.3	1,047.9	0.7
V	119,895	2,463/1,550	29,335	8.5	1,048.5	1,048.5	1,049.0	0.5
W	123,770	2,877/2,020	32,447	7.7	1,052.2	1,052.2	1,052.5	0.3
X	126,970	3,425/2,350	39,766	6.3	1,054.2	1,054.2	1,055.1	0.9
Y	133,170	3,886/2,795	44,607	5.6	1,059.3	1,059.3	1,059.6	0.3
Z	139,370	8,066/4,140	61,338	3.0	1,061.5	1,061.5	1,061.9	0.4
AA	143,170	9,100/5,700	60,079	3.1	1,062.7	1,062.7	1,063.2	0.5
AB	148,570	14,100/10,600	74,005	2.5	1,067.4	1,067.4[3]	1,068.2[3]	0.8
AC	152,620	13,700/11,950	91,680	2.0	1,069.9	1,068.8[3]	1,069.5[3]	0.7
AD	158,720	12,550/12,005	63,720	2.9	1,074.2	1,071.4[3]	1,072.4[3]	1.0
AE	161,820	12,106/11,198	62,293	3.0	1,078.0	1,074.3[3]	1,075.3[3]	1.0
AF	167,570	10,400/6,900	56,687	3.3	1,081.4	1,078.1[3]	1,078.9[3]	0.8
AG	170,620	11,300/5,905	53,407	3.5	1,085.2	1,080.6[3]	1,081.6[3]	1.0
AH	173,970	10,890/5,650	49,506	3.8	1,087.1	1,083.1[3]	1,084.1[3]	1.0

[1]Feet above confluence with Missouri River
[2]Total width/width within Sarpy County
[3]Elevation computed including ice jam effects

Table 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

SARPY COUNTY, NE
AND INCORPORATED AREAS

FLOODWAY DATA

PLATTE RIVER (WITH LEVEE)

05-22-13A10:38 RCVD