Agenda Item: 6.B.

MEMORANDUM

TO: Ad Hoc Consultant Selection Subcommittee for the Papillion Creek Watershed Regional Detention Basins

FROM: Lori Ann Laster, Stormwater Management Engineer

SUBJECT: Review and Recommendation on Professional Services Contract with HDR for the WP4, DS19, and DS12 Projects

DATE: April 28, 2017

In March 2017, the Subcommittee interviewed firms and selected HDR Engineering, Inc. (HDR) with which to negotiate a professional services contract for the preliminary design of West Papillion Regional Basin Number 4 (WP4), Dam Site 19 (DS19), and Dam Site 12 (DS12) Projects. Since that time, District staff and representatives from HDR have worked together to prepare the enclosed scope and schedule for your review and consideration. This initial phase of design takes the project through a 60% plan level and provides enough detail for developing land acquisition limits. At this time, a construction timeline has not been established and future phases of design and construction will be determined by the Board when necessary.

A summary of the proposed tasks included in the contract is as follows:

- Project management for a ten-month project schedule.
- Complete geotechnical analysis and report.
- Dam design alternatives analysis and modeling.
- Initial work to complete a USACE 404 permit application. The permit will not be submitted until construction is planned. Additional preliminary meetings with Department of Natural Resources are included for state permits.
- 60% plans for all design elements including dam design, water quality basin, roads, utilities, and recreation.
- Conceptual fisheries design.
- Survey, right of way, and individual tract legal descriptions.

The proposed contract containing the detailed scope of work, cost estimate and schedule are attached. The scope and fee is identified for each project separately then combined into one contract. HDR would provide the professional services for preliminary design of the WP4, DS19, and DS12 Projects on an hourly basis not to exceed the amount of $2,043,823 million.

Management recommends that the Subcommittee recommend to the Board that the General Manager be authorized to execute a Professional Services Agreement with HDR Engineering, Inc. for Preliminary Design of the WP4, DS19, and DS12 Projects in an amount not to exceed $2,043,823, subject to changes deemed necessary by the General Manager and approval as to form by District Legal Counsel.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR PROFESSIONAL SERVICES

Original Version

Prepared by

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Issued and Published Jointly by

ACEC
AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

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MODIFIED VERSION

Papio-Missouri River Natural Resources District

A redline comparison copy of this document highlighting the changes made to the original version will be made available to you upon request.

This Agreement has been prepared for use with **EJCDC® C-700, Standard General Conditions of the Construction Contract, 2013 Edition**. Their provisions are interrelated, and a change in one may necessitate a change in the other. For guidance on the completion and use of this Agreement, see EJCDC® E-001, Commentary on the EJCDC Engineering Services Agreements, 2013 Edition.

NOTE: EJCDC publications may be purchased at www.ejcdc.org, or from any of the sponsoring organizations above.

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AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR PROFESSIONAL SERVICES
(*P-MRNRD MODIFIED*)

THIS IS AN AGREEMENT effective as of [ ] ("Effective Date") between

Papio-Missouri River Natural Resources District ("Owner") and

HDR Engineering, Inc. ("Engineer").

Owner's Project, of which Engineer's services under this Agreement are a part, is generally identified as follows:

Preliminary Design of Dam Site 12, Dam Site 19 and Regional Detention Basin WP-4

("Project").

Other terms used in this Agreement are defined in Article 7.

Engineer's services under this Agreement are generally identified as follows: conduct geotechnical investigation and design, prepare environmental documentation, evaluate spillway alternatives, evaluate impacted infrastructure, prepare legal exhibits for land acquisition, and prepare construction drawings to a 60% design level to provide acquisition limits for the project.

Owner and Engineer further agree as follows:

ARTICLE 1 – SERVICES OF ENGINEER

1.01 *Scope*

A. Engineer shall provide, or cause to be provided, the services set forth herein and in Exhibit A.

ARTICLE 2 – OWNER'S RESPONSIBILITIES

2.01 *General*

A. Owner shall have the responsibilities set forth herein and in Exhibit B.

B. Owner shall pay Engineer as set forth in Article 4 and Exhibit C.

C. Owner shall be responsible for all requirements and instructions that it furnishes to Engineer pursuant to this Agreement, and for the accuracy and completeness of all programs, reports, data, and other information furnished by Owner to Engineer pursuant to this Agreement. Engineer may use and rely upon such requirements, programs, instructions, reports, data, and information in performing or furnishing services under this Agreement, subject to any express limitations or reservations applicable to the furnished items.

D. Owner shall give written notice to Engineer as soon as reasonably practicable whenever Owner observes or otherwise becomes aware of:

1. any development that affects the scope or time of performance of Engineer's services;

2. the presence at the Site of any Constituent of Concern; or

3. any relevant, material defect or nonconformance in: (a) Engineer's services, (b) the Work, (c) the performance of any Constructor, or (d) Owner's performance of its responsibilities under this Agreement.

ARTICLE 3 – SCHEDULE FOR RENDERING SERVICES

3.01 *Commencement*

A. Engineer is authorized to begin rendering services as of the Effective Date.

3.02 *Time for Completion*

A. Engineer shall complete its obligations as expeditiously as is consistent with professional skill and care and the orderly progress of the Project, within a reasonable time. Specific periods of time for rendering services, or specific dates by which services are to be completed, are provided in Exhibit A, and are hereby agreed to be reasonable.

B. If, through no fault of Engineer, such periods of time or dates are changed, or the orderly and continuous progress of Engineer's services is impaired, or Engineer's services are delayed or suspended and such changes or delays increase the time of performance of Engineer's services, then the time for completion of Engineer's services, and the rates and amounts of Engineer's compensation, shall be adjusted equitably.

C. If Owner authorizes changes in the scope, extent, or character of the Project or Engineer's services in writing, then Owner shall pay Engineer compensation based on Engineer's normal hourly rates for time actually and necessarily devoted to services rendered in completing the additional services or shall negotiate an agreed upon fixed amount to perform such additional services, and the time for completion of Engineer's services shall be adjusted equitably, as agreed upon in writing by the parties.

D. Owner shall make decisions and carry out its other responsibilities in a timely manner so as not to unreasonably delay the Engineer's performance of its services.

E. If Engineer fails, through its own fault, to complete the performance required in this Agreement within the time set forth, as duly adjusted, then Owner shall be entitled, as its sole remedy, to the recovery of direct damages, if any, resulting from such failure in addition to any other remedies to which Owner may be entitled.

ARTICLE 4 – INVOICES AND PAYMENTS

4.01 *Invoices*

A. *Preparation and Submittal of Invoices:* Engineer shall prepare invoices in accordance with its standard invoicing practices and the terms of Exhibit C. Engineer shall submit its invoices to Owner on a monthly basis by the last business day of the month. Invoices are due and payable within 45 days of receipt. Notwithstanding anything to the contrary, in no event shall Owner be obligated to make any payment, whether as compensation for services or relating to charges by consultants, reimbursement and/or otherwise, that would result in exceeding the Maximum Amount unless Owner otherwise agrees in a signed written agreement entered into pursuant to this Agreement.

4.02 *Payments*

A. *Application to Interest and Principal:* Payment will be credited first to any interest owed to Engineer and then to principal.

B. *Failure to Pay*: Subject to Paragraph 4.02.C, if Owner fails to make any payment due Engineer for services and expenses within 45 days after receipt of Engineer's invoice, then:

1. amounts due Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) from said thirtieth day; and

2. Engineer may, after giving seven days written notice to Owner, suspend services under this Agreement until Owner has paid in full all amounts due for services, expenses, and other related charges. Owner waives any and all claims against Engineer for any such suspension.

C. *Disputed Invoices:* If Owner disputes an invoice, either as to amount or entitlement, then Owner shall as soon as reasonably practicable advise Engineer in writing of the specific basis for doing so, may withhold only that portion so disputed, and must pay the undisputed portion subject to the terms of Paragraph 4.01. Engineer shall continue performing services while any dispute is pending provided Owner has paid all undisputed amounts. Owner may withhold payment to the extent required to protect Owner from loss arising out of Engineer's performance or failure to perform any services.

D. *Sales or Use Taxes:* If after the Effective Date of this Agreement any governmental entity takes a legislative action that imposes additional sales or use taxes on Engineer's services or compensation under this Agreement, then Engineer may invoice such additional sales or use taxes for reimbursement by Owner. Owner shall reimburse Engineer for the cost of such invoiced additional sales or use taxes; such reimbursement shall be in addition to the compensation to which Engineer is entitled under the terms of Exhibit C.

ARTICLE 5 – OPINIONS OF COST

5.01 *Opinions of Probable Construction Cost*

A. Engineer's opinions (if any) of probable Construction Cost are to be made on the basis of Engineer's experience, qualifications, and general familiarity with the construction industry. However, because Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual Construction Cost will not vary from opinions of probable Construction Cost prepared by Engineer.

5.02 *Intentionally Deleted.*

5.03 *Opinions of Total Project Costs*

A. The services, if any, of Engineer with respect to Total Project Costs shall be limited to assisting the Owner in tabulating the various categories that comprise Total Project Costs. Engineer assumes no responsibility for the accuracy of any opinions of Total Project Costs.

ARTICLE 6 – GENERAL CONSIDERATIONS

6.01 *Standards of Performance*

A. *Standard of Care:* The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession currently practicing under similar circumstances at the same time and in Nebraska. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with any services performed or furnished by Engineer.

B. *Technical Accuracy:* Owner shall not be responsible for discovering deficiencies in the technical accuracy of Engineer's services. Engineer shall correct deficiencies in technical accuracy without additional compensation, unless such corrective action is directly and solely attributable to deficiencies in Owner-furnished information.

C. *Consultants:* Engineer may retain such Consultants as Engineer deems necessary to assist in the performance or furnishing of the services, subject to reasonable, timely, and substantive objections by Owner.

D. *Reliance on Others:* Subject to the standard of care set forth in Paragraph 6.01.A, Engineer and its Consultants may use or rely upon design elements and information ordinarily or customarily furnished by others, including, but not limited to, specialty contractors, manufacturers, suppliers, and the publishers of technical standards.

E. *Compliance with Laws and Regulations, and Policies and Procedures:*

1. Engineer and Owner shall comply with applicable Laws and Regulations.

2. Owner's policies, procedures, performance standards and other information (collectively, the "Owner Policies") are accessible at http://www.papionrd.org/about-nrd/policies-and-manuals/. Engineer shall comply with any and all such Owner Policies and with any other instructions of Owner relating to Engineer's performance of services under this Agreement that Owner provides to Engineer in writing (collectively with Owner Policies, the "Owner Requirements"), subject to the standard of care set forth in Paragraph 6.01.A, and to the extent compliance is not inconsistent with professional practice requirements.

3. This Agreement is based on Laws and Regulations and Owner Requirements as of the Effective Date. The following may be the basis for modifications to Owner's responsibilities or to Engineer's scope of services, times of performance, or compensation, as applicable:

   a. changes after the Effective Date to Laws and Regulations;

   b. the receipt by Engineer after the Effective Date of new or different Owner Requirements.

4. Prior to the Effective Date, Engineer shall promptly notify Owner in writing of any objections to the Owner Requirements or conflicts between the Owner Requirements and Laws and Regulations and the parties shall use their best efforts to resolve such objections or conflicts.

F. Engineer shall not be required to sign any document, no matter by whom requested, that would result in the Engineer having to certify, guarantee, or warrant the existence of conditions whose existence the Engineer cannot ascertain. Owner agrees not to make resolution of any dispute with the Engineer or payment of any amount due to the Engineer in any way contingent upon the Engineer signing any such document.

G. The general conditions for any construction contract documents prepared hereunder are to be EJCDC® C-700 "Standard General Conditions of the Construction Contract" (2013 Edition), prepared by the Engineers Joint Contract Documents Committee and amended and/or supplemented by the parties (the "Standard General Conditions"), unless expressly indicated otherwise in Exhibit J or elsewhere in this Agreement.

H. Engineer shall not at any time directly supervise, direct, control, or have authority over any Constructor's work, nor shall Engineer have direct authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any Constructor, or the safety precautions and programs incident thereto, for security or safety at the Site, nor for any failure of a Constructor to comply with Laws and Regulations applicable to that Constructor's furnishing and performing of its work. Engineer shall not be responsible for the acts or omissions of any Constructor unless such action or omission is caused in whole or in part by Engineer.

I. *Intentionally deleted*.

J. Engineer shall not be responsible for any decision made regarding the Construction Contract Documents, or any application, interpretation, clarification, or modification of the Construction Contract Documents, other than those made or caused to be made by Engineer or its Consultants or other agents or representatives.

K. Engineer is not required to provide and does not have any responsibility for surety bonding or insurance-related advice, recommendations, counseling, or research, or enforcement of construction insurance or surety bonding requirements.

L. Engineer's services do not include providing legal advice or representation.

M. Engineer's services do not include (1) serving as a "municipal advisor" for purposes of the registration requirements of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (2010) or the municipal advisor registration rules issued by the Securities and Exchange Commission, or (2) advising Owner, or any municipal entity or other person or entity, regarding municipal financial products or the issuance of municipal securities, including advice with respect to the structure, timing, terms, or other similar matters concerning such products or issuances.

N. While at the Site, Engineer, its Consultants, and their employees and representatives shall comply with the applicable requirements of Contractor's and Owner's safety programs. Engineer understands, acknowledges and agrees that Engineer is responsible for ensuring that it, its Consultant, and their employees and representatives are aware and know of the applicable requirements of Contractor's and Owner's safety programs

6.02 *Design Without Construction Phase Services*

A. Engineer shall be responsible only for those Construction Phase services expressly required of Engineer in Exhibit A, Paragraph A1.05. With the exception of such expressly required services, Engineer shall have no design, Shop Drawing review, or other obligations during construction, and Owner assumes all responsibility for the application and interpretation of the Construction Contract Documents, review and response to Contractor claims, Construction Contract administration, processing of Change Orders and submittals, revisions to the Construction Contract Documents during construction, construction observation and review, review of Contractor's payment applications, and all other necessary Construction Phase administrative, engineering, and professional services; and Owner waives only those claims against the Engineer directly connected thereto.

6.03 *Use of Documents*

A. All Documents are instruments of service in respect to this Project, and shall become property of Owner without restriction or further limitation on their use, subject to receipt by Engineer of full payment for all services relating to preparation of the Documents and subject to Owner acknowledging that such documents are not intended or represented to be suitable for use on the Project unless completed by Engineer, or for use or reuse by Owner or others on extensions of the Project, on any other project, or for any other purpose, without written verification or adaptation by Engineer or another engineer.

Engineer acknowledges that the Project is a public project subject to the Nebraska public record statutes, Neb. Rev. Stat. § 87-712, *et seq.*

B. If Engineer is required to prepare or furnish Drawings or Specifications under this Agreement, Engineer shall deliver to Owner at least one original printed record version of such Drawings and Specifications, signed and sealed according to applicable Laws and Regulations. If requested by Owner, at no additional expense, Engineer shall make Documents available in an electronic format to be agreed upon by the parties.

C. *Intentionally deleted.*

D. If Engineer at Owner's request verifies the suitability of the Documents, completes them, or adapts them for extensions of the Project or for any other purpose, then Owner shall compensate Engineer at rates or in an amount to be agreed upon by Owner and Engineer.

6.04 *Electronic Transmittals*

A. Owner and Engineer may transmit Project-related correspondence, Documents, text, data, drawings, information, and graphics, in electronic media or digital format, either directly, or through access to a secure Project website, in accordance with a mutually agreeable protocol.

B. If this Agreement does not establish protocols for electronic or digital transmittals, then Owner and Engineer shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

6.05 *Insurance*

A. Engineer shall procure and maintain insurance as set forth in Exhibit G. Engineer shall cause Owner to be listed as an additional insured on any applicable general liability insurance policy carried by Engineer with a waiver of subrogation for such additional insureds.

B. Owner shall procure and maintain insurance as set forth in Exhibit G. Owner shall cause Engineer and its Consultants to be listed as additional insureds on any general liability policies carried by Owner, which are applicable to the Project.

C. Owner shall require Contractor to purchase and maintain general liability and other insurance in accordance with the requirements of Paragraph 6.03 of the "Standard General Conditions of the Construction Contract," No. C-700 (Rev. 1) as amended and/or supplemented by the parties, and shall cause Engineer and its Consultants to be listed as additional insureds with respect to such liability insurance purchased and maintained by Contractor for the Project.

D. Owner and Engineer shall each deliver to the other certificates of insurance evidencing the coverages indicated in Exhibit G. Such certificates shall be furnished prior to commencement of Engineer's services and at renewals thereafter during the life of the Agreement.

E. All policies of property insurance relating to the Project shall allow for waiver of subrogation rights and contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insured or additional insured thereunder or against Engineer or its Consultants.

F. All policies of insurance shall contain a provision or endorsement that the coverage afforded will not be canceled or reduced in limits by endorsement, and that renewal will not be refused, until at least 10 days prior written notice has been given to the primary insured. Upon receipt of such notice, the receiving party shall promptly forward a copy of the notice to the other party to this Agreement.

G. At any time, Owner may request that Engineer or its Consultants, at Owner's sole expense, provide additional insurance coverage, increased limits, or revised deductibles that are more protective than those specified in Exhibit G. If so requested by Owner, and if commercially available, Engineer shall obtain and shall require its Consultants to obtain such additional insurance coverage, different limits, or revised deductibles for such periods of time as requested by Owner, and Exhibit G will be supplemented to incorporate these requirements.

6.06 *Suspension and Termination*

A. *Suspension:*

1. *By Owner*: Owner may suspend the Project upon seven days written notice to Engineer.

2. *By Engineer*: Subject to Paragraph 4.02.C, Engineer may, after giving seven days written notice to Owner, suspend services under this Agreement if Owner has failed to pay Engineer for undisputed invoiced services and expenses, as set forth in Paragraph 4.02.B, or in response to the presence of Constituents of Concern at the Site, as set forth in Paragraph 6.10.D.

B. *Termination*: The obligation to provide further services under this Agreement may be terminated:

1. For cause,

a. by Owner upon 7 days written notice if Engineer fails to fulfill in a timely and proper manner any of its obligations hereunder. Owner shall be entitled to withhold payment to Engineer until the Project is completed and the damages to Owner due to Engineer's default have been determined. Engineer shall be entitled to payment for the value of services performed less a deduction for the damages suffered by Owner as a result of the default.

b. by Engineer:

1) upon seven days written notice if Owner demands that Engineer furnish or perform services contrary to Engineer's responsibilities as a licensed professional;

2) upon seven days written notice if the Engineer's services for the Project are delayed or suspended for more than 120 days for reasons beyond Engineer's control; or

3) as set forth in Paragraph 6.10.D.

4) Engineer shall have no liability to Owner on account of such termination.

c. Notwithstanding the foregoing, this Agreement will not terminate under Paragraph 6.06.B.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its substantial failure to perform and proceeds diligently to cure such failure within no more than 7 days of receipt thereof; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 7 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 30 days after the date of receipt of the notice.

2. For convenience, by Owner for any reason or no reason and with or without cause effective upon Engineer's receipt of notice from Owner.

C. *Effective Date of Termination:* The terminating party under Paragraph 6.06.B may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to demobilize personnel and equipment from the Site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

D. *Payments Upon Termination:*

1. In the event of any termination under Paragraph 6.06, Engineer will be entitled to invoice Owner and to receive full payment for all services performed or furnished in accordance with this Agreement and all Reimbursable Expenses incurred through the effective date of termination. Upon making such payment, Owner shall have full ownership and rights to use of Documents, at Owner's sole risk, subject to the provisions of Paragraph 6.03.

2. In the event of termination by Owner for convenience or by Engineer for cause, Engineer shall be entitled, in addition to invoicing for those items identified in Paragraph 6.06.D.1, to invoice Owner and receive payment of a reasonable amount for services and expenses directly attributable to termination, both before and after the effective date of termination, such as reassignment of personnel, costs of terminating contracts with Engineer's Consultants, and other related close-out costs, using methods and rates for Additional Services as set forth in Exhibit C and incurred prior to the effective date of the

termination. Under no circumstances shall Owner be responsible for Engineer's indirect or consequential damages, including, but not limited to, lost or anticipated profits.

6.07 *Controlling Law*

A. This Agreement is to be governed by the Laws and Regulations of the state of Nebraska.

6.08 *Successors, Assigns, and Beneficiaries*

A. Owner and Engineer and the successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by Paragraph 6.08.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the successors, executors, administrators and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Engineer may not assign, sublet, or transfer any rights under or interest (including, but without limitation, money that is due or may become due) in this Agreement without the written consent of Owner, except to the extent that any assignment, subletting, or transfer is mandated by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge Engineer from any duty or responsibility under this Agreement.

C. Unless expressly provided otherwise in this Agreement:

1. Nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by Owner or Engineer to any Constructor, other third-party individual or entity, or to any surety for or employee of any of them.

2. All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of Owner and Engineer and not for the benefit of any other party.

3. Owner agrees that the substance of the provisions of this Paragraph 6.08.C shall appear in the Construction Contract Documents.

6.09 *Dispute Resolution*

A. Owner and Engineer agree to negotiate all disputes between them in good faith for a period of 30 days from the date of notice prior to invoking the procedures of Exhibit H or other provisions of this Agreement, or exercising their rights at law.

B. If the parties fail to resolve a dispute through negotiation under Paragraph 6.09.A, then either or both may invoke the procedures of Exhibit H. If Exhibit H is not included, or if no dispute resolution method is specified in Exhibit H, then the parties may exercise their rights at law.

6.10 *Environmental Condition of Site*

A. Owner represents to Engineer that as of the Effective Date to the best of Owner's knowledge no Constituents of Concern, other than those disclosed in writing to Engineer, exist at the Site.

B. If Engineer encounters or learns of an undisclosed Constituent of Concern at the Site, then Engineer shall notify (1) Owner and (2) appropriate governmental officials if Engineer reasonably concludes that doing so is required by applicable Laws or Regulations.

C. It is acknowledged by both parties that Engineer's scope of services does not include any services related to unknown or undisclosed Constituents of Concern. If Engineer or any other party encounters, uncovers, or reveals an undisclosed Constituent of Concern, or if investigative or remedial action, or other professional services, are necessary with respect to undisclosed Constituents of Concern, then Engineer may, at its option and without liability, suspend performance of services on the portion of the Project affected thereby until Owner: (1) retains appropriate specialist consultant(s) or contractor(s) to identify and, as appropriate, abate, remediate, or remove the Constituents of Concern; and (2) warrants that the Sire is in full compliance with applicable Laws and Regulations.

D. If the presence at the Site of undisclosed Constituents of Concern adversely affects the performance of Engineer's services under this Agreement, then the Engineer shall have the option of (1) accepting an equitable adjustment in its compensation or in the time of completion, or both; or (2) terminating this Agreement for cause on 30 days notice.

E. Owner acknowledges that Engineer is performing professional services for Owner and that Engineer is not and shall not be required to become an "owner," "arranger," "operator," "generator," or "transporter" of hazardous substances, as defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, which are or may be encountered at or near the Site in connection with Engineer's activities under this Agreement.

6.11 *Indemnification and Mutual Waiver*

A. *Indemnification by Engineer:* To the fullest extent permitted by Laws and Regulations, Engineer shall indemnify and hold harmless Owner, and Owner's officers, directors, members, managers, partners, agents, consultants, and employees, from and against any and all claims, costs, losses, damages, and judgments (including, but not limited to, all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to this Agreement and/or the Project, provided that any such claim, cost , loss, damages, or judgment is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission or intentional misconduct of Engineer or Engineer's principals, officers, directors, managers members, partners, agents, employees, or Consultants or other representatives.

B. *Indemnification by Owner:* To the extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants from and against any and all claims, costs, losses, damages, and judgments (including, but not limited to, all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to this Agreement and/or the Project, provided that any such claim, cost , loss, damages, or judgment is directly attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission or intentional misconduct of Owner or Owner's officers, directors or employees with respect to this Agreement or to the Project.

C. *Environmental Indemnification:* To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants from all claims, costs, losses, damages, actions, and judgments (including reasonable consultants' and attorneys fees and expenses) caused by, arising out of, relating to, or resulting from a Constituent of Concern at, on, or under the Site, provided that (1) any such claim, cost, loss, damages, action, or judgment is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (2) nothing in this paragraph shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence or willful misconduct.

D. *No Defense Obligation:* The indemnification commitments in this Agreement do not include a defense obligation by the indemnitor unless such obligation is expressly stated.

E. *Intentionally deleted.*

F. *Mutual Waiver:* To the fullest extent permitted by Laws and Regulations, Owner and Engineer waive against each other, and the other's employees, officers, directors, members, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to this Agreement or the Project, from any cause or causes; provided, however, that this waiver does not apply to restrict or limit available insurance or indemnity claims arising from third-party property damage or bodily injury claims.

6.12 *Records Retention*

A. Engineer shall maintain on file in legible form, for a period of five years following completion or termination of its services, all Documents, records (including cost records), and design calculations related to Engineer's services or pertinent to Engineer's performance under this Agreement. Upon Owner's request, Engineer shall provide a copy of any such item to Owner at no cost to Owner.

6.13 *Miscellaneous Provisions*

A. *Notices:* Any notice required under this Agreement will be in writing, addressed to the appropriate party at its address on the signature page and given personally, by facsimile, by registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt.

B. *Survival:* All express representations, waivers, indemnifications, and limitations of liability included in this Agreement will survive its completion or termination for any reason.

C. *Severability:* Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Engineer, which agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

D. *Waiver:* A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

E. *Accrual of Claims:* To the fullest extent permitted by Laws and Regulations, all causes of action arising under this Agreement shall be deemed to have accrued, and all statutory periods of limitation shall commence, no later than the date of Substantial Completion.

F. *Non-Discrimination.* Engineer shall not discriminate against any employee or applicant for employment, to be employed in the performance of the Project, with respect to his/her hire, tenure, terms, conditions, or privileges of employment, because of his or her race, color, religion, sex, disability, or national origin.

G. *Ethics in Public Contracting*. Engineer represents and warrants that it has not and will not pay or offer to pay, either directly or indirectly, any fee, commission compensation, gift, gratuity, or anything of value to any Nebraska or other government officer, board member, employee or evaluator based on the understanding that the receiving person's vote, actions, or judgment will be influenced thereby. Engineer further represents and warrants that it is prohibited from utilizing the services of lobbyists, attorneys, political activists, or consultants to secure any contract in any way relating to the Project. It is the intent of this Paragraph 6.13.F to assure that the prohibition of government contact during the procurement process is not subverted through the use of lobbyists, attorneys, political activists, or consultants. It is the intent of the Owner that the process of evaluation of proposals and award of the Work and the Project be completed without external influence. It is not the intent of this Paragraph 6.13.F to prohibit any party from seeking professional advice, for example consulting legal counsel, regarding terms and conditions of this or any other contract or agreement or proposal. Engineer may not refer to receiving the award of this Agreement or the Project in advertising in such a manner as to state or imply that it or its services are endorsed or preferred by Owner. News releases pertaining to the Work shall not be issued without prior written approval from Owner. If Engineer is found to be in non-compliance with this Paragraph 6.13.F, Engineer may forfeit

the Agreement and the Project and any contract or other agreement relating to the Project awarded to it.

H. *Sovereign Immunity*. Nothing in this Agreement or in any other agreement between the parties shall be construed as a waiver of all or any part of, or as in any way limited, the sovereign immunity afforded to Owner pursuant to Laws and Regulations.

ARTICLE 7 – DEFINITIONS

7.01 *Defined Terms*

A. Wherever used in this Agreement (including the Exhibits hereto) terms (including the singular and plural forms) printed with initial capital letters have the meanings indicated in the text above, in the exhibits, in the following provisions, in the Standard General Conditions, or in the following definitions:

1. *Addenda*—Written or graphic instruments issued prior to the opening of bids which clarify, correct, or change the bidding requirements or the proposed Construction Contract Documents.

2. *Additional Services*—The services to be performed for or furnished to Owner by Engineer in accordance with Part 2 of Exhibit A of this Agreement.

3. *Agreement*—This written contract for professional services between Owner and Engineer, including all exhibits identified in Paragraph 8.01 and any duly executed amendments.

4. *Application for Payment*—The form acceptable to Owner and Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Construction Contract.

5. *Basic Services*—The services to be performed for or furnished to Owner by Engineer in accordance with Part 1 of Exhibit A of this Agreement.

6. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Construction Contract Price or the Construction Contract Times, or other revision to the Construction Contract, issued on or after the effective date of the Construction Contract.

7. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth in the Construction Contract, seeking an adjustment in Construction Contract Price or Construction Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Construction Contract Documents or the acceptability of Work under the Construction Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Construction Contract.

8. *Constituent of Concern*—Asbestos, petroleum, radioactive material, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, State, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

9. *Construction Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

10. *Construction Contract Documents*—Those items designated as "Contract Documents" in the Construction Contract, and which together comprise the Construction Contract.

11. *Construction Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Construction Contract Documents.

12. *Construction Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve milestones, if any, in the Construction Contract; (b) achieve Substantial Completion; and (c) complete the Work.

13. *Construction Cost*—The cost to Owner of the construction of those portions of the entire Project designed or specified by or for Engineer under this Agreement, including construction labor, services, materials, equipment, insurance, and bonding costs, and allowances for contingencies. Construction Cost does not include costs of services of Engineer or other design professionals and consultants; cost of land or rights-of-way, or compensation for damages to property; Owner's costs for legal, accounting, insurance counseling, or auditing services; interest or financing charges incurred in connection with the Project; or the cost of other services to be provided by others to Owner. Construction Cost is one of the items comprising Total Project Costs.

14. *Constructor*—Any person or entity (not including the Engineer, its employees, agents, representatives, and Consultants), performing or supporting construction activities relating to the Project, including but not limited to Contractors, Subcontractors, Suppliers, Owner's work forces, utility companies, other contractors, construction managers, testing firms, shippers, and truckers, and the employees, agents, and representatives of any or all of them.

15. *Consultants*—Individuals or entities having a contract or other arrangement with Engineer to furnish services with respect to this Project.

16. *Contractor*—The entity or individual with which Owner enters into a Construction Contract.

17. *Day*—A calendar day of 24 hours measured from midnight to the next midnight.

18. *Documents*—Data, reports, Drawings, Specifications, Record Drawings, building information models, civil integrated management models, and other deliverables, whether in printed or electronic format, provided or furnished in appropriate phases by Engineer to Owner pursuant to this Agreement.

19. *Drawings*—That part of the Construction Contract Documents that graphically shows the scope, extent, and character of the proposed Work to be performed by Contractor in accordance with and for the benefit of the Project.

20. *Effective Date*—The date indicated in this Agreement on which it becomes effective, but if no such date is indicated, the date on which this Agreement is signed and delivered by the last of the parties to sign and deliver.

21. *Engineer*—The individual or entity named as such in this Agreement.

22. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Construction Contract Price or the Construction Contract Times.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Maximum Amount—T*he aggregate amount of two million forty three thousand eight hundred twenty three dollars ($2,043,823.00), which is the maximum to be paid by Owner with respect to and/or pursuant to this Agreement under any and all circumstances unless Owner agrees otherwise in a signed written agreement entered into pursuant to this Agreement.

25. *Owner*—The individual or entity named as such in this Agreement and for which Engineer's services are to be performed. Unless indicated otherwise, this is the same individual or entity that will enter into any Construction Contracts concerning the Project.

26. *Project*—As defined on the first page of this Agreement, and including the total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the services to be performed or furnished by Engineer under this Agreement are a part.

27. *Record Drawings*—Drawings depicting the completed Project, or a specific portion of the completed Project, prepared by Engineer as an Additional Service and based on Contractor's record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications, as delivered to Engineer and annotated by Contractor to show changes made during construction.

28. *Reimbursable Expenses*—The expenses incurred reasonably and directly by Engineer in connection with the performing or furnishing of Basic Services and Additional Services for the Project, as detailed in Exhibit C.

29. *Resident Project Representative*—The authorized representative of Engineer, if any, assigned to assist Engineer at the Site during the Construction Phase. The Resident Project Representative will be Engineer's agent or employee and under Engineer's supervision. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative. The duties and responsibilities of the Resident Project Representative, if any, are as set forth in Exhibit D.

30. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

31. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Construction Contract Documents.

32. *Site*—Lands or areas to be indicated in the Construction Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

33. *Specifications*—The part of the Construction Contract Documents that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

34. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

35. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Construction Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

36. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

37. *Total Project Costs*—The total cost of planning, studying, designing, constructing, testing, commissioning, and start-up of the Project, including Construction Cost and all other Project labor, services, materials, equipment, insurance, and bonding costs, allowances

for contingencies, and the total costs of services of Engineer or other design professionals and consultants, together with such other Project-related costs that Owner furnishes for inclusion, including but not limited to cost of land, rights-of-way, compensation for damages to properties, Owner's costs for legal, accounting, insurance counseling, and auditing services, interest and financing charges incurred in connection with the Project, and the cost of other services to be provided by others to Owner.

38. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Construction Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Construction Contract Documents.

39. *Work Change Directive*—A written directive to Contractor issued on or after the effective date of the Construction Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

ARTICLE 8 – EXHIBITS AND SPECIAL PROVISIONS

8.01 *Exhibits Included:*

A. Exhibit A, Engineer's Services.

B. Exhibit B, Owner's Responsibilities.

C. Exhibit C, Payments to Engineer for Services and Reimbursable Expenses.

D. NOT USED.

E. Exhibit E, Notice of Acceptability of Work.

~~F. Exhibit F, Construction Cost Limit.~~ *NOT USED*.

G. Exhibit G, Insurance.

H. Exhibit H, Dispute Resolution.

~~I. Exhibit I, Limitations of Liability.~~ *NOT USED.*

J. Exhibit J, Special Provisions.

K. Exhibit K, Amendment to Owner-Engineer Agreement.

8.02 *Total Agreement*

A. This Agreement, (together with the exhibits included above) constitutes the entire agreement between Owner and Engineer and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a written instrument duly executed by both parties. Amendments should be based whenever possible on the format of Exhibit K to this Agreement.

8.03 *Designated Representatives*

A. With the execution of this Agreement, Engineer and Owner shall designate specific individuals to act as Engineer's and Owner's representatives with respect to the services to be performed or furnished by Engineer and responsibilities of Owner under this Agreement. Such an individual shall have authority to transmit instructions, receive information, and render decisions relative to this Agreement on behalf of the respective party whom the individual represents.

8.04 *Engineer's Certifications*

A. Engineer certifies that it has not engaged in corrupt, fraudulent, or coercive practices in competing for or in executing the Agreement. For the purposes of this Paragraph 8.04:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the selection process or in the Agreement execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the selection process or the execution of the Agreement to the detriment of Owner, or (b) to deprive Owner of the benefits of free and open competition;

3. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the selection process or affect the execution of the Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

Owner:	Engineer:
Papio-Missouri River Natural Resources District	HDR Engineering, Inc.
By: [ ]	By: Matthew Tondl, PE
Print name: John Winkler	Print name: Matthew Tondl, PE
Title: General Manager	Title: Senior Vice President
Date Signed: [ ]	Date Signed: [ ]
	Engineer License or Firm's Certificate No. (if required): [ ]
	State of: [ ]
Address for Owner's receipt of notices:	Address for Engineer's receipt of notices:
P-MRNRD	HDR Engineering, Inc.
8901 S. 154th Street	8404 Indian Hills Drive
Omaha, NE 68138-3621	Omaha, NE 68114
Designated Representative (Paragraph 8.03.A):	Designated Representative (Paragraph 8.03.A):
[ ]	[ ]
Title: [ ]	Title: [ ]
Phone Number: [ ]	Phone Number: [ ]
E-Mail Address: [ ]	E-Mail Address: [ ]

This is **EXHIBIT A**, consisting of [ ] pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Engineer's Services

Article 1 of the Agreement is supplemented to include the following agreement of the parties.

Engineer shall provide the Basic Services identified in Attachment 1 to Exhibit A (Proposed Scope of Services), and Attachment 2 to Exhibit A (Time Schedule Chart) pursuant to the terms set forth in Part 1 of Exhibit A below. Engineer shall provide Additional Services, if necessary, pursuant to the terms set forth in Part 2 of Exhibit A below. In the event that there is a conflict regarding the Scope of Services to be performed, Attachment 1 of Exhibit A shall prevail.

PART 1 – BASIC SERVICES

A1.01 *Preliminary Design Phase*

Papio-Missouri River Natural Resources District
Preliminary Design of Dam Site 12, Dam Site 19 and WP-4
Papillion Creek Watershed (Douglas and Sarpy Countites, NE)

ENGINEERING PROPOSAL

BACKGROUND AND BASIS OF PROPOSAL

HDR Engineering, Inc. was selected by the P-MRNRD to provide planning, permitting, and preliminary design for Dam Site 12, 19 and regional detention basin WP-4. Dam Site 12 is a proposed dam site located on West Papillion Creek near 216th and Fort Streets with a drainage area of 2.6 square miles. Dam Site 19 is a proposed dam site located on South Papillion Creek near 192nd Street and Giles Road with a drainage area of 4.3 square miles. WP-4 is a proposed regional detention basin to be located on an unnamed tributary of South Papillion Creek near 204th Street and Schram Road in Sarpy County with a drainage area of 1.05 square miles.

A1.01 Preliminary Design Phase

This Scope of Services is to document professional services to the Papio-Missouri River NRD (P-MRNRD) for a preliminary design of Dam Sites 12 and 19 and regional detention basin WP-4 (Project).

The Phase I scope of work is segmented into 8 task series for each dam site: 10's series DS 12, 100's series DS 19 and 1000's series WP-4:

- Task Series 10, 100, and 1000 – Project Management
- Task Series 20, 200, and 2000 – Geotechnical Engineering
- Task Series 30, 300, and 3000 – Dam Design Alternatives Analysis
- Task Series 40, 400, and 4000 – Permitting
- Task Series 50, 500, and 5000 – Design Elements
- Task Series 60, 600, and 6000 – Survey and ROW Legal Descriptions
- Task Series 70, 700, and 7000 – Deliverables

HDR proposes to provide the following professional services over an anticipated ten (10) – month project period from the time of contract authorization.

DAM SITE 12 SCOPE OF WORK

TASK SERIES 10 – PROJECT MANAGEMENT

Task Objective: Develop effective project communication; confirm that Project elements are being completed. Discover and disseminate project information to improve quality and efficiency.

HDR Activities: **Task 11 Contract Administration.** Conduct general project management tasks. Includes development of project initiation forms including the development of a project management plan, monthly invoicing, monthly progress report, project close out activities and other project administrative activities. A Project Approach and Resource Review (PARR) will be conducted by subject matter experts to review solutions, technical approach and staffing.

Task 12 Coordination Meetings. Coordination meetings will be conducted with P-MRNRD, city and county officials during the Project.

12.1 Kickoff Meeting. Meet with P-MRNRD personnel to discuss project details and review the project scope.

12.2 Joint Monthly Progress Meetings. Meet with P-MRNRD, City of Omaha and Douglas County personnel to review and discuss Project progress on DS 12. Assume 9 meetings through the duration of the project for DS 12.

Task 13 P-MRNRD Board Presentation. Conduct a presentation to the P-MRNRD Board/Subcommittee to provide the results of the preliminary design efforts. A PowerPoint presentation will be prepared. One preparation meeting with P-MRNRD staff for the presentation is assumed.

Task Deliverables:

- Monthly invoices and progress reports
- PowerPoint presentation for P-MRNRD Board/Subcommittee Presentation

Key Understandings:

- The duration of the project is 10 months. Contract administration is divided amongst each damsite.
- Meetings will be held at the offices of the P-MRNRD and attended by 2 HDR professionals.
- Ten coordination meetings, including kickoff meetings, are assumed.
- One (1) P-MRNRD Board/Subcommittee meeting presentation is assumed for all 3 damsites. The level of effort is divided amongst each damsite.

TASK 20 GEOTECHNICAL ENGINEERING

Task Objective: Conduct subsurface geotechnical investigation and conduct geotechnical evaluation of embankment. It is intended that the geotechnical design elements will be advanced to approximately the 90% level in this Phase.

Activities: **Task 21 Data Collection and Analysis.** Data to be evaluated includes:

- Available geotechnical data from adjacent roadway projects

- Adjacent development projects

Task 22 Subsurface Investigation Plan. HDR to conduct a geotechnical investigation to evaluate the subsurface conditions along the dam centerline, the principal spillway, auxiliary spillway and potential on-site borrow areas. HDR to prepare a boring plan showing the location of the borings and a laboratory testing program assigning tests to specific samples. Two (2) of the borings will be maintained as observation wells.

Field investigation and laboratory testing requirements include:

Field Investigation	Quantity
Borings feet of borings drilled to non-yielding material (glacial till or bedrock)	1,090
Cone penetrometer tests	130
Laboratory Test	**Quantity**
Dry Density/Moisture Content (ASTM D 7263)	70
Liquid Limit, Plastic Limit, and Plasticity Index of Soils (ASTM D 4318)	27
Sieve Analyses w/ Hydrometer (ASTM D 422)	27
Unconfined Compressive Strength of Cohesive Soil (ASTM D 2166)	8
Unconsolidated-Undrained Triaxial Compression (ASTM D 2850)	10
One-Dimensional Consolidation (ASTM D 4186 / D 4186 M)	10
Standard Proctor (ASTM D 698)	2
Crumb Test (ASTM D6572)	3
CU Bar Triaxial Compression Test on Undisturbed Samples (ASTM D 4767)	2
CU Bar Triaxial Compression Test on Recompacted Samples (ASTM D 4767)	3

Task 23 Subsurface Investigation and Laboratory Testing. Thiele Geotech to conduct field drilling, field sampling and conduct laboratory tests, and prepare a geotechnical material data report. Geotechnical data report includes boring logs and laboratory test data. JEO will survey top of boring hole elevations.

Task 24 Geotechnical Analyses. Geotechnical analyses will be performed based on TR-60 criteria and the subsurface investigation and laboratory testing. The analysis includes:

- Review field and lab data.
- Prepare geologic cross-sections
- Select design foundation section and shear strengths
- Select trial embankment sections (with internal drainage, if needed)
- Run slope stability analyses for end of construction case
- Run seepage analyses (does not include reservoir water balance)
- Evaluate foundation underseepage
- Evaluate seepage through the embankment
- Run slope stability analyses for rapid drawdown, steady state seepage and earthquake cases
- Run settlement analyses along:
  - Embankment centerline
  - Principal spillway (vertical and horizontal joint extensibility)

Task 25 Geotechnical Design. Final geotechnical design will be performed. The design includes:

- Specify final embankment section
- Specify, size, and locate the chimney drain, horizontal blanket drain and drain outlets, if needed
- Refine upstream slope geometry, if needed

- Evaluate principal spillway alignment, stability and settlement
- Evaluate auxiliary spillway stability
- Evaluate slope stability of embankment closure section
- Evaluate upstream face slope protection
- Define embankment construction phasing

Task 26 Geotechnical Investigation and Evaluation Report. Prepare geotechnical evaluation report documenting the results of the geotechnical investigation and design. Conduct QC on geotechnical analyses and design.

26.1 Draft Geotechnical Investigation and Design Report. Document geotechnical evaluation.

26.2 Final Geotechnical Investigation and Design Report. Incorporate review comments and revise geotechnical report.

Task Deliverables:

- Draft and Final Geotechnical Investigation and Design Reports

Key Understandings:

- Thiele Geotech, as a subconsultant to HDR, will conduct field investigation tasks.
- Fee estimate is based on a total of 1,090 feet of borings drilled to non-yielding material (glacial till or bedrock) and 130 feet of cone penetrometer tests.
- JEO, as a subconsultant to HDR, will survey top of boring hole elevations.
- Geotechnical investigation and design will be completed to approximately a 90 percent level.
- It is intended that the subsurface investigation is adequate for completion of design. Should additional subsurface information be required to complete design, it will be documented for inclusion in subsequent phases.
- Instrumentation measures will be identified for purpose of cost estimating only.

TASK 30 DAM DESIGN ALTERNATIVES ANALYSIS

Task Objective: Develop hydrologic model for use in evaluating and optimizing dam features for dam site. Impacts of varying pool levels will also be determined.

Activities:

Task 31 Data Collection and Evaluation.

31.1 Data Collection. Data to be evaluated includes:

- Dam Site 12 Updated Hydrologic Evaluation (HDR, January 2017)
- 2010 LiDAR 2-meter DEM composite data obtained from the Nebraska DNR and was collected by NIROC (Nebraska-Iowa Regional Orthoimagery Consortium) for Douglas County.
- 2016 Metropolitan Area Planning Agency (MAPA) Aerial
- Papillion Creek Watershed Hydrologic Study by FYRA (2017)

31.2 Field Reconnaissance. This task includes one (1) site visit for field observation to support modeling and alternative evaluations. Field reconnaissance activities include observation of the existing roadway network, drainage features, utility verification, and documentation of the visit, including a photo log.

31.3 Stage-Storage Data Verification. Verify the stage-area-storage relationship for the dam and reservoir using HDR's hydrologic model from the previous technical memorandums for the dam site and LiDAR topographic mapping. Evaluate impact of grading changes to stage-

storage data for the dam and reservoir and any wetland and channel mitigations.

Task 32 Hydrologic Model Development. HEC-HMS will be used to route design hydrographs through the proposed dam site. The 2017 FYRA hydrologic models and storm distributions prepared for the Papillion Creek Watershed analysis will serve as the basis for model development. The principal spillway hydrograph, auxiliary spillway hydrograph, and freeboard hydrographs will be determined per NRCS Technical Release No. 60 (TR-60) for high hazard structures. In addition, 10-, 50-, 100-, and 500-yr hydrographs will be defined. One storm-centering will be used in the hydrologic analysis.

Task 33 Sediment Evaluation. Determine at-reservoir sediment yield from upland erosion and channel bank sources using RUSLE, or other appropriate estimating techniques.

Task 34 Dam Elements Refinement. The conceptual design report for DS 12 recommended an operating pool elevation of 1212 ft which maximizes normal pool surface area, while minimizing infrastructure and real estate impacts and maintaining a conservative, average sustainability of 4.0 percent. A 2.5 percent sustainability will be used for preliminary design.

34.1 Dam Features for Alternatives. Variations in principal and auxiliary spillway configurations will be investigated to further maximize the normal pool surface area and minimize impacts to infrastructure, land and environmental resources. Variations in spillway design, such as fuseplugs or two-stage spillways will be investigated. Rating curves for principal and auxiliary spillways will be developed for use in reservoir routing.

34.2 Reservoir Routing. HEC-HMS model will be used to route hydrographs through the proposed dam site. Top of dam elevations will be established through these routings based on NRCS TR-60 and State of Nebraska Dam Safety criteria.

34.3 Reservoir Sedimentation. Data on watershed sediment yield developed in Task 33 will be used to estimate delivery rate and reservoir life cycle.

34.4 Impact Evaluation. Infrastructure impacts for each design hydrograph will be determined for each alternative. Potential mitigation measures for impacted infrastructure (relocations, etc.) will be investigated.

Task 35 Auxiliary Spillway Integrity and Stability. Utilize NRCS's SITES model to evaluate the auxiliary spillway integrity and stability.

Task 36 Water Quality Basin. Potential locations for water quality basins upstream of the reservoir will be identified and screened. Potential sites will be assessed based on sediment storage provided, residence time for water quality enhancement, portion of watershed afforded treatment by the site, and compatibility with surrounding infrastructure and land use.

36.1 Potential Water Quality Sites Identification. Identify potential locations for water quality basin(s) upstream of Dam Site 12. A maximum of 2 locations will be evaluated.

36.2 Stage-Storage Data. Stage-area curves will be developed for each water quality basin(s) from the LiDAR data.

36.3 Water Quality Site Selection. Using the estimated reservoir sedimentation rate and life cycle analysis performed in Task 33, determine which of the potential water quality sites are necessary.

36.4 Water Quality Basin(s) Sizing. Size and develop rating curves for the principal and auxiliary spillways.

36.5 Maintenance Intervals. Compute the trap efficiencies of the proposed sediment basin(s) to quantify sediment deposition in cubic yards and percentage of basin volume. Using this information, establish the required maintenance intervals for removal of sediment from the proposed water quality basin(s).

Task 37 Design Memorandum. Document the results of the dam alternatives in a technical memorandum. Conduct QC on hydrologic/hydraulic modeling and design.

Task Deliverables:

- Draft dam design alternative analysis memorandum

Key Understandings:

- The hydrologic analysis will be performed using FYRA's 2017 HEC-HMS model and storm distribution of the Papillion Creek Watershed .
- The probable maximum precipitation event will be defined by the December 2008 Study entitled "Site-Specific Probable Maximum Precipitation (PMP) Study for Nebraska".
- A maximum of two (2) dam spillway configurations will be evaluated.
- A maximum of two (2) water quality basins will be evaluated for trapping sediment.

TASK 40 PERMITTING

Task Objective: Secure necessary Section 404 approvals for the dam site in accordance with the Clean Water Act and meet with Nebraska Department of Natural Resources for dam safety compliance.

Activities: **Task 41 Data Collection and Evaluation.** Environmental data collected for the project area proposed for the dam site include:

- Data on recorded archaeological and historic/architectural sites (coordinated through the Nebraska State Historical Society, State Historic Preservation Office).
- Data on threatened or endangered species known locations (coordinated through the USFWS and Nebraska Game and Parks Commission)
- Soil survey data
- National Wetland Inventory (NWI) mapping
- Surface water quality impaired streams inventory from NDEQ

Task 42 NDNR Coordination. Meet with NDNR at the beginning and near completion of preliminary design on dam design issues. A total of two (2) meeting are assumed.

Task 43 USACE/Agency Coordination. Coordinate with United States Army Corps of Engineers (USACE) and other Federal, state and local agencies.

43.1 Agency Scoping Coordination. Prepare background document describing the project and requesting information on impacts to their resources to obtain input from federal/state agencies, tribes, and special interest groups. Prepare contact mailing list of agencies and send background document along with invitation to a scoping meeting.

43.2 USACE Project Coordination. Meet with USACE at key points during permit development. This would include after development of purpose and need, alternative screening criteria, initial screening, and draft stage of the Section 404 permit application. A total of 3 meetings are assumed.

43.3 Agency Coordination. Coordinate as needed with other agencies on project specific issues. Assumes only telephone calls and effort is limited to 8 hours of senior scientist and 24 hours of scientist.

Task 44 Section 404 Individual Permit. HDR will seek project approval under an individual Section 404 permit from the USACE.

44.1 Wetlands and Waters of the U.S. Survey. HDR will identify wetlands and jurisdictional waters of the U.S. on the project lands.

44.1.1 Wetland Delineation. Investigate the study area for the presence of Clean Water Act jurisdictional waters (including wetlands). Delineate and characterize the type, size, and location of waters of U.S. A formal wetland delineation [in accordance with the USACE 1987 Wetland Delineation Manual] shall be provided for areas within the normal pool area and limits of construction of the structure(s).

44.1.2 Stream Functional Assessment. Perform a stream functional assessment of all impacted stream and associated riparian areas for assessment of stream impacts and potential mitigation requirements. Use of the Omaha District method for evaluation of existing stream conditions will be applied.

44.2 Section 404 Permit Application. Based on initial identification of permitting issues, HDR will develop a permit application for the Project. This document will include an alternatives analysis to identify potential alternatives that are practicable according to the 404(b)(1) Guidelines. HDR will coordinate the development of the Section 404 permit application with USACE.

44.2.1 Project Need and Purpose. HDR will identify the need for the project and the primary and secondary purposes of the Project. This will be done in a manner to best justify the location of the project while limiting the alternatives analysis to the minimum required by the USACE.

44.2.2 Screening Criteria. Establish the screening criteria to evaluate alternatives for the project. The screening criteria will establish the practicability of the alternatives as described in Subpart B §230.10 (a) of the Guidelines. A practicable alternative is considered "available and capable of being done after taking into consideration cost, existing technology, and logistics while also fulfilling the basic purpose of the proposed activity".

44.2.3 Range of Alternatives. In addition to the proposed alternative (as defined and established in Task Series 34, alternatives may include, but not limited to:

- low impact development strategies

- multiple small detention basins
- levees and channel improvements
- floodplain acquisition
- dry regional detention basin

44.2.4 Alternative Screening. Apply screening criteria to each of the alternatives for determination of alternative practicability. Review waters of the impacts on all practicable alternatives to identify the preliminary least environmentally damaging practicable alternative (LEDPA).

44.2.5 Supplemental Environmental Evaluation. Apply Section 230.11(a)-(h) to evaluate the potential short- or long-term effects of the practicable alternatives on the aquatic environment on the LEDPA. Indirect and cumulative impacts will be considered.

44.2.6 Minimization Alternatives. Evaluate the LEDPA to determine if minimization of impacts to waters of the US is practicable.

44.2.7 Compensatory Mitigation Plan. Develop a wetland and stream mitigation plan following the elements of 33 CFR Part 332.4(c)(2) through (c)(14) and the Mitigation Checklist contained within the Omaha District Corps of Engineers' Guidance for Compensatory Mitigation and Mitigation Banking. Apply NeSCAP to document stream functional credits achieved at the stream mitigation site to confirm that project relate impacts are off-set by stream mitigation.

44.3 Cultural Resources (Section 106) Compliance. The Section 404 permit requires Section 106 compliance. This will be achieved through a record search of previously documented cultural resources identified within the Project area and a Phase I cultural resources survey (pedestrian survey) of the areas of ground disturbance as well as inundated areas.

Task 45 Section 404 Application Preparation. HDR will prepare an individual permit application based on coordination and meetings with the USACE, and mitigation concept design. Conduct QC on permit application elements.

Task Deliverables:

- Project Background Document
- USACE Pre-application meeting agendas and minutes
- Critical Issues Analysis for Historical Properties (includes summary of SHPO record search)
- Phase I Cultural Resources Survey and Report
- Section 404 Permit Application

Key Understandings:

- Right of entry with landowners to conduct cultural resources and wetland surveys will be coordinated by P-MRNRD.
- Nebraska State Historical Society, as a subconsultant to HDR, will conduct the cultural resources pedestrian work.
- Project will have a dual purpose: flood control and recreation.
- Recreation alternatives and screening are the same for all three (3) dam sites.
- Screening of alternatives will result in a single practicable alternative.
- Existing HEC-RAS models will be used to analyze flood control alternatives. Existing models to be provided by P-MRNRD.

- Cumulative effects of environmental and social resource concerns of the project will be assessed in relation to other past, present and reasonably foreseeable projects within the study area of the project.
- Scope and fee are based on assumption that project will not require an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).
- It is assumed that no threatened or endangered species surveys will be required.
- Scope assumes the development of an individual Section 404 permit application. If a Nationwide permit is obtainable, Tasks 44.1 would be eliminated.
- Any wetland or stream mitigation would be on-site.
- All wetland mitigation will occur in the normal pool. Stream mitigation will occur on-site in stream reaches above the normal pool. Addition of stream length or design components beyond a planting plan are not anticipated

TASK 50 DESIGN ELEMENTS

Task Objective: To define major design elements and prepare set of drawings to approximately a 60% level.

Activities:

Task 51 Data Collection and Evaluation.

51.1 Data Collection. Collect necessary data. Data to be evaluated includes:

- MAPA Long Range Transportation Plan
- Pertinent reports on planning, traffic studies, and development
- Available traffic counts, traffic projections and crash data
- Public and private utility information

51.2 Field Reconnaissance. This task includes one (1) site visit for field observation to support conceptual roadway development. Field reconnaissance activities include observation of the existing roadway network and drainage features in and immediately adjacent to the study area, utility verification, and documentation of the visit, including a photo log.

Task 52 Stakeholder Coordination Meetings. Coordination a stakeholder coordination meeting with developers and other interested stakeholders early in the preliminary design to discuss project elements and solicit input. Two (2) meetings are assumed.

Task 53 Roadway Realignments/Modifications. As a result of the project, 216th Street will be relocated outside of the top of dam elevation. A portion of the roadway will be abandoned and a new roadway alignment designed. The drainage structure located in the pool area on Mt Michael Road will be evaluated for a road raise. In additional several local driveways may need to be realigned or relocated.

53.1 Conceptual Roadway Alignment. Develop two (2) roadway alternatives for 216th Street – 1) maintain existing alignment and 2) minimal shift of the alignment to the east near the dam embankment. Alignments based on 216th Street current classification design standards for a 2-lane rural major collector.

For each 216th Street alternative, one (1) conceptual roadway alternative will be developed for intersection with Fort Street. This task includes developing conceptual horizontal and vertical alignments for 216th Street (2 alignments), Mt. Michael Road (2 alternatives) and 2 local resident

driveways. Design will utilize the Nebraska Minimum Design Standards prepared by Board of Public Roads and Classification Standards.

53.2 Geometrics / Typical Sections. This task will include developing conceptual roadway geometrics including curb returns at Fort Street. As part of this effort, turning radii will be checked using the design vehicle's turning template. This task also includes effort to develop two (2) roadway typical sections.

53.3 Roadway Cross-Sections. This task will include developing cross sections at 500' intervals and at select locations to provide clarity and define ROW footprint. Included in this task is the development of approximate limits of construction and earthwork quantities. Preparation of earthwork quantities by construction phases is not included. The existing ground terrain will be created from LiDAR data.

53.4 Right-of-Way Boundary. Delineate conceptual rights-of-way acquisition per affected parcel. The existing right-of-way lines will be taken from GIS information with no title research.

53.5 Hydrualic Modeling on Existing Structures. Conduct a hydraulic analyses for drainage structures under Mt. Michael Road and 216th Street.

53.6 Roadway Concept Memorandum. A concept study memorandum will be developed to document the design standards and assumptions. The alternatives will compare drainage structure alternatives, cost, geometrics, traffic analysis, and constructability. HDR will document the findings. Conduct QC on civil and hydraulic anlyses.

Task 54 Public and Private Utility Coordination.

54.1 Utility Confirmation. A letter will be prepared and submitted requesting public and private utility information from each respective utility within the dam site and reservoir areas.

54.2 Utility Infrastructure Coverages. Create GIS coverages for utility information.

54.3 Sanitary Sewer. Evaluate sanitary sewer extension alignments around the dam embankment/spillway.

54.3.1 Alternative Evaluation. Review the City of Omaha Interceptor Sewer Element of the Master Plan and evaluation a maximum of 2 alternatives to accommodate future growth. Identify the type, size, and location and conceptual level cost opinion. Document findings in a technical memorandum.

54.3.2 Sanitary Sewer Preliminary Plans. Based on the alternative evaluation of the sanitary sewer, a preferred alternative will be designed showing a site plan and preliminary sanitary sewer profiles of the penetration through the dam.

54.4 Utility Memorandum. A memorandum will be developed to document the utility coordinaton and public utilty mitigation. Conduct QC on utility analyses and design.

Task 55 Minimum Recreation Elements. Design minimum recreation elements including trail, boat ramp and access area.

55.1 Trail. Develop preliminary plan and profile drawings for a trail including sizing drainage culverts.

55.2 Access Areas and Boat Ramp. Site plan and grading layout for access road and boat ramp to provide public access to the lake. One (1) access area is assumed. Locations for picnic shelter, vault toilet, and lighting will be defined.

55.3 Recreation Memorandum. A memorandum will be developed to document the recreation elements. Conduct QC on recreation elements.

Task 56 Fishery Enhancement Opportunity. Develop a conceptual layout for in-lake fishery enhancements including features as breakwaters, shoals, and gravel beds.

56.1 In-Lake Fisheries/Recreation Coordination. Coordinate with Nebraska Game and Parks on in-lake fisheries and recreation design elements to layout in-lake fisheries and recreation features. One meeting is assumes with follow-up email communications.

56.2 In-Lake Fisheries Conceptual Design. Develop concept level layout of the in-lake fisheries features.

56.3 Fishery Enhancement Memorandum. A memorandum will be developed to document the fishery enhancement elements.

Task Deliverables:

- Field site visit
- Meeting notes
- Transportation, Utility, Recreation and Fishery Enhancement Memos

Key Understandings:

- Roadway coordination with the City of Omaha and Douglas County will be conducted during the joint monthly progress meetings.
- Preliminary roadway design will be for one (1) recommended alternative
- No traffic study will be conducted on the adjacent roadway system. MAPAs traffic counts will be adequate.
- No meeting is planned with utility companies. Individual coordination will be via either telephone or emails.
- Roadway design is limited to typical section, and plan and profile alignments.

TASK 60 SURVEY AND RIGHT-OF-WAY LEGAL DESCRIPTIONS

Task Objective: To determine right-of-way (ROW) requirements based on a preliminary design and determine legal descriptions in support of public hearings and appraisal/title searches to be conducted by P-MRNRD.

Activities:

Task 61 Data Collection and Evaluation.

61.1 Data Collection. Collect necessary data. Data to be evaluated includes:

- Existing GIS mapping including aerials, topographic data, and parcels
- Private and public utilities (existing and proposed data available at time of evaluation) potentially impacted by the Project including: communication lines, sanitary sewer lines, power lines, gas lines, and fiber-optic lines.

61.2 Topographic Survey. Conduct a topographic survey of the proposed dam site basin embankment/spillway footprint based on the conceptual design reports and create a topographic map. Survey roadway(s) profile impacted by the reservoir pool.

61.3 Topographic Base Map. Topographic survey will be supplemented with LiDAR topographic data.

Task 62 Acquisition and ROW Plan Development. This task includes defining the preliminary acquisition/boundary plans preparing preliminary ROW plans for

approximately 14 parcels for acquisition and 4 parcels for easements, and performing limited baseline survey in support of the final acquisition/boundary survey.

62.1 Real Property Work Maps. Prepare property work maps based on the proposed outline of Project area necessary for the construction of the dam, reservoir and public areas. Coordinate with P-MRNRD and determine boundary extents for acquisition.

62.2 Preliminary Acquisition/Boundary Plans. Conduct field survey to locate section corners and establish initial control. Develop preliminary ROW map plans based on GIS information and supplement with dimensional control provided by recorded subdivision plats and other recorded surveys and documentation at the Douglas County Surveyor's office, Douglas County Register of Deeds Office, and topographic survey. Items depicted on these plans include: limits of maximum pool based on the top of proposed dam elevation and other construction outside this limit to aid P-MRNRD personnel with appraisals along with acquisition and easement negotiations. Determine acreages for acquisition and provide legal descriptions for acquisition.

Task Deliverables:

- Real Property Work Maps based on proposed limits of construction
- Preliminary Acquisition/Boundary Plans for initial public ROW hearings and subsequent appraisal and fee title searches activities.

Key Understandings:

- Right of way coordination with the City of Omaha and Douglas County will be conducted during the joint monthly progress meetings
- P-MRNRD will provide title documentation for the properties affected by this project
- P-MRNRD is responsible for securing appraisals along with acquisition and easement negotiations.
- No permanent monuments will be set for the parcel acquisition.
- It is assumed that the number of revisions to the preliminary boundary is limited to 1 per parcel.
- No Phase I Environmental Site Assessment to be conducted.

TASK 70 DELIVERABLES

Task Objective: To prepare documentation resulting from the preliminary design.

Activities:

Task 71 Design Analysis Report. Prepare a preliminary and final draft design analysis report documenting the technical analyses. This includes the dam design alternative analysis and design elements.

71.1 Draft Design Analysis Report. Document technical analysis in a technical report. Conduct QC on report.

71.2 Final Design Analysis Report. Revise draft technical report. Incorporate review comments.

Task 72 Drawing Production - Develop preliminary design of the dam site elements.

72.1 Draft 60% Drawings. Prepare 60% drawings for review. Conduct QC on draft drawings. A preliminary drawing list of sheets includes:

Sheet	Section Description
Section 01- General	
G-1	Cover Sheet, Location Map, and Index of Drawings
G-2	Reservoir Area Plan, Benchmarks, and Capacity Table
G-3	Hydrologic and Hydraulic Data
G-4	Project Boundary and Easement Map
Section 02- Main Dam	
D-1	Site Plan, Geometrics, and Sequencing Plan
D-2	Grading and Drainage Plan
D-3	Embankment Typical Section and Profile Along Dam Centerline
D-4	Details
D-5 to D-6	Principal Spillway Riser Structure
D-7 to D-8	Stilling Basin Outlet Works
D-9	Site Boring Plan
D-10	Geologic Profiles Along Dam and Spillway
Section 03 – Water Quality Basins (2)	
W-1	WQ1 Site Plan, Geometrics, and Sequencing Plan
W-2	WQ1 Grading and Drainage Plan
W-3	WQ1 Embankment Typical Section and Profile Along Dam Centerline
W-4 to W-5	WQ1 Principal Spillway Riser Structure
W-6 to W-7	WQ1 Stilling Basin Outlet Works
W-8	WQ2 Site Plan, Geometrics, and Sequencing Plan
W-9	WQ2 Grading and Drainage Plan
W-10	WQ2 Embankment Typical Section and Profile Along Dam Centerline
W-11 to W-12	WQ2 Principal Spillway Riser Structure
W-13 to W-14	WQ2 Stilling Basin Outlet Works
Section 04 – Roadway	
R-1	Typical Sections
R-2 to R-3	Overall Site Plan and Geometrics
R-4 to R-8	Roadway Plan and Profile (50 scale)
R-9	Mt Michael Road Plan and Profile
R-10	Driveway Plan and Profile
Section 05 – Recreation and Fishery Enhancements	
T-1	Overall Recreation and Fishery Enhancement Plan
T-2 to T-13	Trail Plan and Profile (13,500’ at 50 scale – 12 sheets)
T-15	Access Area Site, Grading and Drainage Plan
T-16 to T-19	Access Road Plan and Profile (3,000’ at 50 scale – 3 sheets)
Section 06 – Mitigation, Seeding, and Fencing	
C-1	Overall Mitigation Site Plan
C-2 to C-3	Seeding and Fencing Plan
Section 07 – Sanitary Sewer	
SS-1 to SS-2	Sanitary Sewer Plan and Profile
SS-3	Sanitary Sewer Details

72.2 Final 60% Drawings. Revise draft drawings and incorporate review comments.

Task 73 Opinion of Probable Construction Costs. Develop opinion of probable construction costs for the construction of the dam site. Included in the cost estimate will be dam construction costs and infrastructure relocation costs.

73.1 Draft Opinion of Probable Construction Cost. Prepare draft OPCC. Conduct QC on cost estimate.

73.2 Final Opinion of Probable Construction Cost. Prepare final OPCC and incorporate review comments.

Task Deliverables:

- Draft and Final Design Analysis Report
- Draft and Final Conceptual Design Drawings (approximately 60% level)
- Draft and Final Opinion of Probable Construction Costs (approximately 60% level)

Key Understandings:

- Drawings will be developed at 22" x 34" format and provided in 11" x 17" format for review and submittal.
- Cross sections for trails and roadways will not be part of this preliminary design
- Lift station design is limited to floodproofing alternatives. If floodproofing is not viable or not preferred, basic recommendations for a preferred alternative will be shown in plan view only, with no detailed structural, civil, or architectural design.
- If a sanitary sewer siphon is found to be necessary, no structural design will be performed.
- One (1) electronic copy and one (1) hard copy of Draft and Final Design Analysis will be provided to P-MRNRD.
- P-MRNRD will be responsible for report reproduction.
- Technical specifications will not be prepared.
- Mitigation areas for trees and forested wetlands, if required, will be identified only, no tree-planting schedule will be developed.
- No opinion of probable construction cost will be prepared for the 30% progress design meeting.

DAM SITE 19 SCOPE OF WORK

TASK SERIES 100 – PROJECT MANAGEMENT

Task Objective: Develop effective project communication; confirm that Project elements are being completed. Discover and disseminate project information to improve quality and efficiency.

HDR Activities: **Task 110 Contract Administration.** Conduct general project management tasks. Includes development of project initiation forms including the development of a project management plan, monthly invoicing, monthly progress report, project close out activities and other project administrative activities. A Project Approach and Resource Review (PARR) will be conducted by subject matter experts to review solutions, technical approach and staffing.

Task 120 Coordination Meetings. Coordination meetings will be conducted with P-MRNRD, city and county officials during the Project.

120.1 Kickoff Meeting. Meet with P-MRNRD personnel to discuss project details and review the project scope.

120.2 Joint Monthly Progress Meetings. Meet with P-MRNRD, City of Gretna, and Sarpy County personnel to review and discuss on DS 19 and WP-4. Assume 9 meetings through the duration of the project for DS 19 and WP-4.

Task 130 P-MRNRD Board Presentation. Conduct a presentation to the P-MRNRD Board/Subcommittee to provide the results of the preliminary design efforts. A PowerPoint presentation will be prepared. One preparation meeting with P-MRNRD staff for the presentation is assumed.

Task Deliverables:

- Monthly invoices and progress reports
- PowerPoint presentation for P-MRNRD Board/Subcommittee Presentation

Key Understandings:

- The duration of the project is 10 months. Contract administration is divided amongst each damsite.
- Meetings will be held at the offices of the P-MRNRD and attended by 2 HDR professionals.
- Ten coordination meetings, including kickoff meetings, are assumed.
- One (1) P-MRNRD Board/Subcommittee meeting presentation is assumed for all 3 damsites. The level of effort is divided amongst each damsite.

TASK 200 GEOTECHNICAL ENGINEERING

Task Objective: Conduct subsurface geotechnical investigation and conduct geotechnical evaluation of embankment. It is intended that the geotechnical design elements will be advanced to approximately the 90% level in this Phase.

Activities:

Task 210 Data Collection and Analysis. Data to be evaluated includes:

- Available geotechnical data from adjacent roadway projects
- Adjacent development projects

Task 220 Subsurface Investigation Plan. HDR to conduct a geotechnical investigation to evaluate the subsurface conditions along the dam centerline, the principal spillway, auxiliary spillway and potential borrow areas. HDR to prepare a boring plan showing the location of the borings and a laboratory testing program assigning tests to specific samples. Two (2) f the borings will be maintained as observation wells.

Field investigation and laboratory testing requirements include:

Field Investigation	Quantity
Borings feet of borings drilled to non-yielding material (glacial till or bedrock)	1,365
Cone penetrometer tests	130
Laboratory Test	**Quantity**
Dry Density/Moisture Content (ASTM D 7263)	80
Liquid Limit, Plastic Limit, and Plasticity Index of Soils (ASTM D 4318)	32
Sieve Analyses w/ Hydrometer (ASTM D 422)	32
Unconfined Compressive Strength of Cohesive Soil (ASTM D 2166)	8
Unconsolidated-Undrained Triaxial Compression (ASTM D 2850)	12

One-Dimensional Consolidation (ASTM D 4186 / D 4186 M)	12
Standard Proctor (ASTM D 698)	2
Crumb Test (ASTM D6572)	3
CU Bar Triaxial Compression Test on Undisturbed Samples (ASTM D 4767)	2
CU Bar Triaxial Compression Test on Recompacted Samples (ASTM D 4767)	3

Task 230 Subsurface Investigation and Laboratory Testing. Thiele Geotech to conduct field drilling, field sampling and conduct laboratory tests, and prepare a geotechnical material data report. Geotechnical data report includes boring logs and laboratory test data. JEO will survey top of boring hole elevations.

Task 240 Geotechnical Analyses. Geotechnical analyses will be performed based on TR-60 criteria and the subsurface investigation and laboratory testing. The analysis includes:

- Review field and lab data.
- Prepare geologic cross-sections
- Select design foundation section and shear strengths
- Select trial embankment sections (with internal drainage, if needed)
- Run slope stability analyses for end of construction case
- Run seepage analyses (does not include reservoir water balance)
- Evaluate foundation underseepage
- Evaluate seepage through the embankment
- Run slope stability analyses for rapid drawdown, steady state seepage and earthquake cases
- Run settlement analyses along:
  - Embankment centerline
  - Principal spillway (vertical and horizontal joint extensibility)

Task 250 Geotechnical Design. Final geotechnical design will be performed. The design includes:

- Specify final embankment section
- Specify, size, and locate the chimney drain, horizontal blanket drain and drain outlets, if needed
- Refine upstream slope geometry, if needed
- Evaluate principal spillway alignment, stability and settlement
- Evaluate auxiliary spillway stability
- Evaluate slope stability of embankment closure section
- Evaluate upstream face slope protection
- Define embankment construction phasing

Task 260 Geotechnical Investigation and Evaluation Report. Prepare geotechnical evaluation report documenting the results of the geotechnical investigation and design. Conduct QC on geotechnical analyses and design.

260.1 Draft Geotechnical Investigation and Design Report. Document geotechnical evaluation.

260.2 Final Geotechnical Investigation and Design Report. Incorporate review comments and revise geotechnical report.

Task Deliverables:

- Draft and Final Geotechnical Investigation and Design Reports

Key Understandings:

- Thiele Geotech, as a subconsultant to HDR, will conduct field investigation tasks.
- Fee estimate is based on a total of 1,365 feet of borings drilled to non-yielding material (glacial till or bedrock) and 135 feet of cone penetrometer tests.
- JEO, as a subconsultant to HDR, will survey top of boring hole elevations.
- Geotechnical investigation and design will be completed to approximately a 90 percent level.
- It is intended that the subsurface investigation is adequate for completion of design. Should additional subsurface information be required to complete design, it will be documented for inclusion in subsequent phases.
- Instrumentation measures will be identified for purpose of cost estimating only.

TASK 300 DAM DESIGN ALTERNATIVES ANALYSIS

Task Objective: Develop hydrologic model for use in evaluating and optimizing dam features for dam site. Impacts of varying pool levels will also be determined.

Activities:

Task 310 Data Collection and Evaluation.

310.1 Data Collection. Data to be evaluated includes:
- Dam Site 19 Conceptual Report (HDR, November 2000)
- 2010 LiDAR 2-meter DEM composite data obtained from the Nebraska DNR and was collected by NIROC (Nebraska-Iowa Regional Orthoimagery Consortium) for Sarpy County.
- 2016 MAPA Aerial
- Papillion Creek Watershed Hydrologic Study by FYRA (2017)

310.2 Field Reconnaissance. This task includes one (1) site visit for field observation to support modeling and alternative evaluations. Field reconnaissance activities include observation of the existing roadway network, drainage features, utility verification, and documentation of the visit, including a photo log.

310.3 Stage-Storage Data Verification. Verify the stage-area-storage relationship for the dam and reservoir using HDR's hydrologic model from the previous technical memorandums for the dam site and LiDAR topographic mapping. Evaluate impact of grading changes to stage-storage data for the dam and reservoir and any wetland and channel mitigations.

Task 320 Hydrologic Model Development. HEC-HMS will be used to route design hydrographs through the proposed dam site. The 2017 FYRA hydrologic models and storm distributions prepared for the Papillion Creek Watershed analysis will serve as the basis for model development. The principal spillway hydrograph, auxiliary spillway hydrograph, and freeboard hydrographs will be determined per NRCS Technical Release No. 60 (TR-60) for high hazard structures. In addition, 10-, 50-, 100-, and 500-yr hydrographs will be defined. One storm-centering will be used in the hydrologic analysis.

Task 330 Sediment Evaluation. Determine at-reservoir sediment yield from upland erosion and channel bank sources using RUSLE, or other appropriate estimating techniques.

Task 340 Dam Elements Refinement. The conceptual design report for DS 19 recommended an operating pool elevation of 1162 ft which maximizes normal pool surface area, while minimizing infrastructure and real estate impacts and

maintaining a conservative, average sustainability of 3.0 percent. A 2.5 percent sustainability will be used for preliminary design.

340.1 Dam Features for Alternatives. Variations in principal and auxiliary spillway configurations will be investigated to further maximize the normal pool surface area and minimize impacts to infrastructure, land and environmental resources. Variations in spillway design, such as fuseplugs or two-stage spillways will be investigated. Rating curves for principal and auxiliary spillways will be developed for use in reservoir routing.

340.2 Reservoir Routing. HEC-HMS model will be used to route hydrographs through the proposed dam site. Top of dam elevations will be established through these routings based on NRCS TR-60 and State of Nebraska Dam Safety criteria.

340.3 Reservoir Sedimentation. Data on watershed sediment yield developed in Task 330 will be used to estimate delivery rate and reservoir life cycle.

340.4 Impact Evaluation. Infrastructure impacts for each design hydrograph will be determined for each alternative. Potential mitigation measures for impacted infrastructure (relocations, etc.) will be investigated.

Task 350 Auxiliary Spillway Integrity and Stability. Utilize NRCS's SITES model to evaluate the auxiliary spillway integrity and stability.

Task 360 Water Quality Basin(s). Potential locations for water quality basin(s) upstream of the reservoir will be identified and screened. Potential sites will be assessed based on sediment storage provided, residence time for water quality enhancement, portion of watershed afforded treatment by the site, and compatibility with surrounding infrastructure and land use.

360.1 Potential Water Quality Sites Identification. Identify potential locations for water quality basin(s) upstream of Dam Site 19. A maximum of 3 locations will be evaluated.

360.2 Stage-Storage Data. Stage-area curves will be developed for each water quality basin(s) from the LiDAR data.

360.3 Water Quality Site Selection. Using the estimated reservoir sedimentation rate and life cycle analysis performed in Task 330, determine which of the potential water quality sites are necessary.

360.4 Water Quality Basin(s) Sizing. Size and develop rating curves for the principal and auxiliary spillways.

360.5 Maintenance Intervals. Compute the trap efficiencies of the proposed sediment basin(s) to quantify sediment deposition in cubic yards and percentage of basin volume. Using this information, establish the required maintenance intervals for removal of sediment from the proposed water quality basin(s).

Task 370 Design Memorandum. Document the results of the dam alternatives in a technical memorandum. Conduct QC on hydrologic and hydraulic modeling and design.

Task Deliverables:

- Draft dam design alternative analysis memorandum

Key Understandings:

- The hydrologic analysis will be performed using FYRA's 2017 HEC-HMS model and storm distribution of the Papillion Creek Watershed .
- The probable maximum precipitation event will be defined by the December 2008 Study entitled "Site-Specific Probable Maximum Precipitation (PMP) Study for Nebraska".
- A maximum of two (2) dam spillway configurations will be evaluated.
- A maximum of three (3) water quality basins will be evaluated for trapping sediment.

TASK 400 PERMITTING

Task Objective: Secure necessary Section 404 approvals for the dam site in accordance with the Clean Water Act and meet with Nebraska Department of Natural Resources for dam safety compliance.

Activities:

Task 410 Data Collection and Evaluation. Environmental data collected for the project area proposed for the dam site include:

- Data on recorded archaeological and historic/architectural sites (coordinated through the Nebraska State Historical Society, State Historic Preservation Office).
- Data on threatened or endangered species known locations (coordinated through the USFWS and Nebraska Game and Parks Commission)
- Soil survey data
- National Wetland Inventory (NWI) mapping
- Surface water quality impaired streams inventory from NDEQ

Task 420 NDNR Coordination. Meet with NDNR at the beginning and near completion of preliminary design on dam design issues. A total of two (2) meeting are assumed.

Task 430 USACE/Agency Coordination. Coordinate with United States Army Corps of Engineers (USACE) and other Federal, state and local agencies.

430.1 Agency Scoping Coordination. Prepare background document describing the project and requesting information on impacts to their resources to obtain input from federal/state agencies, tribes, and special interest groups. Prepare contact mailing list of agencies and send background document along with invitation to a scoping meeting.

430.2 USACE Project Coordination. Meet with USACE at key points during permit development. This would include after development of purpose and need, alternative screening criteria, initial screening, and draft stage of the Section 404 permit application. A total of 3 meetings are assumed.

430.3 Agency Coordination. Coordinate as needed with other agencies on project specific issues. Assumes only telephone calls and effort is limited to 8 hours of senior scientist and 24 hours of scientist.

Task 440 Section 404 Individual Permit. HDR will seek project approval under an individual Section 404 permit from the USACE.

440.1 Wetlands and Waters of the U.S. Survey. HDR will identify wetlands and jurisdictional waters of the U.S. on the project lands.

440.1.1 Wetland Delineation. Investigate the study area for the presence of Clean Water Act jurisdictional waters (including wetlands).

Delineate and characterize the type, size, and location of waters of U.S. A formal wetland delineation [in accordance with the USACE 1987 Wetland Delineation Manual] shall be provided for areas within the normal pool area and limits of construction of the structure(s).

440.1.2 Stream Functional Assessment. Perform a stream functional assessment of all impacted stream and associated riparian areas for assessment of stream impacts and potential mitigation requirements. Use of the Omaha District method for evaluation of existing stream conditions will be applied.

440.2 Section 404 Permit Application. Based on initial identification of permitting issues, HDR will develop a permit application for the Project. This document will include an alternatives analysis to identify potential alternatives that are practicable according to the 404(b)(1) Guidelines. HDR will coordinate the development of the Section 404 permit application with USACE.

440.2.1 Project Need and Purpose. HDR will identify the need for the project and the primary and secondary purposes of the Project. This will be done in a manner to best justify the location of the project while limiting the alternatives analysis to the minimum required by the USACE.

440.2.2 Screening Criteria. Establish the screening criteria to evaluate alternatives for the project. The screening criteria will establish the practicability of the alternatives as described in Subpart B §230.10 (a) of the Guidelines. A practicable alternative is considered "available and capable of being done after taking into consideration cost, existing technology, and logistics while also fulfilling the basic purpose of the proposed activity".

440.2.3 Range of Alternatives. In addition to the proposed alternative (as defined and established in Task Series 34, alternatives may include, but not limited to:

- low impact development strategies
- multiple small detention basins
- levees and channel improvements
- floodplain acquisition
- dry regional detention basin

440.2.4 Alternative Screening. Apply screening criteria to each of the alternatives for determination of alternative practicability. Review waters of the impacts on all practicable alternatives to identify the preliminary least environmentally damaging practicable alternative (LEDPA).

440.2.5 Supplemental Environmental Evaluation. Apply Section 230.11(a)-(h) to evaluate the potential short- or long-term effects of the practicable alternatives on the aquatic environment on the LEDPA. Indirect and cumulative impacts will be considered.

440.2.6 Minimization Alternatives. Evaluate the LEDPA to determine if minimization of impacts to waters of the US is practicable.

440.2.7 Compensatory Mitigation Plan. Develop a wetland and stream mitigation plan following the elements of 33 CFR Part 332.4(c)(2) through (c)(14) and the Mitigation Checklist contained within the Omaha District Corps of Engineers' Guidance for Compensatory

Mitigation and Mitigation Banking. Apply NeSCAP to document stream functional credits achieved at the stream mitigation site to confirm that project relate impacts are off-set by stream mitigation.

440.3 Cultural Resources (Section 106) Compliance. The Section 404 permit requires Section 106 compliance. This will be achieved through a record search of previously documented cultural resources identified within the Project area and a Phase I cultural resources survey (pedestrian survey) of the areas of ground disturbance as well as inundated areas.

Task 450 Section 404 Application Preparation. HDR will prepare an individual permit application based on coordination and meetings with the USACE, and mitigation concept design. Conduct QC on permit application elements.

Task Deliverables:

- Project Background Document
- USACE Pre-application meeting agendas and minutes
- Critical Issues Analysis for Historical Properties (includes summary of SHPO record search)
- Phase I Cultural Resources Survey and Report
- Section 404 Permit Application

Key Understandings:

- Right of entry with landowners to conduct cultural resources and wetland surveys will be coordinated by P-MRNRD.
- Nebraska State Historical Society, as a subconsultant to HDR, will conduct the cultural resources pedestrian work.
- Project will have a dual purpose: flood control and recreation.
- Recreation alternatives and screening are the same for all three (3) dam sites.
- Screening of alternatives will result in a single practicable alternative.
- Existing HEC-RAS models will be used to analyze flood control alternatives. Existing models to be provided by P-MRNRD
- Cumulative effects of environmental and social resource concerns of the project will be assessed in relation to other past, present and reasonably foreseeable projects within the study area of the project.
- Scope and fee are based on assumption that project will not require an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).
- It is assumed that no threatened or endangered species surveys will be required.
- Scope assumes the development of an individual Section 404 permit application. If a Nationwide permit is obtainable, Tasks 44.1 would be eliminated.
- Any wetland or stream mitigation would be on-site.
- All wetland mitigation will occur in the normal pool. Stream mitigation will occur on-site in stream reaches above the normal pool. Addition of stream length or design components beyond a planting plan are not anticipated

TASK 500 DESIGN ELEMENTS

Task Objective: To define major design elements and prepare set of drawings to approximately a 60% level.

Activities: **Task 510 Data Collection and Evaluation.**

510.1 Data Collection. Collect necessary data. Data to be evaluated includes:

- Culvert Evaluation Findings Technical Memo (HDR, 2004)
- MAPA Long Range Transportation Plan

- Pertinent reports on planning, traffic studies, and development
- Available traffic counts, traffic projections and crash data
- Public and private utility information

510.2 Field Reconnaissance. This task includes one (1) site visit for field observation to support conceptual roadway development. Field reconnaissance activities include observation of the existing roadway network and drainage features in and immediately adjacent to the study area, utility verification, and documentation of the visit, including a photo log.

Task 520 Stakeholder Coordination Meeting. Coordination a stakeholder coordination meeting with developers and other interested stakeholders early in the preliminary design to discuss project elements and solicit input. Two (2) meetings are assumed.

Task 530 Roadway Impacts. As a result of the project, the top of dam extends beyond Giles Road and US Hwy 6 and several private access drives may be impacted. The auxiliary spillway will affect 192nd Street and modifications may be required.

530.1 Hydrualic Modeling on Existing Structures. Review culvert hydraulic model developed for drainage structures under U.S. Hwy 6. Evaluate the hydraulic impact of the reservoir on the Giles Road crossing.

530.2 Roadway Modificaitons. Evaluate the interaction of the auxilary spillway and 192nd Street alignments and revise alignments to mimimize impacts. Develop alternative (2) vertical profiles for 192nd Street. Design will utilize the Nebraska Minimum Design Standards prepared by Board of Public Roads and Classification Standards. Discuss options with county and select a preferred profile.

530.3 Roadway Concept Memorandum. A concept study memorandum will be developed to document the impact to the roadway system. Conduct QC on civil and hydraulic analyses.

Task 540 Public and Private Utility Coordination.

540.1 Utility Confirmation. A letter will be prepared and submitted requesting public and private utility information from each respective utility within the dam site and reservoir areas.

540.2 Utility Infrastructure Coverages. Create GIS coverages for utility information.

540.3 Sanitary Sewer . Evaluate sanitary sewer extension alignments around the dam embankment/spillway.

540.3.1 Alternative Evaluation. Review the City of Omaha Interceptor Sewer Element of the Master Plan and evaluation a maximum of 2 alternatives to accommodate future growth. Identify the type, size, and location and conceptual level cost opinion. Document findings in a technical memorandum.

540.3.2 Sanitary Sewer Preliminary Plan. Based on the alternative evaluation of the sanitary sewer, a preferred alternative will be designed showing a site plan and preliminary sanitary sewer profiles of the penetration through the dam.

540.4 Utility Memorandum. A memorandum will be developed to document the utility coordinaton and public utilty mitigation. Conduct QC on utility analyses and design.

Task 550 Minimum Recreation Elements. Design minimum recreation elements including trail, boat ramp and access areas.

550.1 Trail. Develop preliminary plan and profile drawings for a trail including sizing drainage culverts.

550.2 Access Areas and Boat Ramp. Layout access road and boat ramp to provide public access to the lake. Two (2) access areas are assumed. Locations for picnic shelters, vault toilets, and lighting will be defined.

550.3 Recreation Memorandum. A memorandum will be developed to document the recreation elements. Conduct QC on recreation plan.

Task 560 Fishery Enhancement Opportunity. Develop a conceptual layout for in-lake fishery enhancements including features as breakwaters, shoals, and gravel beds.

560.1 In-Lake Fisheries/Recreation Coordination. Coordinate with Nebraska Game and Parks on in-lake fisheries and recreation design elements to layout in-lake fisheries and recreation features. One meeting is assumes with follow-up email communications.

560.2 In-Lake Fisheries Conceptual Design. Develop concept level layout of the in-lake fisheries features.

560.3 Fishery Enhancement Memorandum. A memorandum will be developed to document the fishery enhancement elements.

Task Deliverables:

- Field site visit
- Meeting notes
- Transportation, Utility, Recreation and Fishery Enhancement Memos

Key Understandings:

- Roadway coordination with the City of Gretna and Sarpy County will be conducted during the joint monthly progress meetings.
- Preliminary roadway design will be for one (1) recommended alternative
- No traffic study will be conducted on the adjacent roadway system. MAPAs traffic counts will be adequate.
- No meeting is planned with utility companies. Individual coordination will be via either telephone or emails.
- Roadway design is limited to typical section, and plan and profile alignments.

TASK 600 SURVEY AND RIGHT-OF-WAY LEGAL DESCRIPTIONS

Task Objective: To determine right-of-way (ROW) requirements based on a preliminary design and determine legal descriptions in support of public hearings and appraisal/title searches to be conducted by P-MRNRD.

Activities:

Task 610 Data Collection and Evaluation.

610.1 Data Collection. Collect necessary data. Data to be evaluated includes:

- Existing GIS mapping including aerials, topographic data, and parcels
- Private and public utilities (existing and proposed data available at time of evaluation) potentially impacted by the Project including: communication lines, sanitary sewer lines, power lines, gas lines, and fiber-optic lines.

610.2 Topographic Survey. Conduct a topographic survey of the proposed dam site basin embankment/spillway footprint based on the conceptual design

reports and create a topographic map. Survey roadway(s) profile impacted by the reservoir pool.

610.3 Topographic Base Map. Topographic survey will be supplemented with LiDAR topographic data.

Task 620 Acquisition and ROW Plan Development. This task includes defining the preliminary acquisition/boundary plans preparing preliminary ROW plans for approximately 14 parcels for acquisition and 4 parcels for easements, and performing limited baseline survey in support of the final acquisition/boundary survey.

620.1 Real Property Work Maps. Prepare property work maps based on the proposed outline of Project area necessary for the construction of the dam, reservoir and public areas. Coordinate with P-MRNRD and determine boundary extents for acquisition.

620.2 Preliminary Acquisition/Boundary Plans. Conduct field survey to locate section corners and establish initial control. Develop preliminary ROW map plans based on GIS information and supplement with dimensional control provided by recorded subdivision plats and other recorded surveys and documentation at the Sarpy County Surveyor's office, Sarpy County Register of Deeds Office, and topographic survey. Items depicted on these plans include: limits of maximum pool based on the top of proposed dam elevation and other construction outside this limit to aid P-MRNRD personnel with appraisals along with acquisition and easement negotiations. Determine acreages for acquisition and provide legal descriptions for acquisition.

Task Deliverables:

- Real Property Work Maps based on proposed limits of construction
- Preliminary Acquisition/Boundary Plans for initial public ROW hearings and subsequent appraisal and fee title searches activities.

Key Understandings:

- Right of way coordination with the City of Gretna and Sarpy County will be conducted during the joint monthly progress meetings.
- P-MRNRD will provide title documentation for the properties affected by this project.
- P-MRNRD is responsible for securing appraisals along with acquisition and easement negotiations.
- No permanent monuments will be set (to be performed during Phase II)
- It is assumed that the number of revisions to the preliminary boundary is limited to 1 per parcel.
- No Phase I Environmental Site Assessment to be conducted.

TASK 700 DELIVERABLES

Task Objective: To prepare documentation resulting from the preliminary design.

Activities: **Task 710 Design Analysis Report.** Prepare a preliminary and final draft design analysis report documenting the technical analyses. This includes the dam design alternative analysis and design elements.

710.1 Draft Design Analysis Report. Document technical analysis in a technical report. Conduct QC on report.

710.2 Final Design Analysis Report. Revise draft technical report. Incorporate review comments.

Task 720 Drawing Production - Develop preliminary design of the dam site elements. Conduct QC or drawings.

720.1 Draft 60% Drawings. Prepare 60% drawings for review. A preliminary drawing list of sheets includes:

Sheet	Section Description
Section 01 – General	
G-1	Cover Sheet, Location Map, and Index of Drawings
G-2	Reservoir Area Plan, Benchmarks, and Capacity Table
G-3	Hydrologic and Hydraulic Data
G-4	Project Boundary and Easement Map
Section 02 – Main Dam	
D-1	Site Plan, Geometrics, and Sequencing Plan
D-2	Grading and Drainage Plan
D-3	Embankment Typical Section and Profile Along Dam Centerline
D-4	Details
D-5 to D-6	Principal Spillway Riser Structure
D-7 to D-8	Stilling Basin Outlet Works
D-9	Site Boring Plan
D-10	Geologic Profiles Along Dam and Spillway
Section 03 – Water Quality Basins (3)	
W-1	WQ1 Site Plan, Geometrics, and Sequencing Plan
W-2	WQ1 Grading and Drainage Plan
W-3	WQ1 Embankment Typical Section and Profile Along Dam Centerline
W-4 to W-5	WQ1 Principal Spillway Riser Structure
W-6 to W-7	WQ1 Stilling Basin Outlet Works
W-8	WQ2 Site Plan, Geometrics, and Sequencing Plan
W-9	WQ2 Grading and Drainage Plan
W-10	WQ2 Embankment Typical Section and Profile Along Dam Centerline
W-11 to W-12	WQ2 Principal Spillway Riser Structure
W-13 to W-14	WQ2 Stilling Basin Outlet Works
W-15	WQ3 Site Plan, Geometrics, and Sequencing Plan
W-16	WQ3 Grading and Drainage Plan
W-17	WQ3 Embankment Typical Section and Profile Along Dam Centerline
W-18 to W-19	WQ3 Principal Spillway Riser Structure
W-20 to W-21	WQ3 Stilling Basin Outlet Works
Section 04 – Roadway	
R-1	Typical Sections
R-2 to R-3	Overall Site Plan and Geometrics
R-4 to R-8	192nd Street Roadway Plan and Profile (50 scale)
R-9	Giles Road Plan and Profile

Sheet	Section Description
R-10	Driveway Plan and Profile
Section 05 – Recreation and Fishery Enhancements	
T-1	Overall Recreation and Fishery Enhancement Plan
T-2 to T-14	Trail Plan and Profile (15,000' at 50 scale – 13 sheets)
T-15	Access Area Site, Grading and Drainage Plan
T-16 to T-19	Access Road Plan and Profile (3,000' at 50 scale – 3 sheets)
Section 06 – Mitigation, Seeding, and Fencing	
C-1	Overall Mitigation Site Plan
C-2 to C-3	Seeding and Fencing Plan
Section 07 – Sanitary Sewer	
SS-1 to SS-2	Sanitary Sewer Plan and Profile
SS-3	Sanitary Sewer Details

720.2 Final 60% Drawings. Revise draft drawings and incorporate review comments.

Task 730 Opinion of Probable Construction Costs. Develop opinion of probable construction costs for the construction of the dam site. Included in the cost estimate will be dam construction costs and infrastructure relocation costs.

730.1 Draft Opinion of Probable Construction Cost. Prepare draft OPCC. Conduct QC of OPCC.

730.2 Final Opinion of Probable Construction Cost. Prepare final OPCC and incorporate review comments.

Task Deliverables:

- Draft and Final Design Analysis Report
- Draft and Final Conceptual Design Drawings (approximately 60% level)
- Draft and Final Opinion of Probable Construction Costs (approximately 60% level)

Key Understandings:

- Drawings will be developed at 22" x 34" format and provided in 11" x 17" format for review and submittal.
- Cross sections for trails and roadways will not be part of this preliminary design
- Lift station design is limited to floodproofing alternatives. If floodproofing is not viable or not preferred, basic recommendations for a preferred alternative will be shown in plan view only, with no detailed structural, civil, or architectural design.
- If a sanitary sewer siphon is found to be necessary, no structural design will be performed.
- One (1) electronic copy and one (1) hard copy of Draft and Final Design Analysis will be provided to P-MRNRD.
- P-MRNRD will be responsible for report reproduction.
- Technical specifications will not be prepared.
- Mitigation areas for trees and forested wetlands, if required, will be identified only, no tree-planting schedule will be developed.
- No opinion of probable construction cost will be prepared for the 30% progress design meeting.

REGIONAL DETENTION BASIN WP-4 SCOPE OF WORK

TASK SERIES 1000 – PROJECT MANAGEMENT

Task Objective: Develop effective project communication; confirm that Project elements are being completed. Discover and disseminate project information to improve quality and efficiency.

HDR Activities: **Task 1010 Contract Administration.** Conduct general project management tasks. Includes development of project initiation forms including the development of a project management plan, monthly invoicing, monthly progress report, project close out activities and other project administrative activities. A Project Approach and Resource Review (PARR) will be conducted by subject matter experts to review solutions, technical approach and staffing.

Task 1020 Coordination Meetings. Coordination meetings will be conducted with P-MRNRD, city and county officials during the Project.

1020.1 Kickoff Meeting. Meet with P-MRNRD personnel to discuss project details and review the project scope.

1020.2 Joint Monthly Progress Meetings. Meet with P-MRNRD, City of Gretna, and Sarpy County personnel to review and discuss on DS 19 and WP-4. Assume 9 meetings through the duration of the project for DS 19 and WP-4.

Task 1030 P-MRNRD Board Presentation. Conduct a presentation to the P-MRNRD Board/Subcommittee to provide the results of the preliminary design efforts. A PowerPoint presentation will be prepared. One preparation meeting with P-MRNRD staff for the presentation is assumed.

Task Deliverables:

- Monthly invoices and progress reports
- PowerPoint presentation for P-MRNRD Board/Subcommittee Presentation

Key Understandings:

- The duration of the project is 10 months. Contract administration is divided amongst each damsite.
- Meetings will be held at the offices of the P-MRNRD and attended by 2 HDR professionals.
- Ten coordination meetings, including kickoff meetings, are assumed.
  One (1) P-MRNRD Board/Subcommittee meeting presentation is assumed for all 3 damsites. The level of effort is divided amongst each damsite.

TASK 2000 GEOTECHNICAL ENGINEERING

Task Objective: Conduct subsurface geotechnical investigation and conduct geotechnical evaluation of embankment. It is intended that the geotechnical design elements will be advanced to approximately the 90% level in this Phase.

Activities: **Task 2100 Data Collection and Analysis.** Data to be evaluated includes:

- Available geotechnical data from adjacent roadway projects
- Adjacent development projects

Task 2200 Subsurface Investigation Plan. HDR to conduct a geotechnical investigation to evaluate the subsurface conditions along the dam centerline, the principal spillway, auxiliary spillway and potential borrow areas. HDR to prepare a boring plan showing the location of the borings and a laboratory testing program assigning tests to specific samples. Two (2) f the borings will be maintained as observation wells.

Field investigation and laboratory testing requirements include:

Field Investigation	Quantity
Borings feet of borings drilled to non-yielding material (glacial till or bedrock)	955
Cone penetrometer tests	130
Laboratory Test	**Quantity**
Dry Density/Moisture Content (ASTM D 7263)	60
Liquid Limit, Plastic Limit, and Plasticity Index of Soils (ASTM D 4318)	22
Sieve Analyses w/ Hydrometer (ASTM D 422)	22
Unconfined Compressive Strength of Cohesive Soil (ASTM D 2166)	8
Unconsolidated-Undrained Triaxial Compression (ASTM D 2850)	8
One-Dimensional Consolidation (ASTM D 4186 / D 4186 M)	8
Standard Proctor (ASTM D 698)	2
Crumb Test (ASTM D6572)	3
CU Bar Triaxial Compression Test on Undisturbed Samples (ASTM D 4767)	2
CU Bar Triaxial Compression Test on Recompacted Samples (ASTM D 4767)	2

Task 2300 Subsurface Investigation and Laboratory Testing. Thiele Geotech to conduct field drilling, field sampling and conduct laboratory tests, and prepare a geotechnical material data report. Geotechnical data report includes boring logs and laboratory test data. JEO will survey top of boring hole elevations.

Task 2400 Geotechnical Analyses. Geotechnical analyses will be performed based on TR-60 criteria and the subsurface investigation and laboratory testing. The analysis includes:

- Review field and lab data.
- Prepare geologic cross-sections
- Select design foundation section and shear strengths
- Select trial embankment sections (with internal drainage, if needed)
- Run slope stability analyses for end of construction case
- Run seepage analyses (does not include reservoir water balance)
- Evaluate foundation underseepage
- Evaluate seepage through the embankment
- Run slope stability analyses for rapid drawdown, steady state seepage and earthquake cases
- Run settlement analyses along:
  - Embankment centerline
  - Principal spillway (vertical and horizontal joint extensibility)

Task 2500 Geotechnical Design. Final geotechnical design will be performed. The design includes:

- Specify final embankment section
- Specify, size, and locate the chimney drain, horizontal blanket drain and drain outlets, if needed
- Refine upstream slope geometry, if needed
- Evaluate principal spillway alignment, stability and settlement

- Evaluate auxiliary spillway stability
- Evaluate slope stability of embankment closure section
- Evaluate upstream face slope protection
- Define embankment construction phasing

Task 2600 Geotechnical Investigation and Evaluation Report. Prepare geotechnical evaluation report documenting the results of the geotechnical investigation and design. Conduct QC on geotechnical analyses and design.

2600.1 Draft Geotechnical Investigation and Design Report. Document geotechnical evaluation.

2600.2 Final Geotechnical Investigation and Design Report. Incorporate review comments and revise geotechnical report.

Task Deliverables:

- Draft and Final Geotechnical Investigation and Design Reports

Key Understandings:

- Thiele Geotech, as a subconsultant to HDR, will conduct field investigation tasks.
- Fee estimate is based on a total of 955 feet of borings drilled to non-yielding material (glacial till or bedrock) and 130 feet of cone penetrometer tests.
- JEO, as a subconsultant to HDR, will survey top of boring hole elevations.
- Geotechnical investigation and design will be completed to approximately a 90 percent level.
- It is intended that the subsurface investigation is adequate for completion of design. Should additional subsurface information be required to complete design, it will be documented for inclusion in subsequent phases.
- Instrumentation measures will be identified for purpose of cost estimating only.

TASK 3000 DAM DESIGN ALTERNATIVES ANALYSIS

Task Objective: Develop hydrologic model for use in evaluating and optimizing dam features for dam site. Impacts of varying pool levels will also be determined.

Activities:

Task 3100 Data Collection and Evaluation.

3100.1 Data Collection. Data to be evaluated includes:

- Papillion Creek Watershed Management Plan (HDR, April 2009) and Hydrology Update Evaluation (HDR, September 2016)
- 2010 LiDAR 2-meter DEM composite data obtained from the Nebraska DNR and was collected by NIROC (Nebraska-Iowa Regional Orthoimagery Consortium) for Sarpy County.
- 2016 MAPA Aerial
- Papillion Creek Watershed Hydrologic Study by FYRA (2017)

3100.2 Field Reconnaissance. This task includes one (1) site visit for field observation to support modeling and alternative evaluations. Field reconnaissance activities include observation of the existing roadway network, drainage features, utility verification, and documentation of the visit, including a photo log.

3100.3 Stage-Storage Data Verification. Verify the stage-area-storage relationship for the dam and reservoir using HDR's hydrologic model from the previous technical memorandums for the dam site and LiDAR topographic mapping. Evaluate impact of grading changes to stage-storage data for the dam and reservoir and any wetland and channel mitigations.

Task 3200 Hydrologic Model Development. HEC-HMS will be used to route design hydrographs through the proposed dam site. The 2017 FYRA hydrologic models and storm distributions prepared for the Papillion Creek Watershed analysis will serve as the basis for model development. The principal spillway hydrograph, auxiliary spillway hydrograph, and freeboard hydrographs will be determined per NRCS Technical Release No. 60 (TR-60) for high hazard structures. In addition, 10-, 50-, 100-, and 500-yr hydrographs will be defined. One storm-centering will be used in the hydrologic analysis.

Task 3300 Sediment Evaluation. Determine at-reservoir sediment yield from upland erosion and channel bank sources using RUSLE, or other appropriate estimating techniques.

Task 3400 Dam Elements Refinement. The conceptual design report for WP-4 recommended an operating pool elevation of 1222 ft which maximizes normal pool surface area, while minimizing infrastructure and real estate impacts and maintaining a conservative, average sustainability of 2.4 percent. A 2.5 percent sustainability will be used for preliminary design.

3400.1 Dam Features for Alternatives. Variations in principal and auxiliary spillway configurations will be investigated to further maximize the normal pool surface area and minimize impacts to infrastructure, land and environmental resources. Variations in spillway design, such as fuseplugs or two-stage spillways will be investigated. Rating curves for principal and auxiliary spillways will be developed for use in reservoir routing.

3400.2 Reservoir Routing. HEC-HMS model will be used to route hydrographs through the proposed dam site. Top of dam elevations will be established through these routings based on NRCS TR-60 and State of Nebraska Dam Safety criteria.

3400.3 Reservoir Sedimentation. Data on watershed sediment yield developed in Task 330 will be used to estimate delivery rate and reservoir life cycle.

3400.4 Impact Evaluation. Infrastructure impacts for each design hydrograph will be determined for each alternative. Potential mitigation measures for impacted infrastructure (relocations, etc.) will be investigated.

Task 3500 Auxiliary Spillway Integrity and Stability. Utilize NRCS's SITES model to evaluate the auxiliary spillway integrity and stability.

Task 3600 Water Quality Enhancements. Potential locations for water quality enhancements upstream of the main reservoir, in lieu of sediment basins, will be identified and screened. Potential sites will be assessed based on a number of criteria including estimated sediment delivery rates, compatibility with surrounding infrastructure, land use, cost, and general effectiveness.

3600.1 Potential Water Quality Sites Identification. Identify potential locations for water quality basins upstream of WP-4. A maximum of two (2) locations will be evaluated.

3600.2 Water Quality Site Selection and Sizing. Estimate berm and conveyance structure sizes based on hydrology and hydraulic characteristics of the site and other above listed criteria. Water quality sites are assumed to be

simple berms and weirs and are not intended to be dam style structures with principal and auxiliary spillways.

3600.3 Maintenance Intervals. Establish maintenance intervals based upon estimated vegetation management and incoming sediment loads. Potential locations for water quality basins upstream of the reservoir will be identified and screened. Potential sites will be assessed based on sediment storage provided, residence time for water quality enhancement, portion of watershed afforded treatment by the site, and compatibility with surrounding infrastructure and land use.

Task 3700 Design Memorandum. Document the results of the dam alternatives in a technical memorandum. Conduct QC on hydrologic and hydraulic analyses.

Task Deliverables:

- Draft dam design alternative analysis memorandum

Key Understandings:

- The hydrologic analysis will be performed using FYRA's 2017 HEC-HMS model and storm distribution of the Papillion Creek Watershed .
- The probable maximum precipitation event will be defined by the December 2008 Study entitled "Site-Specific Probable Maximum Precipitation (PMP) Study for Nebraska".
- A maximum of two (2) dam spillway configurations will be evaluated.
- A maximum of two (2) water quality enhancement sites will be evaluated. It is assumed that these enhancement sites will not be of a size to fall under dam safety regulations.

TASK 4000 PERMITTING

Task Objective: Secure necessary Section 404 approvals for the dam site in accordance with the Clean Water Act and meet with Nebraska Department of Natural Resources for dam safety compliance.

Activities:

Task 4100 Data Collection and Evaluation. Environmental data collected for the project area proposed for the dam site include:

- Data on recorded archaeological and historic/architectural sites (coordinated through the Nebraska State Historical Society, State Historic Preservation Office).
- Data on threatened or endangered species known locations (coordinated through the USFWS and Nebraska Game and Parks Commission)
- Soil survey data
- National Wetland Inventory (NWI) mapping
- Surface water quality impaired streams inventory from NDEQ

Task 4200 NDNR Coordination. Meet with NDNR at the beginning and near completion of preliminary design on dam design issues. A total of two (2) meeting are assumed.

Task 4300 USACE/Agency Coordination. Coordinate with United States Army Corps of Engineers (USACE) and other Federal, state and local agencies.

4300.1 Agency Scoping Coordination. Prepare background document describing the project and requesting information on impacts to their resources to obtain input from federal/state agencies, tribes, and special interest groups. Prepare contact mailing list of agencies and send background document along with invitation to a scoping meeting.

4300.2 USACE Project Coordination. Meet with USACE at key points during permit development. This would include after development of purpose and need, alternative screening criteria, initial screening, and draft stage of the Section 404 permit application. A total of 3 meetings are assumed.

4300.3 Agency Coordination. Coordinate as needed with other agencies on project specific issues. Assumes only telephone calls and effort is limited to 8 hours of senior scientist and 24 hours of scientist.

Task 4400 Section 404 Individual Permit. HDR will seek project approval under an individual Section 404 permit from the USACE.

4400.1 Wetlands and Waters of the U.S. Survey. HDR will identify wetlands and jurisdictional waters of the U.S. on the project lands.

4400.1.1 Wetland Delineation. Investigate the study area for the presence of Clean Water Act jurisdictional waters (including wetlands). Delineate and characterize the type, size, and location of waters of U.S. A formal wetland delineation [in accordance with the USACE 1987 Wetland Delineation Manual] shall be provided for areas within the normal pool area and limits of construction of the structure(s).

4400.1.2 Stream Functional Assessment. Perform a stream functional assessment of all impacted stream and associated riparian areas for assessment of stream impacts and potential mitigation requirements. Use of the Omaha District method for evaluation of existing stream conditions will be applied.

4400.2 Section 404 Permit Application. Based on initial identification of permitting issues, HDR will develop a permit application for the Project. This document will include an alternatives analysis to identify potential alternatives that are practicable according to the 404(b)(1) Guidelines. HDR will coordinate the development of the Section 404 permit application with USACE.

4400.2.1 Project Need and Purpose. HDR will identify the need for the project and the primary and secondary purposes of the Project. This will be done in a manner to best justify the location of the project while limiting the alternatives analysis to the minimum required by the USACE.

4400.2.2 Screening Criteria. Establish the screening criteria to evaluate alternatives for the project. The screening criteria will establish the practicability of the alternatives as described in Subpart B §230.10 (a) of the Guidelines. A practicable alternative is considered "available and capable of being done after taking into consideration cost, existing technology, and logistics while also fulfilling the basic purpose of the proposed activity".

4400.2.3 Range of Alternatives. In addition to the proposed alternative (as defined and established in Task Series 34, alternatives may include, but not limited to:

- low impact development strategies

- multiple small detention basins
- levees and channel improvements
- floodplain acquisition
- dry regional detention basin

4400.2.4 Alternative Screening. Apply screening criteria to each of the alternatives for determination of alternative practicability. Review waters of the impacts on all practicable alternatives to identify the preliminary least environmentally damaging practicable alternative (LEDPA).

4400.2.5 Supplemental Environmental Evaluation. Apply Section 230.11(a)-(h) to evaluate the potential short- or long-term effects of the practicable alternatives on the aquatic environment on the LEDPA. Indirect and cumulative impacts will be considered.

4400.2.6 Minimization Alternatives. Evaluate the LEDPA to determine if minimization of impacts to waters of the US is practicable.

4400.2.7 Compensatory Mitigation Plan. Develop a wetland and stream mitigation plan following the elements of 33 CFR Part 332.4(c)(2) through (c)(14) and the Mitigation Checklist contained within the Omaha District Corps of Engineers' Guidance for Compensatory Mitigation and Mitigation Banking. Apply NeSCAP to document stream functional credits achieved at the stream mitigation site to confirm that project relate impacts are off-set by stream mitigation.

4400.3 Cultural Resources (Section 106) Compliance. The Section 404 permit requires Section 106 compliance. This will be achieved through a record search of previously documented cultural resources identified within the Project area and a Phase I cultural resources survey (pedestrian survey) of the areas of ground disturbance as well as inundated areas.

Task 4500 Section 404 Application Preparation. HDR will prepare an individual permit application based on coordination and meetings with the USACE, and mitigation concept design. Conduct QC on permit application elements.

Task Deliverables:

- Project Background Document
- USACE Pre-application meeting agendas and minutes
- Critical Issues Analysis for Historical Properties (includes summary of SHPO record search)
- Phase I Cultural Resources Survey and Report
- Section 404 Permit Application

Key Understandings:

- Right of entry with landowners to conduct cultural resources and wetland surveys will be coordinated by P-MRNRD.
- Nebraska State Historical Society, as a subconsultant to HDR, will conduct the cultural resources pedestrian work.
- Project will have a dual purpose: flood control and recreation.
- Recreation alternatives and screening are the same for all three (3) dam sites.
- Screening of alternatives will result in a single practicable alternative.
- Existing HEC-RAS models will be used to analyze flood control alternatives. Existing models to be provided by P-MRNRD

- Cumulative effects of environmental and social resource concerns of the project will be assessed in relation to other past, present and reasonably foreseeable projects within the study area of the project.
- Scope and fee are based on assumption that project will not require an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).
- It is assumed that no threatened or endangered species surveys will be required.
- Scope assumes the development of an individual Section 404 permit application. If a Nationwide permit is obtainable, Tasks 44.1 would be eliminated.
- Any wetland or stream mitigation would be on-site.
- All wetland mitigation will occur in the normal pool. Stream mitigation will occur on-site in stream reaches above the normal pool. Addition of stream length or design components beyond a planting plan are not anticipated

TASK 5000 DESIGN ELEMENTS

Task Objective: To define major design elements and prepare set of drawings to approximately a 60% level.

Activities:

Task 5100 Data Collection and Evaluation.

5100.1 Data Collection. Collect necessary data. Data to be evaluated includes:

- Metropolitan Area Planning Agency (MAPA) Long Range Transportation Plan
- Public and private utility information

5100.2 Field Reconnaissance. This task includes one (1) site visit for field observation to support conceptual roadway development. Field reconnaissance activities include observation of the existing roadway network and drainage features in and immediately adjacent to the study area, utility verification, and documentation of the visit, including a photo log.

Task 5200 Stakeholder Coordination Meeting. Coordination a stakeholder coordination meeting with developers and other interested stakeholders early in the preliminary design to discuss project elements and solicit input. Two (2) meetings are assumed.

Task 5300 Roadway Evaluation. Because of the project, the top of dam extends beyond within several subdivision roads. Schram Road does not currently extend between 204th Street and approximately 210th Street.

5300.1 Hydrualic Modeling on Existing Structures. Evaluate the hydraulic impacts to existing drainage structures at Schram Road and Frances Street.

5300.2 Roadway Modificaitons. Evaluate the hydraulic impacts of a proposed Schram Road alingment through the dam site.

5300.3 Roadway Concept Memorandum. A concept study memorandum will be developed to document the impact to the existign roadway system and a future Schram Road alingment. Conduct QC on civil and hydraulic analyses.

Task 5400 Public and Private Utility Coordination.

5400.1 Utility Confirmation. A letter will be prepared and submitted requesting public and private utility information from each respective utility within the dam site and reservoir areas.

5400.2 Utility Infrastructure Coverages. Create GIS coverages for utility information.

5400.3 Sanitary Sewer . Evaluate sanitary sewer extension alignments around the dam embankment/spillway.

5400.3.1 Alternative Evaluation. Review the City of Omaha Interceptor Sewer Element of the Master Plan and evaluation a maximum of 2 alternatives to accommodate future growth. Identify the type, size, and location and conceptual level cost opinion. Document findings in a technical memorandum.

5400.3.2 Sanitary Sewer Preliminary Plans. Based on the alternative evaluation of the sanitary sewer, a preferred alternative will be designed showing a site plan and preliminary sanitary sewer profiles of the penetration through the dam.

5400.4 Sanitary Sewer Lift Station Evaluation.

5400.4.1 Alternative Evaluation. Review potential concepts for floodproofing of the existing sanitary lift station. In addition to floodproofing, relocation alternatives will be evaluated at a conceptual level. Coordinate with the city of Gretna to determine service area for the lift station and future flow conditions.

5400.4.2 Lift Station Concept Plan. It is assumed that floodproofing of the lift station is a viable alternative. A site plan will be developed illustrating this alternative. It is assumed that relocation of the lift station is not a viable, nor preferred alternative for the city or NRD.

5400.5 Utility Memorandum. A memorandum will be developed to document the utility coordinaton and public utilty mitigation. Conduct QC on utility evaluation and design.

Task 5500 Minimum Recreation Elements. Design minimum recreation elements including trail, boat ramp and access area(s).

5500.1 Trail. Develop preliminary plan and profile drawings for a trail including sizing drainage culverts.

5500.2 Access Areas and Boat Ramp. Layout access road and boat ramp to provide public access to the lake. One (1) access area is assumed. Locations for picnic shelter, vault toilet and lighting will be defined.

5500.3 Recreation Memorandum. A memorandum will be developed to document the recreation elements. Conduct QC or recreation plan.

Task 5600 Fishery Enhancement Opportunity. Develop a conceptual layout for in-lake fishery enhancements including features as breakwaters, shoals, and gravel beds.

5600.1 In-Lake Fisheries/Recreation Coordination. Coordinate with Nebraska Game and Parks on in-lake fisheries and recreation design elements to layout in-lake fisheries and recreation features. One meeting is assumes with follow-up email communications.

5600.2 In-Lake Fisheries Conceptual Design. Develop concept level layout of the in-lake fisheries features.

5600.3 Fishery Enhancement Memorandum. A memorandum will be developed to document the fishery enhancement elements.

Task Deliverables:

- Field site visit
- Meeting notes

- Transportation, Utility, Recreation and Fishery Enhancement Memos

Key Understandings:

- Roadway coordination with the Gretna and Sarpy County will be conducted during the joint monthly progress meetings.
- No meeting is planned with utility companies. Individual coordination will be either via telephone or emails.
- A vertical and horizontal alignment for Schram Road will be developed based on existing study alignments and in discussions with the City and County.
- No detailed design for the Schram Road connection will be done. Roadway plan and profile will be modeled for grading extents to define ROW and potential flood pool effects.
- Drawings for Schram Road grading will include the portion within the top of dam elevation limits.
- City of Gretna will provide existing studies involving Schram Road and area sanitary sewer plans.
- Relocation of the lift station is not anticipated, nor is it a preferred alternative. Floodproofing is the preferred alternative. Should floodproofing not be a viable alternative, recommendations for relocation of the lift station and a plan view drawing of relocation will be provided.

TASK 6000 SURVEY AND RIGHT-OF-WAY LEGAL DESCRIPTIONS

Task Objective: To determine right-of-way (ROW) requirements based on a preliminary design and determine legal descriptions in support of public hearings and appraisal/title searches to be conducted by P-MRNRD.

Activities:

Task 6100 Data Collection and Evaluation.

6100.1 Data Collection. Collect necessary data. Data to be evaluated includes:

- Existing GIS mapping including aerials, topographic data, and parcels
- Private and public utilities (existing and proposed data available at time of evaluation) potentially impacted by the Project including: communication lines, sanitary sewer lines, power lines, gas lines, and fiber-optic lines.

6100.2 Topographic Survey. Conduct a topographic survey of the proposed dam site basin embankment/spillway footprint based on the conceptual design reports and create a topographic map. Survey roadway(s) profile impacted by the reservoir pool.

6100.3 Topographic Base Map. Topographic survey will be supplemented with LiDAR topographic data.

Task 6200 Acquisition and ROW Plan Development. This task includes defining the preliminary acquisition/boundary plans preparing preliminary ROW plans for approximately 5 parcels for acquisition and 4 parcels for easements, and performing limited baseline survey in support of the final acquisition/boundary survey.

6200.1 Real Property Work Maps. Prepare property work maps based on the proposed outline of Project area necessary for the construction of the dam, reservoir and public areas. Coordinate with P-MRNRD and determine boundary extents for acquisition.

6200.2 Preliminary Acquisition/Boundary Plans. Conduct field survey to locate section corners and establish initial control. Develop preliminary ROW

map plans based on GIS information and supplement with dimensional control provided by recorded subdivision plats and other recorded surveys and documentation at the Sarpy County Surveyor's office, Sarpy County Register of Deeds Office, and topographic survey. Items depicted on these plans include: limits of maximum pool based on the top of proposed dam elevation and other construction outside this limit to aid P-MRNRD personnel with appraisals along with acquisition and easement negotiations. Determine acreages for acquisition and provide legal descriptions for acquisition.

Task Deliverables:

- Real Property Work Maps based on proposed limits of construction
- Preliminary Acquisition/Boundary Plans for initial public ROW hearings and subsequent appraisal and fee title searches activities.

Key Understandings:

- Right of way coordination with the City of Gretna and Sarpy County will be conducted during the joint monthly progress meetings.
- P-MRNRD will provide title documentation for the properties affected by this project
- P-MRNRD is responsible for securing appraisals along with acquisition and easement negotiations.
- No permanent monuments will be set for the parcel acquisition.
- It is assumed that the number of revisions to the preliminary boundary is limited to 1 per parcel.
- No Phase I Environmental Site Assessment to be conducted.

TASK 7000 DELIVERABLES

Task Objective: To prepare documentation resulting from the preliminary design.

Activities:

Task 7100 Design Analysis Report. Prepare a preliminary and final draft design analysis report documenting the technical analyses. This includes the dam design alternative analysis and design elements.

7100.1 Draft Design Analysis Report. Document technical analysis in a technical report. Conduct QC on design analysis report.

7100.2 Final Design Analysis Report. Revise draft technical report. Incorporate review comments.

Task 7200 Drawing Production - Develop preliminary design of the dam site elements.

7200.1 Draft 60% Drawings. Prepare 60% drawings for review Conduct QC on drawings. A preliminary drawing list of sheets includes:

Sheet	Section Description
Section 01 – General	
G-1	Cover Sheet, Location Map, and Index of Drawings
G-2	Reservoir Area Plan, Benchmarks and Capacity Table
G-3	Hydrologic and Hydraulic Data
G-4	Project Boundary and Easement Map
Section 02 – Main Dam	

Sheet	Section Description
D-1	Site Plan, Geometrics, and Sequencing Plan
D-2	Grading and Drainage Plan
D-3	Embankment Typical Section and Profile Along Dam Centerline
D-4	Details
D-5 to D-6	Principal Spillway Riser
D-7 to D-8	Stilling Basin Outlet Works
D-9	Site Boring Plan
D-10	Geologic Profiles Along Dam and Spillway
Section 03 – Water Quality Enhancements	
W-1 to W-3	Site Plan and Typical Sections
Section 04 – Schram Road	
R-1	Roadway Site Plan and Geometrics
R-2	Roadway Embankment Profile
Section 05 – Recreation and Fishery Enhancements	
T-1	Overall Recreation and Fishery Enhancement Plan
T-2 to T-9	Trail Plan and Profile (9,500' at 50 scale – 8 sheets)
T-10	Access Area Site, Grading and Drainage Plan
T-11 to T-14	Access Road Plan and Profile (3,000' at 50 scale)
Section 06 – Mitigation, Seeding, and Fencing	
C-1	Overall Mitigation Site Plan
C-2 to C-3	Seeding and Fencing Plan
Section 07 – Sanitary Sewer	
SS-1 to SS-3	Sanitary Sewer Plan and Profile
SS-4	Sanitary Sewer Details
SS-5 to SS-6	Lift Station Floodproofing

7200.2 Final 60% Drawings. Revise draft drawings and incorporate review comments.

Task 7300 Opinion of Probable Construction Costs. Develop opinion of probable construction costs for the construction of the dam site. Included in the cost estimate will be dam construction costs and infrastructure relocation costs.

7300.1 Draft Opinion of Probable Construction Cost. Prepare draft OPCC. Conduct QC on OPCC.

7300.2 Final Opinion of Probable Construction Cost. Prepare final OPCC and incorporate review comments.

Task Deliverables:

- Draft and Final Design Analysis Report
- Draft and Final Conceptual Design Drawings (approximately 60% level)
- Draft and Final Opinion of Probable Construction Costs (approximately 60% level)

Key Understandings:

- Drawings will be developed at 22" x 34" format and provided in 11" x 17" format for review and submittal.
- Cross sections for trails and roadways will not be part of this preliminary design

- Lift station design is limited to floodproofing alternatives. If floodproofing is not viable or not preferred, basic recommendations for a preferred alternative will be shown in plan view only, with no detailed structural, civil, or architectural design.
- If a sanitary sewer siphon is found to be necessary, no structural design will be performed.
- One (1) electronic copy and one (1) hard copy of Draft and Final Design Analysis will be provided to P-MRNRD.
- P-MRNRD will be responsible for report reproduction.
- Technical specifications will not be prepared.
- Mitigation areas for trees and forested wetlands, if required, will be identified only, no tree-planting schedule will be developed.
- No opinion of probable construction cost will be prepared for the 30% progress design meeting.

Geotechnical Cost Estimate

Exhibit A

Dam Site # 12 **4/28/2017**
N. 216th Street & Fort Street, Douglas County, NE

Description			Estimated Quantity	Unit Rate	Estimated Cost
Drilling					
Mobilization (Zone 1)			1.0	500.00	500.00
Mobilization Surcharge for ATV Rig			1.0	460.00	460.00
Exploratory Drilling (hollow stem augers) (/ft.)			1,010.0	15.75	15,907.50
Cone Penetrometer Testing (/ft.)			130.0	11.25	1,462.50
Staff Engineer (/hr.)	utilities, field coord., H&S Plan		30.0	92.00	2,760.00
Grouting Boreholes (/ft.)			1,010.0	7.00	7,070.00
Reclaim (seed and straw)			1.0	1,000.00	500.00
Crop Damage			1.0	2,500.00	2,500.00
Trip Charge - Zone 1 (/trip)	support truck		13.0	58.00	754.00
ATV Use (/day)			13.0	164.00	2,132.00
Laboratory Analysis					
Atterberg Limits (/set)			25.0	82.00	2,050.00
Hydrometer Analysis (ea.)	with sieve		25.0	112.00	2,800.00
Unit Weight Test (ea.)			70.0	20.00	1,400.00
Unconfined Compression Test (ea.)			8.0	31.00	248.00
UU Triaxial Compression Test (ea.)			10.0	120.00	1,200.00
CU Triaxial Compression Test (ea.)			2.0	1,725.00	3,450.00
CU Triaxial Compression Test (ea.)		remolded	3.0	1,875.00	5,625.00
One-Dimensional Consolidation Test (ea.)			10.0	310.00	3,100.00
Standard Proctor (ea.)			2.0	162.00	324.00
Crumb Dispersion Test (ea.)			3.0	36.00	108.00
Shipping (lump sum)	CU triax samples		1.0	500.00	500.00
Hold samples in Shelby tubes (ea.100/month)			8.0	350.00	2,800.00
Contingency Program					
Exploratory Drilling (hollow stem augers) (/ft.)			80.0	15.75	1,260.00
Atterberg Limits (/set)			2.0	82.00	164.00
Hydrometer Analysis (ea.)	with sieve		2.0	112.00	224.00
Clearing and grubbing			1.0	3,000.00	3,000.00
Project Management					
Data Report Preparation (/hr)			30.0	114.00	3,420.00
Senior Engineer (/hr.)			10.0	174.00	1,740.00
CPT Analysis (per sounding)			2.0	123.00	246.00
				Total	67,705.00

T h i e l e G e o t e c h I n c

RE: Cultural Resources Study for Dam Site 12

Below is a not to exceed cost estimate. This assumes HDR will acquire permission for us to access the property. While we might be able to complete the work this spring and summer, with other commitments we propose setting a report submission due date for January 1, 2018.

We propose to complete a Critical Analysis file search and a comprehensive field investigation for the entire project area to identify all cultural resources and evaluate each for *National Register of Historic Places* eligibility. The field effort and background research will be detailed in a brief report with all appropriate forms and maps attached. The report will be suitable for submission to the Nebraska State Historic Preservation Office (SHPO) for review under Section 106 of the National Historic Preservation Act. Please remember that the SHPO has up to 30 days to review and respond to the report after submission.

Rob Bozell
State Archeologist
Nebraska State Historical Society

Dam Site 12	
Project Archeologist ($ 44/hour)	4224
4 days of fieldwork and 8 days of report preparation	
2 Archeological Technicians ($18/hour each)	1152
4 days of fieldwork	
Architectural Historian ($23/hour)	552
1 day of fieldwork and 2 days of report preparation	
Mileage (Lincoln-Omaha-Lincoln x 4)	260
(480 mi @0.54 /mi)	
Subtotal	6188
ADMINISTRATIVE OVERHEAD (20%)	1237
TOTAL	**7425**

Geotechnical Cost Estimate

Exhibit A

Dam Site # 19 **4/28/2017**
S. 192nd Street & Giles Road, Sarpy County, NE

Description			Estimated Quantity	Unit Rate	Estimated Cost
Drilling					
Mobilization (Zone 1)			1.0	500.00	500.00
Exploratory Drilling (hollow stem augers) (/ft.)			1,285.0	15.75	20,238.75
Cone Penetrometer Testing (/ft.)			130.0	11.25	1,462.50
Staff Engineer (/hr.)	utilities, field coord., H&S Plan		40.0	92.00	3,680.00
Grouting Boreholes (/ft.)			1,285.0	7.00	8,995.00
Reclaim (seed and straw)			1.0	1,000.00	500.00
Crop Damage			1.0	3,000.00	3,000.00
Trip Charge - Zone 1 (/trip)	support truck		15.0	58.00	870.00
Laboratory Analysis					
Atterberg Limits (/set)			30.0	82.00	2,460.00
Hydrometer Analysis (ea.)	with sieve		30.0	112.00	3,360.00
Unit Weight Test (ea.)			80.0	20.00	1,600.00
Unconfined Compression Test (ea.)			8.0	31.00	248.00
UU Triaxial Compression Test (ea.)			12.0	120.00	1,440.00
CU Triaxial Compression Test (ea.)			2.0	1,725.00	3,450.00
CU Triaxial Compression Test (ea.)		remolded	3.0	1,875.00	5,625.00
One-Dimensional Consolidation Test (ea.)			12.0	310.00	3,720.00
Standard Proctor (ea.)			2.0	162.00	324.00
Crumb Dispersion Test (ea.)			3.0	36.00	108.00
Shipping (lump sum)	CU triax samples		1.0	500.00	500.00
Hold samples in Shelby tubes (ea.100/month)			9.0	350.00	3,150.00
Contingency Program					
Exploratory Drilling (hollow stem augers) (/ft.)			80.0	15.75	1,260.00
Atterberg Limits (/set)			2.0	82.00	164.00
Hydrometer Analysis (ea.)	with sieve		2.0	112.00	224.00
Project Management					
Data Report Preparation (/hr)			30.0	114.00	3,420.00
Senior Engineer (/hr.)			10.0	174.00	1,740.00
CPT Analysis (per sounding)			2.0	123.00	246.00
				Total	72,285.25

T h i e l e G e o t e c h I n c

RE: Cultural Resources Study for Dam Site 19

Below is a not to exceed cost estimate. This assumes HDR will acquire permission for us to access the property. While we might be able to complete the work this spring and summer, with other commitments we propose setting a report submission due date for January 1, 2018.

We propose to complete a Critical Analysis file search and a comprehensive field investigation for the entire project area to identify all cultural resources and evaluate each for *National Register of Historic Places* eligibility. The field effort and background research will be detailed in a brief report with all appropriate forms and maps attached. The report will be suitable for submission to the Nebraska State Historic Preservation Office (SHPO) for review under Section 106 of the National Historic Preservation Act. Please remember that the SHPO has up to 30 days to review and respond to the report after submission.

Rob Bozell
State Archeologist
Nebraska State Historical Society

Dam Site 19	
Project Archeologist ($ 44/hour)	4224
4 days of fieldwork and 8 days of report preparation	
2 Archeological Technicians ($18/hour each)	1152
4 days of fieldwork	
Architectural Historian ($23/hour)	552
1 day of fieldwork and 2 days of report preparation	
Mileage (Lincoln-Omaha-Lincoln x 4)	260
(480 mi @0.54 /mi)	
Subtotal	6188
ADMINISTRATIVE OVERHEAD (20%)	1237
TOTAL	**7425**

Geotechnical Cost Estimate

Exhibit A

West Papio Number 4
S. 204 Street & Schram Road, Sarpy County, NE

4/28/2017

Description			Estimated Quantity	Unit Rate	Estimated Cost
Drilling					
Mobilization (Zone 1)			1.0	500.00	500.00
Mobilization Surcharge for ATV Rig			1.0	460.00	460.00
Exploratory Drilling (hollow stem augers) (/ft.)			875.0	15.75	13,781.25
Cone Penetrometer Testing (/ft.)			130.0	11.25	1,462.50
Staff Engineer (/hr.)	utilities, field coord., H&S Plan		30.0	92.00	2,760.00
Reclaim (seed and straw)			1.0	1,000.00	500.00
Grouting Boreholes (/ft.)			875.0	7.00	6,125.00
Crop Damage			1.0	2,000.00	2,000.00
Trip Charge - Zone 1 (/trip)	support truck		10.0	58.00	580.00
ATV Use (/day)			10.0	164.00	1,640.00
Laboratory Analysis					
Atterberg Limits (/set)			20.0	82.00	1,640.00
Hydrometer Analysis (ea.)	with sieve		20.0	112.00	2,240.00
Unit Weight Test (ea.)			60.0	20.00	1,200.00
Unconfined Compression Test (ea.)			8.0	31.00	248.00
UU Triaxial Compression Test (ea.)			8.0	120.00	960.00
CU Triaxial Compression Test (ea.)			2.0	1,725.00	3,450.00
CU Triaxial Compression Test (ea.)		remolded	2.0	1,875.00	3,750.00
One-Dimensional Consolidation Test (ea.)			8.0	310.00	2,480.00
Standard Proctor (ea.)			2.0	162.00	324.00
Crumb Dispersion Test (ea.)			3.0	36.00	108.00
Shipping (lump sum)	CU triax samples		1.0	500.00	500.00
Hold samples in Shelby tubes (ea.100/month)			5.0	350.00	1,750.00
Contingency Program					
Exploratory Drilling (hollow stem augers) (/ft.)			80.0	15.75	1,260.00
Atterberg Limits (/set)			2.0	82.00	164.00
Hydrometer Analysis (ea.)	with sieve		2.0	112.00	224.00
Project Management					
Data Report Preparation (/hr)			30.0	114.00	3,420.00
Senior Engineer (/hr.)			10.0	174.00	1,740.00
CPT Analysis (per sounding)			2.0	123.00	246.00
				Total	55,512.75

T h i e l e G e o t e c h I n c

RE: Cultural Resources Study for WP-4

Below is a not to exceed cost estimate. This assumes HDR will acquire permission for us to access the property. While we might be able to complete the work this spring and summer, with other commitments we propose setting a report submission due date for January 1, 2018.

We propose to complete a Critical Analysis file search and a comprehensive field investigation for the entire project area to identify all cultural resources and evaluate each for *National Register of Historic Places* eligibility. The field effort and background research will be detailed in a brief report with all appropriate forms and maps attached. The report will be suitable for submission to the Nebraska State Historic Preservation Office (SHPO) for review under Section 106 of the National Historic Preservation Act. Please remember that the SHPO has up to 30 days to review and respond to the report after submission.

Rob Bozell
State Archeologist
Nebraska State Historical Society

WP-4	
Project Archeologist ($ 44/hour) 4 days of fieldwork and 4 days of report preparation	2816
2 Archeological Technicians ($18/hour each) 4 days of fieldwork	1152
Architectural Historian ($23/hour) 1 day of fieldwork and 2 days of report preparation	552
Mileage (Lincoln-Omaha-Lincoln x 4) (480 mi @0.54 /mi)	260
Subtotal	4780
ADMINISTRATIVE OVERHEAD (20%)	956
TOTAL	**5736**

A1.02 *Final Design Phase - RESERVED*

A1.03 *Bidding or Negotiating Phase - RESERVED*

A1.04 *Construction Phase - RESERVED*

PART 2 – ADDITIONAL SERVICES

A2.01 *Additional Services Requiring Owner's Written Authorization*

A. If authorized in writing by Owner, Engineer shall provide Additional Services of the types listed below. These services are not included as part of Basic Services and will be paid for by Owner as indicated in Exhibit C.

1. Preparation of applications and supporting documents (in addition to those furnished under Basic Services) for private or governmental grants, loans, or advances in connection with the Project; preparation or review of environmental assessments and impact statements; review and evaluation of the effects on the design requirements for the Project of any such statements and documents prepared by others; and assistance in obtaining approvals of authorities having jurisdiction over the anticipated environmental impact of the Project.

2. Services to make measured drawings of existing conditions or facilities, to conduct tests or investigations of existing conditions or facilities, or to verify the accuracy of drawings or other information furnished by Owner or others.

3. Services resulting from significant changes in the scope, extent, or character of the portions of the Project designed or specified by Engineer, or the Project's design requirements, including, but not limited to, changes in size, complexity, Owner's schedule, character of construction, or method of financing; and revising previously accepted studies, reports, Drawings, Specifications, or Construction Contract Documents when such revisions are required by changes in Laws and Regulations enacted subsequent to the Effective Date or are due to any other causes beyond Engineer's control.

4. Services resulting from Owner's request to evaluate additional Study and Report Phase alternative solutions beyond those agreed to in Paragraph A1.01.A.1 and 2.

5. Services required as a result of Owner's providing incomplete or incorrect Project information to Engineer.

6. Providing renderings or models for Owner's use, including services in support of building information modeling or civil integrated management.

7. Undertaking investigations and studies including, but not limited to:

    a. detailed consideration of operations, maintenance, and overhead expenses;

b. the preparation of feasibility studies (such as those that include projections of output capacity, utility project rates, project market demand, or project revenues) and cash flow analyses, provided that such services are based on the engineering and technical aspects of the Project, and do not include rendering advice regarding municipal financial products or the issuance of municipal securities;

c. preparation of appraisals;

d. evaluating processes available for licensing, and assisting Owner in obtaining process licensing;

e. detailed quantity surveys of materials, equipment, and labor; and

f. audits or inventories required in connection with construction performed or furnished by Owner.

8. Furnishing services of Consultants for other than Basic Services.

9. Providing data or services of the types described in Exhibit B, when Owner retains Engineer to provide such data or services instead of Owner furnishing the same.

10. Providing the following services:

a. Services attributable to more prime construction contracts than specified in Paragraph A1.03.D.

b. Services to arrange for performance of construction services for Owner by contractors other than the principal prime Contractor, and administering Owner's contract for such services.

11. Services during out-of-town travel required of Engineer, other than for visits to the Site or Owner's office as required in Basic Services (Part 1 of Exhibit A).

12. Preparing for, coordinating with, participating in and responding to structured independent review processes, including, but not limited to, construction management, cost estimating, project peer review, value engineering, and constructibility review requested by Owner in writing; and performing or furnishing services required to revise studies, reports, Drawings, Specifications, or other documents as a result of such review processes.

13. Preparing additional bidding-related documents (or requests for proposals or other construction procurement documents) or Construction Contract Documents for alternate bids or cost estimates requested by Owner for the Work or a portion thereof.

14. Assistance in connection with bid protests, rebidding, or renegotiating contracts for construction, materials, equipment, or services, except when such assistance is required to complete services required by Paragraph 5.02.A and Exhibit F.

15. *Intentionally deleted*.

16. Providing Construction Phase services beyond the original date for completion and readiness for final payment of Contractor, but only if and to the extent such services increase the total quantity of services to be performed in the Construction Phase, rather than merely shifting performance of such services to a later date.

17. Preparing Record Drawings, and furnishing such Record Drawings to Owner.

18. Supplementing Record Drawings with information regarding the completed Project, Site, and immediately adjacent areas obtained from field observations, Owner, utility companies, and other reliable sources.

19. Conducting surveys, investigations, and field measurements to verify the accuracy of Record Drawing content obtained from Contractor, Owner, utility companies, and other sources; revise and supplement Record Drawings as needed.

20. Preparation of operation, maintenance, and staffing manuals.

21. *Intentionally Deleted*.

22. *Intentionally Deleted*.

23. *Intentionally Deleted*.

24. Preparing to serve or serving as a consultant or witness for Owner in any litigation, arbitration, lien or bond claim, or other legal or administrative proceeding or dispute related to the Project.

25. Overtime work requiring higher than regular rates.

26. Providing construction surveys and staking to enable Contractor to perform its work other than as required under Paragraph A1.05.A.8; any type of property surveys or related engineering services needed for the transfer of interests in real property; and providing other special field surveys.

27. Providing more extensive services required to enable Engineer to issue notices or certifications requested by Owner.

28. *Intentionally Deleted*.

29. Other additional services performed or furnished by Engineer not otherwise provided for in this Agreement.

A2.02 *Additional Services Not Requiring Owner's Written Authorization*

A. Engineer shall advise Owner in writing that Engineer is commencing to perform or furnish the Additional Services of the types listed below. For such Additional Services, Engineer need not request or obtain specific advance written authorization from Owner. Engineer shall cease performing or furnishing such Additional Services upon receipt of written notice to cease from Owner.

1. Services in connection with Work Change Directives and Change Orders to reflect changes requested by Owner.

2. Services in making revisions to Drawings and Specifications occasioned by the acceptance of substitute materials or equipment other than “or equal” items; services after the award of the Construction Contract in evaluating and determining the acceptability of a proposed "or equal" or substitution which is found to be inappropriate for the Project; evaluation and determination of an excessive number of proposed "or equals" or substitutions, whether proposed before or after award of the Construction Contract.

3. Services resulting from significant delays, changes, or price increases occurring as a direct or indirect result of materials, equipment, or energy shortages.

4. Additional or extended services during construction made necessary by (a) the presence at the Site of any Constituent of Concern or items of historical or cultural significance, (b) emergencies or acts of God endangering the Work, (c) damage to the Work by fire or other causes during construction, (d) a significant amount of defective, neglected, or delayed work by Contractor, (e) acceleration of the progress schedule involving services beyond normal working hours, or (f) default by Contractor.

5. Services (other than Basic Services during the Post-Construction Phase) in connection with any partial utilization of the Work by Owner prior to Substantial Completion.

6. Evaluating unreasonable or frivolous requests for interpretation or information (RFIs), Change Proposals, or other demands from Contractor or others in connection with the Work, or an excessive number of RFIs, Change Proposals, or demands.

7. Reviewing a Shop Drawing or other Contractor submittal more than three times, as a result of repeated inadequate submissions by Contractor, except to the extent such inadequate submissions are due to Engineer, its Consultants, agents and/or other representatives.

8. *Intentionally Deleted*.

This is **EXHIBIT B**, consisting of [ ] pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Owner's Responsibilities

Article 2 of the Agreement is supplemented to include the following agreement of the parties.

B2.01 In addition to other responsibilities of Owner as set forth in this Agreement, Owner shall at its expense:

A. Provide Engineer with all criteria and full information as to Owner's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility, and expandability, and any budgetary limitations.

B. Give instructions to Engineer regarding Owner's procurement of construction services (including instructions regarding advertisements for bids, instructions to bidders, and requests for proposals, as applicable), Owner's construction contract practices and requirements, insurance and bonding requirements, electronic transmittals during construction, and other information necessary for the finalization of Owner's bidding-related documents (or requests for proposals or other construction procurement documents), and Construction Contract Documents. Furnish copies (or give specific directions requesting Engineer to use copies already in Engineer's possession) of all design and construction standards, Owner's standard forms, general conditions (if other than the Standard General Conditions), supplementary conditions, text, and related documents and content for Engineer to include in the draft bidding-related documents (or requests for proposals or other construction procurement documents), and draft Construction Contract Documents, when applicable. Except to the extent Engineer makes any unauthorized Owner revisions which are not expressly acknowledged and approved by Owner in writing, Owner shall have responsibility for the final content of (1) such bidding-related documents (or requests for proposals or other construction procurement documents), and (2) those portions of any Construction Contract other than the design (as set forth in the Drawings, Specifications, or otherwise), and other engineering or technical matters; and Owner shall seek the advice of Owner's legal counsel, risk managers, and insurance advisors with respect to the drafting and content of such documents.

C. Furnish to Engineer any other available information pertinent to the Project including reports and data relative to previous designs, construction, or investigation at or adjacent to the Site.

D. Following Engineer's assessment of initially-available Project information and data and upon Engineer's request, furnish, or otherwise make available (if necessary through title searches, or retention of specialists or consultants) such additional Project-related information and data as is reasonably required to enable Engineer to complete its Basic and Additional Services. Such additional information or data would generally include the following:

1. *Intentionally Deleted*.

2. *Intentionally Deleted*.

3. *Intentionally Deleted*.

4. *Intentionally Deleted*.

5. Explorations and tests of subsurface conditions at or adjacent to the Site; drawings of physical conditions relating to existing surface or subsurface structures at the Site; hydrographic surveys; with appropriate professional interpretation of such information or data.

6. Environmental assessments, audits, investigations, and impact statements, and other relevant environmental, historical, or cultural studies relevant to the Project, the Site, and adjacent areas.

7. Data or consultations as required for the Project but not otherwise identified in this Agreement.

E. Upon Engineer's request, arrange for appropriate access to and make all provisions for Engineer to enter upon public and private property as required for Engineer to perform services under the Agreement.

F. Recognizing and acknowledging that Engineer's services and expertise do not include the following services, provide, as required for the Project:

1. Accounting, bond and financial advisory (including, if applicable, "municipal advisor" services as described in Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (2010) and the municipal advisor registration rules issued by the Securities and Exchange Commission), independent cost estimating, and insurance counseling services.

2. Legal services with regard to issues pertaining to the Project as Owner requires, and, to the extent deemed necessary by Owner in Owner's sole discretion, that Contractor raises or Engineer reasonably requests.

3. Such auditing services as Owner requires to ascertain how or for what purpose Contractor has used the money paid.

G. Provide the services of an independent testing laboratory to perform all inspections, tests, and approvals of samples, materials, and equipment required by the Construction Contract Documents (other than those required to be furnished or arranged by Contractor), or to evaluate the performance of materials, equipment, and facilities of Owner, prior to their incorporation into the Work with appropriate professional interpretation thereof. Provide Engineer with the findings and reports generated by testing laboratories, including findings and reports obtained from or through Contractor.

H. Provide reviews, approvals, and permits from all governmental authorities having jurisdiction to approve all phases of the Project designed or specified by Engineer and such reviews, approvals, and consents from others as may be necessary for completion of each phase of the Project.

I. Advise Engineer of the identity and scope of services of any independent consultants employed by Owner to perform or furnish services in regard to the Project, including, but not limited to, cost estimating, project peer review, value engineering, and constructibility review.

J. If Owner designates a construction manager or an individual or entity other than, or in addition to, Engineer to represent Owner at the Site, define and set forth as an attachment to this Exhibit B the duties, responsibilities, and limitations of authority of such other party and the relation thereof to the duties, responsibilities, and authority of Engineer.

K. If more than one prime contract is to be awarded for the Work designed or specified by Engineer, then designate a person or entity to have authority and responsibility for coordinating the activities among the various prime Contractors, and define and set forth the duties, responsibilities, and limitations of authority of such individual or entity and the relation thereof to the duties, responsibilities, and authority of Engineer as an attachment to this Exhibit B that is to be mutually agreed upon and made a part of this Agreement before such services begin.

L. Following Engineer's reasonable request, inform Engineer in writing of any specific requirements of safety or security programs that are applicable to Engineer, as a visitor to the Site.

M. Examine all alternative solutions, studies, reports, sketches, Drawings, Specifications, proposals, and other documents presented by Engineer (including obtaining advice of an attorney, risk manager, insurance counselor, financial/municipal advisor, and other advisors or consultants as Owner deems appropriate in its sole discretion with respect to such examination) and render in writing decisions pertaining thereto as soon as reasonably practicable.

N. *Intentionally Deleted*.

O. *Intentionally Deleted*.

P. Place and pay for advertisement for Bids in appropriate publications.

Q. Furnish to Engineer data as to Owner's anticipated costs for services to be provided by others (including, but not limited to, accounting, bond and financial, independent cost estimating, insurance counseling, and legal advice) for Owner so that Engineer may assist Owner in collating the various cost categories which comprise Total Project Costs.

R. Attend and participate in, if deemed appropriate by Owner in Owner's sole discretion, the pre-bid conference, bid opening, pre-construction conferences, construction progress and

other job related meetings, and Site visits to inspect the Work and Project to determine Substantial Completion and readiness of the completed Work for final payment.

S. Authorize Engineer to provide Additional Services as set forth in Part 2 of Exhibit A of the Agreement, as required.

This is **EXHIBIT C**, consisting of [ ] pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Payments to Engineer for Services and Reimbursable Expenses
COMPENSATION PACKET BC-4: Basic Services – Direct Labor Costs Times a Factor

For the avoidance of doubt, this Exhibit C in its entirety is expressly subject to the last sentence of Paragraph 4.01.A in the Agreement. Article 2 of the Agreement is supplemented to include the following agreement of the parties:

ARTICLE 2 – OWNER'S RESPONSIBILITIES

C2.01 *Compensation for Basic Services (other than Resident Project Representative) – Direct Labor Costs Times a Factor Method of Payment*

A. Owner shall pay Engineer for Basic Services set forth in Exhibit A, except for services of Engineer's Resident Project Representative, if any, as follows:

1. An amount equal to Engineer's Direct Labor Costs times a factor of 3.20 for the services of Engineer's personnel engaged on the Project, plus Reimbursable Expenses, estimated to be $1,329,601, and Engineer's Consultant's charges, if any, estimated to be $714,222.

2. Engineer's Reimbursable Expenses Schedule is attached to this Exhibit C as Appendix 1.

3. The total compensation for services under Paragraph C2.01 is estimated to be 2,043,823.00. Engineer's Fee Estimate is attached to this Exhibit C as Appendix 2.

4. Following notice to Owner, Engineer may alter the distribution of compensation between individual phases of the work noted herein to be consistent with services actually rendered. For the avoidance of doubt, in no event shall such amount, in combination with any other compensation, reimbursement and/or any other amount to be paid by Owner with respect to and/or pursuant to this Agreement exceed the Maximum Amount unless Owner agrees otherwise in a signed written agreement entered into pursuant to this Agreement.

5. The total estimated compensation for Engineer's services included in the breakdown by phases as noted in Paragraph C2.01.A.3, incorporates all labor, overhead, profit, Reimbursable Expenses, and Engineer's Consultant's charges.

6. The portion of the amounts billed for Engineer's services which are related to services rendered on a Direct Labor Costs times a Factor basis will be billed based on the applicable Direct Labor Costs for the cumulative hours charged to the Project by Engineer's principals and employees multiplied by the above-designated factor, plus

Reimbursable Expenses and Engineer's Consultant's charges reasonably and actually incurred during the billing period.

7. Direct Labor Costs means salaries and wages paid to Engineer's employees but does not include payroll-related costs or benefits.

8. The parties may, by mutual written agreement, adjust annually the Direct Labor Costs and the factor applied to Direct Labor Costs to reflect equitable changes to the compensation payable to Engineer.

C2.02 *Compensation for Reimbursable Expenses*

A. Owner shall pay Engineer for all Reimbursable Expenses at the rates set forth in Appendix 1 to this Exhibit C to the extent they are actually and reasonably incurred in furtherance of the Project.

B. Reimbursable Expenses include the expenses identified in Appendix 1 and the following: transportation (including mileage), lodging, and subsistence incidental thereto to the extent necessary for completion of the Project and specifically approved in advance by Owner in writing; providing and maintaining field office facilities including furnishings and utilities; reproduction of reports, Drawings, Specifications, bidding-related or other procurement documents, Construction Contract Documents, and similar Project-related items; and Consultants' charges. In addition, if authorized in advance by Owner, Reimbursable Expenses will also include expenses incurred for the use of highly specialized equipment.

C. The amounts payable to Engineer for Reimbursable Expenses will be the Project-related internal expenses actually and reasonably incurred or allocated by Engineer, plus all invoiced external Reimbursable Expenses allocable to the Project, the latter multiplied by a factor of 1.0. For the avoidance of doubt, in no event will the Reimbursable Expenses, in combination with any other reimbursements, compensation and/or any other amounts to be paid by Owner with respect to and/or pursuant to this Agreement exceed the Maximum Amount unless otherwise agreed by Owner in a signed written agreement entered into pursuant to this Agreement.

C2.03 *Other Provisions Concerning Payment*

A. Whenever Engineer is entitled to compensation for the charges of Engineer's Consultants, those charges shall be the amounts billed by Engineer's Consultants to Engineer times a factor of 1.0. For the avoidance of doubt, in no event will such compensation, together with any other compensation, reimbursements and/or any other amounts to be paid by Owner with respect to and/or pursuant to this Agreement exceed the Maximum Amount unless otherwise agreed by Owner in a signed written agreement entered into pursuant to this Agreement.

B. *Factors:* The external Reimbursable Expenses and Engineer's Consultant's factors include Engineer's overhead and profit associated with Engineer's responsibility for the administration of such services and costs.

COMPENSATION PACKET AS-2:
Additional Services – Direct Labor Costs Times a Factor

Article 2 of the Agreement is supplemented to include the following agreement of the parties:

C2.05 *Compensation for Additional Services – Direct Labor Costs Times a Factor Method of Payment*

A. Owner shall pay Engineer for Additional Services as follows:

1. *General:* For services of Engineer's personnel engaged directly on the Project pursuant to Paragraph A2.01 or A2.02 of Exhibit A of the Agreement, except for services as a consultant or witness under Paragraph A2.01.A.24 (which if needed shall be separately negotiated based on the nature of the required consultation or testimony), an amount equal to Engineer's Direct Labor Costs times a factor of 3.20, plus related Reimbursable Expenses and Engineer's Consultant's charges, the extent they are actually and reasonably incurred in furtherance of the Project, if any.

B. *Compensation for Reimbursable Expenses:*

1. For those Reimbursable Expenses that are not accounted for in the compensation for Basic Services under Paragraph C2.01 and are actually and reasonably incurred in furtherance of the Project and directly related to the provision of Additional Services, Owner shall pay Engineer at the rates set forth in Appendix 1 to this Exhibit C.

2. Reimbursable Expenses include the expenses identified in Appendix 1 and the following: transportation (including mileage), lodging, and subsistence incidental thereto to the extent necessary for completion of the Project and specifically approved in advance by Owner in writing; providing and maintaining field office facilities including furnishings and utilities; reproduction of reports, Drawings, Specifications, bidding-related or other procurement documents, Construction Contract Documents, and similar Project-related items; and Consultants' charges. In addition, if authorized in advance by Owner, Reimbursable Expenses will also include expenses incurred for and the use of highly specialized equipment.

3. The amounts payable to Engineer for Reimbursable Expenses, if any, will be the Additional Services-related internal expenses actually incurred or allocated by Engineer, plus all invoiced external Reimbursable Expenses allocable to such Additional Services, the latter multiplied by a factor of 1.0.

4. The parties may, by mutual written agreement, adjust annually the Reimbursable Expenses Schedule to reflect equitable changes in the compensation payable to Engineer.

C. *Other Provisions Concerning Payment for Additional Services:*

1. Whenever Engineer is entitled to compensation for the charges of Engineer's Consultants, those charges shall be the amounts billed by Engineer's Consultants to Engineer times a factor of 1.0.

2. *Factors:* The external Reimbursable Expenses and Engineer's Consultant's factors include Engineer's overhead and profit associated with Engineer's responsibility for the administration of such services and costs.

3. To the extent necessary to verify Engineer's charges and upon Owner's timely request, Engineer shall make copies of such records available to Owner at cost.

This is **Appendix 1 to EXHIBIT C**, consisting of 1 page, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Reimbursable Expenses Schedule

Reimbursable Expenses are subject to review and adjustment to the extent permitted by Exhibit C. Rates and charges for Reimbursable Expenses as of the date of the Agreement are:

8"x11" B/W Copies/Impressions		$ 0.045/page
8"x11" Color Copies/Impressions		$ 0.45/page
11"x17" B/W Copies/Impressions		$ 0.09/page
11"x17" Color Copies/Impressions		$ 0.90/page
Copies of Drawings		$ 0.90/sq. ft.
Mileage (auto)		$ 0.535/mile
Air Transportation		at cost
Laboratory Testing		at cost
GPS Instrument		$ 85/day
Meals and Lodging		at cost

Fee Schedule

ATTACHMENT 2
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE 12
FINAL FEE ESTIMATE - MAY 3, 2017

		HDR Engineering, Inc. Estimated Hours/Costs									Expenses				HDR	Sub-Consultant Estimated Costs					Est. Total Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Admin/ Clerical	Total Hours	Total Labor Cost	Printing	Travel	Misc.	Total Expenses	Totals	JEO	Thiele Geotech	NE Historical Society	Donovan	Total Sub-Consult.	
TASK SERIES 10 PROJECT MANAGEMENT																					
Task 11	**Contract Administration**	50	16	16				40	122	$23,060			$200	$200	$23,260					$0	$23,260
Task 12	**Coordination Meetings**																				
Subtask 12.1	Kickoff Meeting	4		6	6			4	20	$3,760	$7	$27		$34	$3,794					$0	$3,794
Subtask 12.2	Joint Monthly Progress Meetings (9 mtgs)	27		36	36			72	171	$27,810	$41	$241	$200	$481	$28,291					$0	$28,291
Task 13	**P-MRNRD Board Presentation**	4				4			8	$1,380		$13		$13	$1,393					$0	$1,393
	Estimated Task Hours Subtotal	**85**	**16**	**58**	**42**	**4**	**0**	**116**	**321**												
	Estimated Task Cost Subtotal	**$19,550**	**$4,080**	**$13,340**	**$7,560**	**$460**	**$0**	**$11,020**	**$56,010**	**$56,010**	**$47**	**$281**	**$400**	**$728**	**$56,738**	**$0**	**$0**	**$0**	**$0**	**$0**	**$56,738**
TASK SERIES 20 GEOTECHNICAL ENGINEERING																					
Task 21	**Data Collection and Analysis**		8			8			16	$2,960				$0	$2,960					$0	$2,960
Task 22	**Subsurface Investigation Plan**		6			24			30	$4,290				$0	$4,290					$0	$4,290
Task 23	**Subsurface Investigation & Lab Testing**		4			12			16	$2,400		$54		$54	$2,454	$3,920	$67,705			$71,625	$74,079
Task 24	**Geotechnical Analyses**		52			112	38		202	$29,560				$0	$29,560				$1,000	$1,000	$30,560
Task 25	**Geotechnical Design**	2	24			56	4		86	$13,380				$0	$13,380				$1,000	$1,000	$14,380
Task 26	**Geotech. Investigation & Eval. Report**																				
Subtask 26.1	Draft Geotech. Investigation & Design Report	4	24			40	16	4	88	$13,460	$108			$108	$13,568				$1,000	$1,000	$14,568
Subtask 26.2	Final Geotech. Investigation & Design Repor		12			16	8	2	38	$5,810	$108			$108	$5,918					$0	$5,918
	Estimated Task Hours Subtotal	**6**	**130**	**0**	**0**	**268**	**66**	**6**	**476**												
	Estimated Task Cost Subtotal	**$1,380**	**$33,150**	**$0**	**$0**	**$30,820**	**$5,940**	**$570**	**$71,860**	**$71,860**	**$216**	**$54**	**$0**	**$270**	**$72,130**	**$3,920**	**$67,705**	**$0**	**$3,000**	**$74,625**	**$146,755**
TASK SERIES 30 DAM DESIGN ALTERNATIVE ANALYSIS																					
Task 31	**Data Collection and Evaluation**																				
Subtask 31.1	Data Collection					8			8	$920				$0	$920					$0	$920
Subtask 31.2	Field Reconnaissance	4				4			8	$1,380		$13		$13	$1,393					$0	$1,393
Subtask 31.3	Stage-Storage Data Verification					2	4		6	$590				$0	$590					$0	$590
Task 32	**Hydrologic Model Development**			4		16	4		24	$3,120				$0	$3,120					$0	$3,120
Task 33	**Sediment Evaluation**			4		16	16		36	$4,200				$0	$4,200					$0	$4,200
Task 34	**Dam Elements Refinement**																				
Subtask 34.1	Dam Features for Alternatives			8		32			40	$5,520				$0	$5,520					$0	$5,520
Subtask 34.2	Reservoir Routing			2		12			14	$1,840				$0	$1,840					$0	$1,840
Subtask 34.3	Reservoir Sedimentation			2		8			10	$1,380				$0	$1,380					$0	$1,380
Subtask 34.4	Impact Evaluation			4	16	16			36	$5,640				$0	$5,640					$0	$5,640
Task 35	**Auxiliary Spillway Integrity and Stability**		2		24	8			34	$5,750				$0	$5,750					$0	$5,750
Task 36	**Water Quality Basin(s)**																				
Subtask 36.1	Potential WQ Sites Identification			2	2				4	$820				$0	$820					$0	$820
Subtask 36.2	Stage-Storage Data					8	8		16	$1,640				$0	$1,640					$0	$1,640
Subtask 36.3	Water Quality Site Selection			2		4	4		10	$1,280				$0	$1,280					$0	$1,280
Subtask 36.4	Water Quality Basin(s) Sizing			4		40	60		104	$10,920				$0	$10,920					$0	$10,920
Subtask 36.5	Maintenance Intervals					2			2	$230				$0	$230					$0	$230
Task 37	**Design Memorandum**			8		16	16	8	48	$5,880	$108			$108	$5,988					$0	$5,988
	Estimated Task Hours Subtotal	**4**	**2**	**40**	**42**	**192**	**112**	**8**	**400**												
	Estimated Task Cost Subtotal	**$920**	**$510**	**$9,200**	**$7,560**	**$22,080**	**$10,080**	**$760**	**$51,110**	**$51,110**	**$108**	**$13**	**$0**	**$121**	**$51,231**	**$0**	**$0**	**$0**	**$0**	**$0**	**$51,231**
TASK SERIES 40 PERMITTING																					
Task 41	**Data Collection and Evaluation**				4	6	2		12	$1,590				$0	$1,590					$0	$1,590
Task 42	**NDNR Coordination**			8		8		2	18	$2,950		$107		$107	$3,057					$0	$3,057
Task 43	**USACE/Agency Coordination**																				
Subtask 43.1	Agency Scoping Coordination			1	2	8	2		13	$1,690	$20			$20	$1,710					$0	$1,710
Subtask 43.2	USACE Project Coordination			9	18	24		6	57	$8,640	$41	$40		$81	$8,721					$0	$8,721
Subtask 43.3	Agency Coordination				8	24			32	$4,200				$0	$4,200					$0	$4,200
Task 44	**Section 404 Individual Permit**																				
Subtask 44.1	Wetlands and Waters of the U.S. Survey																				
Subtask 44.1.1	Wetland Delineation				4	64	48	4	120	$12,780		$27	$170	$197	$12,977					$0	$12,977
Subtask 44.1.2	Stream Functional Assessment				4	24	16		44	$4,920				$0	$4,920					$0	$4,920
Subtask 44.2	Section 404 Permit Application																				
Subtask 44.2.1	Project Need and Purpose			8	16	34	34		92	$11,690				$0	$11,690					$0	$11,690
Subtask 44.2.2	Screening Criteria			2	2	4	2		10	$1,460				$0	$1,460					$0	$1,460
Subtask 44.2.3	Range of Alternatives				8	12	8		28	$3,540				$0	$3,540					$0	$3,540
Subtask 44.2.4	Alternative Screening				40	92	32		164	$20,660				$0	$20,660					$0	$20,660
Subtask 44.2.5	Supplemental Environmental Evaluation				8	16	8		32	$4,000				$0	$4,000					$0	$4,000
Subtask 44.2.6	Minimization Alternatives				8	24	8		40	$4,920				$0	$4,920					$0	$4,920
Subtask 44.2.7	Compensatory Mitigation Plan				12	32	16	8	68	$8,040				$0	$8,040					$0	$8,040
Subtask 44.3	Cultural Resource (Section 106 Compliance)	2			4	2			8	$1,410				$0	$1,410			$7,500		$7,500	$8,910
Task 45	**Section 404 Application Preparation**				8	40	32	8	88	$9,680	$108			$108	$9,788					$0	$9,788
	Estimated Task Hours Subtotal	**2**	**0**	**28**	**146**	**414**	**208**	**28**	**826**												
	Estimated Task Cost Subtotal	**$460**	**$0**	**$6,440**	**$26,280**	**$47,610**	**$18,720**	**$2,660**	**$102,170**	**$102,170**	**$169**	**$174**	**$170**	**$513**	**$102,683**	**$0**	**$0**	**$7,500**	**$0**	**$7,500**	**$110,183**

Fee Schedule

ATTACHMENT 2
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE 12
FINAL FEE ESTIMATE - MAY 3, 2017

		HDR Engineering, Inc. Estimated Hours/Costs									Expenses				HDR	Sub-Consultant Estimated Costs					Est. Total Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Admin/ Clerical	Total Hours	Total Labor Cost	Printing	Travel	Misc.	Total Expenses	Totals	JEO	Thiele Geotech	NE Historical Society	Donovan	Total Sub-Consult.	
TASK SERIES 50 DESIGN ELEMENTS																					
Task 51	**Data Collection and Evaluation**																				
Subtask 51.1	Data Collection				4	12			16	$2,100				$0	$2,100					$0	$2,100
Subtask 51.2	Field Reconnaissance			8	8	8	8	4	36	$5,300		$27		$27	$5,327					$0	$5,327
Task 52	**Stakeholder Coordination Meetings**			12	12	12		4	40	$6,680	$9	$27		$36	$6,716					$0	$6,716
Task 53	**Roadway Realignment/Modifications**																				
Subtask 53.1	Conceptual Roadway Alignment			4	16	16	20		56	$7,440				$0	$7,440					$0	$7,440
Subtask 53.2	Geometrics/Typical Section				4	16	8		28	$3,280				$0	$3,280					$0	$3,280
Subtask 53.3	Roadway Cross Sections				4	4	24		32	$3,340				$0	$3,340					$0	$3,340
Subtask 53.4	Right-of-Way Boundary			2	2	8			12	$1,740				$0	$1,740					$0	$1,740
Subtask 53.5	Hydraulic Modeling on Existing Structures			4		24	16		44	$5,120				$0	$5,120					$0	$5,120
Subtask 53.6	Roadway Concept Memorandum				8	16	4		28	$3,640	$9			$9	$3,649					$0	$3,649
Task 54	**Public and Private Utility Coordination**																				
Subtask 54.1	Utility Confirmation			2		4			6	$920				$0	$920					$0	$920
Subtask 54.2	Utility Infrastructure Coverages				2		12		14	$1,440				$0	$1,440					$0	$1,440
Subtask 54.3	Sanitary Sewer																				
Subtask 54.3.1	Alternative Evaluation				8	16	16		40	$4,720				$0	$4,720					$0	$4,720
Subtask 54.3.2	Sanitary Sewer Preliminary Plans				4	4	16		24	$2,620				$0	$2,620					$0	$2,620
Subtask 54.4	Utility Memorandum			2	8	16	8	4	38	$4,840	$9			$9	$4,849					$0	$4,849
Task 55	**Minimum Recreation Elements**																				
Subtask 55.1	Trail			2	40	10	10		62	$9,710				$0	$9,710					$0	$9,710
Subtask 55.2	Access Area and Boat Ramp			2	40	10	10		62	$9,710				$0	$9,710					$0	$9,710
Subtask 55.3	Recreation Memorandum			2	4	4	8	4	22	$2,740	$9			$9	$2,749					$0	$2,749
Task 56	**Fishery Enhancement Opportunity**																				
Subtask 56.1	In-Lake Fisheries/Recreation Coordination			1	2	2	2		7	$1,000				$0	$1,000					$0	$1,000
Subtask 56.2	In-Lake Fisheries Concept Design				8	8	8		24	$3,080		$13		$13	$3,093					$0	$3,093
Subtask 56.3	Fishery Enhancement Memorandum			2	4	4	2	2	14	$2,010	$9			$9	$2,019					$0	$2,019
	Estimated Task Hours Subtotal	**0**	**0**	**43**	**178**	**194**	**172**	**18**	**605**												
	Estimated Task Cost Subtotal	**$0**	**$0**	**$9,890**	**$32,040**	**$22,310**	**$15,480**	**$1,710**	**$81,430**	**$81,430**	**$45**	**$67**	**$0**	**$112**	**$81,542**	**$0**	**$0**	**$0**	**$0**	**$0**	**$81,542**
TASK SERIES 60 SURVEY AND RIGHT OF WAY LEGAL DESCRIPTIONS																					
Task 61	**Data Collection and Evaluation**																				
Subtask 61.1	Data Collection				4		4		8	$1,080				$0	$1,080	$2,420				$2,420	$3,500
Subtask 61.2	Topographic Survey	4			4				8	$1,640				$0	$1,640	$9,800				$9,800	$11,440
Subtask 61.3	Topographic Base Map				4		8		12	$1,440				$0	$1,440	$8,300				$8,300	$9,740
Task 62	**Acquisition and ROW Plan Development**																				
Subtask 62.1	Real Property Work Maps	4		2	24	8	4		42	$6,980				$0	$6,980					$0	$6,980
Subtask 62.2	Preliminary Acquisition/Boundary Plans (14+4				8		4		12	$1,800				$0	$1,800	$33,000				$33,000	$34,800
	Estimated Task Hours Subtotal	**8**	**0**	**2**	**44**	**8**	**20**	**0**	**82**												
	Estimated Task Cost Subtotal	**$1,840**	**$0**	**$460**	**$7,920**	**$920**	**$1,800**	**$0**	**$12,940**	**$12,940**	**$0**	**$0**	**$0**	**$0**	**$12,940**	**$53,520**	**$0**	**$0**	**$0**	**$53,520**	**$66,460**
TASK SERIES 70 DELIVERABLES																					
Task 71	**Design Analyses Report**																				
Subtask 71.1	Draft Design Analyses Report	4		24	16	16		8	68	$11,920	$108			$108	$12,028					$0	$12,028
Subtask 71.2	Final Design Analyses Report	2		8	4	4		4	22	$3,860	$108			$108	$3,968					$0	$3,968
Task 72	**Drawing Production**																				
Subtask 72.1	Draft 60% Drawings	24	48	28	404	292	328	0	1124	$160,020	$108			$108	$160,128					$0	$160,128
Subtask 72.2	Final 60% Drawings	2			4	8	8		22	$2,820	$108			$108	$2,928					$0	$2,928
Task 73	**Opinion of Probable Construction Cost**																				
Subtask 73.1	Draft Opinion of Probable Construction Cost	1		16	32	24	16		89	$13,870				$0	$13,870					$0	$13,870
Subtask 73.2	Final Opinion of Probable Construction Cos	1			4		4		9	$1,310				$0	$1,310					$0	$1,310
	Estimated Task Hours Subtotal	**34**	**48**	**76**	**464**	**344**	**356**	**12**	**1334**												
	Estimated Task Cost Subtotal	**$7,820**	**$12,240**	**$17,480**	**$83,520**	**$39,560**	**$32,040**	**$1,140**	**$193,800**	**$193,800**	**$432**	**$0**	**$0**	**$432**	**$194,232**	**$0**	**$0**	**$0**	**$0**	**$0**	**$194,232**
	TOTAL HOURS	139	196	247	916	1,424	934	188	4,044												
	TOTAL COST (ROUNDED)	$ 31,970	$ 49,980	$ 56,810	$ 164,880	$ 163,760	$ 84,060	$ 17,860	$ 569,320	$ 569,320	$ 1,017	$ 589	$ 570	$ 2,176	$ 571,496	$ 57,440	$ 67,705	$ 7,500	$ 3,000	$ 135,645	$ 707,141

Fee Schedule

ATTACHMENT 2
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE 19
FINAL FEE ESTIMATE - MAY 3, 2017

		HDR Engineering, Inc. Estimated Hours/Costs									Expenses				HDR	Sub-Consultant Estimated Costs					Est. Total Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Admin/ Clerical	Total Hours	Total Labor Cost	Printing	Travel	Misc.	Total Expenses	Totals	JEO	Thiele Geotech	NE Historical Society	Donovan	Total Sub-Consult.	
TASK SERIES 0	PROJECT MANAGEMENT																				
Task 10	Contract Administration	50	16	16				40	122	$23,060			$200	$200	$23,260					$0	$23,260
Task 20	Coordination Meetings																				
Subtask 22.1	Kickoff Meeting	4		6	6			4	20	$3,760	$7	$27		$34	$3,794					$0	$3,794
Subtask 22.2	Joint Monthly Progress Meetings (9 mtgs	27		36	36			72	171	$27,810	$41	$241	$200	$481	$28,291					$0	$28,291
Task 30	P-MRNRD Board Presentation	4				4			8	$1,380		$13		$13	$1,393					$0	$1,393
	Estimated Task Hours Subtotal	85	16	58	42	4	0	116	321												
	Estimated Task Cost Subtotal	$19,550	$4,080	$13,340	$7,560	$460	$0	$11,020	$56,010	$56,010	$47	$281	$400	$728	$56,738	$0	$0	$0	$0	$0	$56,738
TASK SERIES 200	GEOTECHNICAL ENGINEERING																				
Task 210	Data Collection and Analysis		8			8			16	$2,960				$0	$2,960					$0	$2,960
Task 220	Subsurface Investigation Plan		8			24			32	$4,800				$0	$4,800					$0	$4,800
Task 230	Subsurface Investigation & Lab Testing		4			12			16	$2,400		$54		$54	$2,454	$3,920	$72,285			$76,205	$78,659
Task 240	Geotechnical Analyses		60			128	38		226	$33,440				$0	$33,440				$1,000	$1,000	$34,440
Task 250	Geotechnical Design		30			42	4		76	$12,840				$0	$12,840				$1,000	$1,000	$13,840
Task 260	Geotech. Investigation & Eval. Report																				
Subtask 260.1	Draft Geotech. Investigation & Design Repor		24			40	16	4	84	$12,540	$108			$108	$12,648				$1,000	$1,000	$13,648
Subtask 260.2	Final Geotech. Investigation & Design Repor		8			16	8	2	34	$4,790	$108			$108	$4,898					$0	$4,898
	Estimated Task Hours Subtotal	0	142	0	0	270	66	6	484												
	Estimated Task Cost Subtotal	$0	$36,210	$0	$0	$31,050	$5,940	$570	$73,770	$73,770	$216	$54	$0	$270	$74,040	$3,920	$72,285	$0	$3,000	$79,205	$153,245
TASK SERIES 300	DAM DESIGN ALTERNATIVE ANALYSIS																				
Task 310	Data Collection and Evaluation																				
Subtask 310.1	Data Collection					8			8	$920				$0	$920					$0	$920
Subtask 310.2	Field Reconnaissance	4				4			8	$1,380		$13		$13	$1,393					$0	$1,393
Subtask 310.3	Stage-Storage Data Verification					2	4		6	$590				$0	$590					$0	$590
Task 320	Hydrologic Model Development			4		16	4		24	$3,120				$0	$3,120					$0	$3,120
Task 330	Sediment Evaluation			4		16	16		36	$4,200				$0	$4,200					$0	$4,200
Task 340	Dam Elements Refinement																				
Subtask 340.1	Dam Features for Alternatives			8		32			40	$5,520				$0	$5,520					$0	$5,520
Subtask 340.2	Reservoir Routing			2		12			14	$1,840				$0	$1,840					$0	$1,840
Subtask 340.3	Reservoir Sedimentation			2		8			10	$1,380				$0	$1,380					$0	$1,380
Subtask 340.4	Impact Evaluation			4	16	16			36	$5,640				$0	$5,640					$0	$5,640
Task 350	Auxiliary Spillway Integrity and Stability		2		24	8			34	$5,750				$0	$5,750					$0	$5,750
Task 360	Water Quality Basin(s)																				
Subtask 360.1	Potential WQ Sites Identification			2	2				4	$820				$0	$820					$0	$820
Subtask 360.2	Stage-Storage Data					8	8		16	$1,640				$0	$1,640					$0	$1,640
Subtask 360.3	Water Quality Site Selection			2		4	8		14	$1,640				$0	$1,640					$0	$1,640
Subtask 360.4	Water Quality Basin(s) Sizing					40	60		100	$10,000				$0	$10,000					$0	$10,000
Subtask 360.5	Maintenance Intervals					2			2	$230				$0	$230					$0	$230
Task 370	Design Memorandum			8		16	16	8	48	$5,880	$108			$108	$5,988					$0	$5,988
	Estimated Task Hours Subtotal	4	2	36	42	192	116	8	400												
	Estimated Task Cost Subtotal	$920	$510	$8,280	$7,560	$22,080	$10,440	$760	$50,550	$50,550	$108	$13	$0	$121	$50,671	$0	$0	$0	$0	$0	$50,671
TASK SERIES 400	PERMITTING																				
Task 410	Data Collection and Evaluation				4	6	2		12	$1,590				$0	$1,590					$0	$1,590
Task 420	NDNR Coordination			8		8			16	$2,760		$107		$107	$2,867					$0	$2,867
Task 430	USACE/Agency Coordination																				
Subtask 430.1	Agency Scoping Coordinatior			1	2	8	2		13	$1,690	$20			$20	$1,710					$0	$1,710
Subtask 430.2	USACE Project Coordination			9	18	24		6	57	$8,640	$41	$40		$81	$8,721					$0	$8,721
Subtask 430.3	Agency Coordination				8	24			32	$4,200				$0	$4,200					$0	$4,200
Task 440	Section 404 Individual Permit																				
Subtask 440.1	Wetlands and Waters of the U.S. Survey																				
Subtask 440.1.1	Wetland Delineation				4	64	48	4	120	$12,780		$27	$170	$197	$12,977					$0	$12,977
Subtask 44.1.2	Stream Functional Assessment				4	24	16		44	$4,920				$0	$4,920					$0	$4,920
Subtask 440.2	Section 404 Permit Application																				
Subtask 440.2.1	Project Need and Purpose			8	16	34	34		92	$11,690				$0	$11,690					$0	$11,690
Subtask 440.2.2	Screening Criteria			2	2	4	2		10	$1,460				$0	$1,460					$0	$1,460
Subtask 440.2.3	Range of Alternatives				8	12	8		28	$3,540				$0	$3,540					$0	$3,540
Subtask 440.2.4	Alternative Screening				40	92	32		164	$20,660				$0	$20,660					$0	$20,660
Subtask 440.2.5	Supplemental Environmental Evaluatior				8	16	8		32	$4,000				$0	$4,000					$0	$4,000
Subtask 440.2.6	Minimization Alternatives				8	24	8		40	$4,920				$0	$4,920					$0	$4,920
Subtask 440.2.7	Compensatory Mitigation Plar				12	32	16	4	64	$7,660				$0	$7,660					$0	$7,660
Subtask 440.3	Cultural Resource (Section 106 Compliance	2			4	2			8	$1,410				$0	$1,410			$7,500		$7,500	$8,910
Task 450	Section 404 Application Preparation				8	40	32	8	88	$9,680	$108			$108	$9,788					$0	$9,788
	Estimated Task Hours Subtotal	2	0	28	146	414	208	22	820												
	Estimated Task Cost Subtotal	$460	$0	$6,440	$26,280	$47,610	$18,720	$2,090	$101,600	$101,600	$169	$174	$170	$513	$102,113	$0	$0	$7,500	$0	$7,500	$109,613

Fee Schedule

ATTACHMENT 2
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE 19
FINAL FEE ESTIMATE - MAY 3, 2017

		HDR Engineering, Inc. Estimated Hours/Costs									Expenses				HDR	Sub-Consultant Estimated Costs					Est. Total Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Admin/ Clerical	Total Hours	Total Labor Cost	Printing	Travel	Misc.	Total Expenses	Totals	JEO	Thiele Geotech	NE Historical Society	Donovan	Total Sub-Consult.	
TASK SERIES 500 DESIGN ELEMENTS																					
Task 510	**Data Collection and Evaluation**																				
Subtask 510.1	Data Collection				4	12			16	$2,100				$0	$2,100					$0	$2,100
Subtask 510.2	Field Reconnaissance			8	8	8	8	4	36	$5,300		$27		$27	$5,327					$0	$5,327
Task 520	**Stakeholder Coordination Meetings**			8	8	8		4	28	$4,580	$9	$27		$36	$4,616					$0	$4,616
Task 530	**Roadway Realignment/Modifications**																				
Subtask 530.1	Hydraulic Modeling on Existing Structures			4	24	24			52	$8,000				$0	$8,000					$0	$8,000
Subtask 530.2	Roadway Modifications			4	16	40	16		76	$9,840				$0	$9,840					$0	$9,840
Subtask 530.3	Roadway Concept Memorandum				4	8			12	$1,640	$9			$9	$1,649					$0	$1,649
Task 540	**Public and Private Utility Coordination**																				
Subtask 540.1	Utility Confirmation			2		4			6	$920				$0	$920					$0	$920
Subtask 540.2	Utility Infrastructure Coverages				2		12		14	$1,440				$0	$1,440					$0	$1,440
Subtask 540.3	Sanitary Sewer								0	$0				$0	$0					$0	$0
Subtask 540.3.1	Alternative Evaluation				16	16	16		48	$6,160				$0	$6,160					$0	$6,160
Subtask 540.3.2	Sanitary Sewer Preliminary Plans				8	8	16		32	$3,800				$0	$3,800					$0	$3,800
Subtask 540.4	Utility Memorandum			2	8	16	8	4	38	$4,840	$9			$9	$4,849					$0	$4,849
Task 550	**Minimum Recreation Elements**																				
Subtask 550.1	Trail			2	40	10	10		62	$9,710				$0	$9,710					$0	$9,710
Subtask 550.2	Access Area and Boat Ramp			2	70	20	20		112	$17,160				$0	$17,160					$0	$17,160
Subtask 550.3	Recreation Memorandum			2	4	4	8	4	22	$2,740	$9			$9	$2,749					$0	$2,749
Task 560	**Fishery Enhancement Opportunity**																				
Subtask 560.1	In-Lake Fisheries/Recreation Coordinatior			1	2	2	2		7	$1,000				$0	$1,000					$0	$1,000
Subtask 560.2	In-Lake Fisheries Concept Design				8	8	8		24	$3,080		$13		$13	$3,093					$0	$3,093
Subtask 560.3	Fishery Enhancement Memorandum			2	4	4	2	2	14	$2,010	$9			$9	$2,019					$0	$2,019
	Estimated Task Hours Subtotal	**0**	**0**	**37**	**226**	**192**	**126**	**18**	**599**												
	Estimated Task Cost Subtotal	**$0**	**$0**	**$8,510**	**$40,680**	**$22,080**	**$11,340**	**$1,710**	**$84,320**	**$84,320**	**$45**	**$67**	**$0**	**$112**	**$84,432**	**$0**	**$0**	**$0**	**$0**	**$0**	**$84,432**
TASK SERIES 60 SURVEY AND RIGHT OF WAY LEGAL DESCRIPTIONS																					
Task 610	**Data Collection and Evaluation**																				
Subtask 610.1	Data Collection				4		4		8	$1,080				$0	$1,080	$2,420				$2,420	$3,500
Subtask 610.2	Topographic Survey	4			4				8	$1,640				$0	$1,640	$11,500				$11,500	$13,140
Subtask 610.3	Topographic Base Map				4		8		12	$1,440				$0	$1,440	$10,300				$10,300	$11,740
Task 620	**Acquisition and ROW Plan Development**																				
Subtask 620.1	Real Property Work Maps	4		2	24	8	4		42	$6,980				$0	$6,980	$0				$0	$6,980
Subtask 620.2	Preliminary Acquisition/Boundary Plans (14+4				8		4		12	$1,800				$0	$1,800	$33,000				$33,000	$34,800
	Estimated Task Hours Subtotal	**8**	**0**	**2**	**44**	**8**	**20**	**0**	**82**												
	Estimated Task Cost Subtotal	**$1,840**	**$0**	**$460**	**$7,920**	**$920**	**$1,800**	**$0**	**$12,940**	**$12,940**	**$0**	**$0**	**$0**	**$0**	**$12,940**	**$57,220**	**$0**	**$0**	**$0**	**$57,220**	**$70,160**
TASK SERIES 700 DELIVERABLES																					
Task 710	**Design Analyses Report**																				
Subtask 710.1	Draft Design Analyses Report			24	16	16		8	64	$11,000	$108			$108	$11,108					$0	$11,108
Subtask 710.2	Final Design Analyses Report			8	4	4		4	20	$3,400	$108			$108	$3,508					$0	$3,508
Task 720	**Drawing Production**																				
Subtask 720.1	Draft 60% Drawings	20	48	28	408	308	356	0	1168	$164,180	$108			$108	$164,288					$0	$164,288
Subtask 720.2	Final 60% Drawings										$108									$0	$0
Task 730	**Opinion of Probable Construction Cost**																				
Subtask 730.1	Draft Opinion of Probable Construction Cost			16	32	24	16		88	$13,640				$0	$13,640					$0	$13,640
Subtask 730.2	Final Opinion of Probable Construction Cos								0	$0				$0	$0					$0	$0
	Estimated Task Hours Subtotal	**20**	**48**	**76**	**460**	**352**	**372**	**12**	**1340**												
	Estimated Task Cost Subtotal	**$4,600**	**$12,240**	**$17,480**	**$82,800**	**$40,480**	**$33,480**	**$1,140**	**$192,220**	**$192,220**	**$432**	**$0**	**$0**	**$324**	**$192,544**	**$0**	**$0**	**$0**	**$0**	**$0**	**$192,544**
	TOTAL HOURS	119	208	237	960	1,432	908	182	4,046												
	TOTAL COST (ROUNDED)	$ 27,370	$ 53,040	$ 54,510	$ 172,800	$ 164,680	$ 81,720	$ 17,290	$ 571,410	$ 571,410	$ 1,017	$ 589	$ 570	$ 2,068	$ 573,478	$ 61,140	$ 72,285	$ 7,500	$ 3,000	$ 143,925	$ 717,403

Fee Schedule

ATTACHMENT 2
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE WP-4
FINAL FEE ESTIMATE - MAY 3, 2017

		HDR Engineering, Inc. Estimated Hours/Costs									Expenses				HDR	Sub-Consultant Estimated Costs					Est. Total Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Admin/ Clerical	Total Hours	Total Labor Cost	Printing	Travel	Misc.	Total Expenses	Totals	JEO	Thiele Geotech	NE Historical Society	Donovan	Total Sub-Consult.	
TASK SERIES 1000	PROJECT MANAGEMENT																				
Task 1010	Contract Administration	10						10	20	$3,250				$0	$3,250	$30,780				$30,780	$34,030
Task 1020	Coordination Meetings																				
Subtask 1020.1	Kickoff Meeting								0	$0				$0	$0	$2,178				$2,178	$2,178
Subtask 1020.2	Internal team coord meetings	20			20				40	$8,200				$0	$8,200	$17,563				$17,563	$25,763
Task 1030	P-MRNRD Board Presentation								0	$0				$0	$0					$0	$0
	Estimated Task Hours Subtotal	30	0	0	20	0	0	10	60												
	Estimated Task Cost Subtotal	$6,900	$0	$0	$3,600	$0	$0	$950	$11,450	$11,450	$0	$0	$0	$0	$11,450	$50,521	$0	$0	$0	$50,521	$61,971
TASK SERIES 2000	GEOTECHNICAL ENGINEERING																				
Task 2100	Data Collection and Analysis		8			8			16	$2,960				$0	$2,960	$340				$340	$3,300
Task 2200	Subsurface Investigation Plan		8			24			32	$4,800				$0	$4,800					$0	$4,800
Task 2300	Subsurface Investigation & Lab Testing		4			12			16	$2,400		$40		$40	$2,440	$3,920	$55,513			$59,433	$61,873
Task 2400	Geotechnical Analyses		54			114	38		206	$30,300				$0	$30,300				$1,000	$1,000	$31,300
Task 2500	Geotechnical Design		22			34	4		60	$9,880				$0	$9,880				$1,000	$1,000	$10,880
Task 2600	Geotech. Investigation & Eval. Report																				
Subtask 2600.1	Draft Geotech. Investigation & Design Report		24			40	16	4	84	$12,540	$108			$108	$12,648				$1,000	$1,000	$13,648
Subtask 2600.2	Final Geotech. Investigation & Design Repor		8			14	8	2	32	$4,560	$108			$108	$4,668					$0	$4,668
	Estimated Task Hours Subtotal	0	128	0	0	246	66	6	446												
	Estimated Task Cost Subtotal	$0	$32,640	$0	$0	$28,290	$5,940	$570	$67,440	$67,440	$216	$40	$0	$256	$67,696	$4,260	$55,513	$0	$3,000	$62,773	$130,469
TASK SERIES 3000	DAM DESIGN ALTERNATIVE ANALYSIS																				
Task 3100	Data Collection and Evaluation																				
Subtask 3100.1	Data Collection					8			8	$920				$0	$920	$1,042				$1,042	$1,962
Subtask 3100.2	Field Reconnaissance	4							4	$920		$13		$13	$933	$2,205				$2,205	$3,138
Subtask 3100.3	Stage-Storage Data Verification								0	$0				$0	$0	$1,456				$1,456	$1,456
Task 3200	Hydrologic Model Development								0	$0				$0	$0	$3,706				$3,706	$3,706
Task 3300	Sediment Evaluation			4		16	12		32	$3,840				$0	$3,840					$0	$3,840
Task 3400	Dam Elements Refinement																				
Subtask 3400.1	Dam Features for Alternatives								0	$0				$0	$0	$4,528				$4,528	$4,528
Subtask 3400.2	Reservoir Routing								0	$0				$0	$0	$3,864				$3,864	$3,864
Subtask 3400.3	Reservoir Sedimentation			2		4			6	$920				$0	$920					$0	$920
Subtask 3400.4	Impact Evaluation								0	$0				$0	$0	$2,186				$2,186	$2,186
Task 3500	Auxiliary Spillway Integrity and Stability								0	$0				$0	$0	$4,664				$4,664	$4,664
Task 3600	Water Quality Enhancements																				
Subtask 3600.1	Potential WQ Sites Identification								0	$0				$0	$0	$2,278				$2,278	$2,278
Subtask 3600.2	Water Quality Site Selection								0	$0				$0	$0	$5,958				$5,958	$5,958
Subtask 3600.3	Maintenance Intervals								0	$0				$0	$0	$2,106				$2,106	$2,106
Task 3700	Design Memorandum								0	$0				$0	$0	$17,280				$17,280	$17,280
	Estimated Task Hours Subtotal	4	0	6	0	28	12	0	50												
	Estimated Task Cost Subtotal	$920	$0	$1,380	$0	$3,220	$1,080	$0	$6,600	$6,600	$0	$13	$0	$13	$6,613	$51,273	$0	$0	$0	$51,273	$57,886
TASK SERIES 4000	PERMITTING																				
Task 4100	Data Collection and Evaluation				4	6	2		12	$1,590				$0	$1,590					$0	$1,590
Task 4200	NDNR Coordination								0	$0				$0	$0	$2,472				$2,472	$2,472
Task 4300	USACE/Agency Coordination																				
Subtask 4300.1	Agency Scoping Coordination			1	2	8	2		13	$1,690	$20			$20	$1,710					$0	$1,710
Subtask 4300.2	USACE Project Coordination			9	18	24		6	57	$8,640	$41	$40		$81	$8,721	$2,514				$2,514	$11,235
Subtask 4300.3	Agency Coordination				8	24			32	$4,200				$0	$4,200					$0	$4,200
Task 4400	Section 404 Individual Permit																				
Subtask 4400.1	Wetlands and Waters of the U.S. Survey																				
Subtask 4400.1.1	Wetland Delineation				4	64	48	4	120	$12,780		$27	$85	$112	$12,892					$0	$12,892
Subtask 4400.1.2	Stream Functional Assessment				4	24	16		44	$4,920				$0	$4,920					$0	$4,920
Subtask 4400.2	Section 404 Permit Application																				
Subtask 4400.2.1	Project Need and Purpose			8	16	34	34		92	$11,690				$0	$11,690					$0	$11,690
Subtask 4400.2.2	Screening Criteria			2	2	4	2		10	$1,460				$0	$1,460					$0	$1,460
Subtask 4400.2.3	Range of Alternatives				8	12	8		28	$3,540				$0	$3,540					$0	$3,540
Subtask 4400.2.4	Alternative Screening				24	56	16		96	$12,200				$0	$12,200	$8,000				$8,000	$20,200
Subtask 4400.2.5	Supplemental Environmental Evaluation				8	16	8		32	$4,000				$0	$4,000					$0	$4,000
Subtask 4400.2.6	Minimization Alternatives				8	24	8		40	$4,920				$0	$4,920					$0	$4,920
Subtask 4400.2.7	Compensatory Mitigation Plan				8	12	14		34	$4,080				$0	$4,080	$4,000				$4,000	$8,080
Subtask 4400.3	Cultural Resource (Section 106 Compliance)	2			4	2			8	$1,410				$0	$1,410			$5,800		$5,800	$7,210
Task 4500	Section 404 Application Preparation				8	40	32	8	88	$9,680	$108			$108	$9,788					$0	$9,788
	Estimated Task Hours Subtotal	2	0	20	126	350	190	18	706												
	Estimated Task Cost Subtotal	$460	$0	$4,600	$22,680	$40,250	$17,100	$1,710	$86,800	$86,800	$169	$67	$85	$321	$87,121	$16,986	$0	$5,800	$0	$22,786	$109,907

Fee Schedule

ATTACHMENT 2
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE WP-4
FINAL FEE ESTIMATE - MAY 3, 2017

		HDR Engineering, Inc. Estimated Hours/Costs									Expenses				HDR	Sub-Consultant Estimated Costs					Est. Total Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Admin/ Clerical	Total Hours	Total Labor Cost	Printing	Travel	Misc.	Total Expenses	Totals	JEO	Thiele Geotech	NE Historical Society	Donovan	Total Sub-Consult.	
TASK SERIES 5000	DESIGN ELEMENTS																				
Task 5100	**Data Collection and Evaluation**																				
Subtask 5100.1	Data Collection								0	$0				$0	$0	$922				$922	$922
Subtask 5100.2	Field Reconnaissance	2							2	$460		$13		$13	$473					$0	$473
Task 5200	**Stakeholder Coordination Meetings**	8							8	$1,840		$27		$27	$1,867	$6,264				$6,264	$8,131
Task 5300	**Roadway Realignment/Modifications**																				
Subtask 5300.1	Hydraulic Modeling on Existing Structures								0	$0				$0	$0	$2,000				$2,000	$2,000
Subtask 5300.2	Roadway Modifications								0	$0				$0	$0	$13,547				$13,547	$13,547
Subtask 5300.3	Roadway Concept Memorandum								0	$0				$0	$0	$4,414				$4,414	$4,414
Task 5400	**Public and Private Utility Coordination**																				
Subtask 5400.1	Utility Confirmation								0	$0				$0	$0	$1,100				$1,100	$1,100
Subtask 5400.2	Utility Infrastructure Coverages								0	$0				$0	$0	$466				$466	$466
Subtask 5400.3	Sanitary Sewer																				
Subtask 5400.3.1	Alternative Evaluation								0	$0				$0	$0	$4,800				$4,800	$4,800
Subtask 5400.3.2	Sanitary Sewer Preliminary Plans								0	$0				$0	$0	$4,800				$4,800	$4,800
Subtask 5400.4	Sanitary Sewer																				
Subtask 5400.4.1	Alternative Evaluation								0	$0				$0	$0	$6,500				$6,500	$6,500
Subtask 5400.4.2	Lift Station Concept Plan								0	$0				$0	$0	$5,500				$5,500	$5,500
Subtask 5400.5	Utility Memorandum								0	$0				$0	$0	$2,100				$2,100	$2,100
Task 5500	**Minimum Recreation Elements**																				
Subtask 5500.1	Trail								0	$0				$0	$0	$8,990				$8,990	$8,990
Subtask 5500.2	Access Area and Boat Ramp								0	$0				$0	$0	$8,264				$8,264	$8,264
Subtask 5500.3	Recreation Memorandum								0	$0				$0	$0	$2,698				$2,698	$2,698
Task 5600	**Fishery Enhancement Opportunity**																				
Subtask 5600.1	In-Lake Fisheries/Recreation Coordination								0	$0				$0	$0	$1,352				$1,352	$1,352
Subtask 5600.2	In-Lake Fisheries Concept Design	2							2	$460		$13		$13	$473	$3,520				$3,520	$3,993
Subtask 5600.3	Fishery Enhancement Memorandum								0	$0				$0	$0	$1,186				$1,186	$1,186
	Estimated Task Hours Subtotal	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**12**												
	Estimated Task Cost Subtotal	**$2,760**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,760**	**$2,760**	**$0**	**$54**	**$0**	**$54**	**$2,814**	**$78,423**	**$0**	**$0**	**$0**	**$78,423**	**$81,237**
TASK SERIES 6000	SURVEY AND RIGHT OF WAY LEGAL DESCRIPTIONS																				
Task 6100	**Data Collection and Evaluation**																				
Subtask 6100.1	Data Collection								0	$0				$0	$0	$2,420				$2,420	$2,420
Subtask 6100.2	Topographic Survey								0	$0				$0	$0	$9,800				$9,800	$9,800
Subtask 6100.3	Topographic Base Map								0	$0				$0	$0	$8,110				$8,110	$8,110
Task 6200	**Acquisition and ROW Plan Development**																				
Subtask 6200.1	Real Property Work Maps								0	$0				$0	$0	$7,460				$7,460	$7,460
Subtask 6200.2	Preliminary Acquisition/Boundary Plans (5+4								0	$0				$0	$0	$16,210				$16,210	$16,210
	Estimated Task Hours Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**												
	Estimated Task Cost Subtotal	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$44,000**	**$0**	**$0**	**$0**	**$44,000**	**$44,000**
TASK SERIES 7000	DELIVERABLES																				
Task 7100	**Design Analyses Report**																				
Subtask 7100.1	Draft Design Analyses Report	8							8	$1,840	$36			$36	$1,876	$26,414				$26,414	$28,290
Subtask 7100.2	Final Design Analyses Report	4							4	$920	$36			$36	$956	$5,634				$5,634	$6,590
Task 7200	**Drawing Production**																				
Subtask 7200.1	Draft 60% Drawings	8			12		12		32	$5,080	$36			$36	$5,116	$73,908				$73,908	$79,024
Subtask 7200.2	Final 60% Drawings	1							1	$230	$36			$36	$266	$11,804				$11,804	$12,070
Task 7300	**Opinion of Probable Construction Cost**																				
Subtask 7300.1	Draft Opinion of Probable Construction Cost				4				4	$720				$0	$720	$7,116				$7,116	$7,836
Subtask 7300.2	Final Opinion of Probable Construction Cos								0	$0				$0	$0					$0	$0
	Estimated Task Hours Subtotal	**21**	**0**	**0**	**16**	**0**	**12**	**0**	**49**												
	Estimated Task Cost Subtotal	**$4,830**	**$0**	**$0**	**$2,880**	**$0**	**$1,080**	**$0**	**$8,790**	**$8,790**	**$144**	**$0**	**$0**	**$144**	**$8,934**	**$124,876**	**$0**	**$0**	**$0**	**$124,876**	**$133,810**
	TOTAL HOURS	69	128	26	162	624	280	34	1,323												
	TOTAL COST (ROUNDED)	$ 15,870	$ 32,640	$ 5,980	$ 29,160	$ 71,760	$ 25,200	$ 3,230	$ 183,840	$ 183,840	$ 529	$ 174	$ 85	$ 788	$ 184,628	$ 370,339	$ 55,513	$ 5,800	$ 3,000	$ 434,652	$ 619,280

ATTACHMENT 3
PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT
PRELIMINARY DESIGN OF DAM SITE 12, DAM SITE 19, AND REGIONAL DETENTION BASIN WP-4
GENERAL SCHEDULE

Tasks		May-17	Jun	Jul	Aug	Sep	Oct	Nov	Dec '17	Jan '18	Feb	Mar	Apr	May
TASK SERIES 10 PROJECT MANAGEMENT														
Task 11	Contract Administration													
Task 12	Coordination Meetings		KM CM	CM	CM	CM	CM	PM	CM	CM	BM CM	CM	CM	
Task 13	P-MRNRD Board Presentation													
TASK SERIES 20 GEOTECHNICAL ENGINEERING														
Task 21	Data Collection and Analysis													
Task 22	Subsurface Investigation Plan													
Task 23	Subsurface Investigation Exploration and Laboratory Testing													
Task 24	Geotechnical Analyses													
Task 25	Geotechnical Design													
Task 26	Geotechnical Investigation and Evaluation Report													
TASK SERIES 30 DAM DESIGN ALTERNATIVE ANALYSIS														
Task 31	Data Collection and Evaluation													
Task 32	Hydrologic Model Development													
Task 33	Sediment Evaluation													
Task 34	Dam Elements Refinement													
Task 35	Auxiliary Spillway Integrity and Stability													
Task 36	Water Quality Basin(s)													
Task 37	Design Memorandum													
TASK SERIES 40 PERMITTING														
Task 41	Data Collection and Evaluation													
Task 42	NDNR Coordination			DM					DM					
Task 43	USACE/Agency Coordination					UM				UM				
Task 44	Section 404 Individual Permit													
Task 45	Section 404 Application Preparation													
TASK SERIES 50 DESIGN ELEMENTS														
Task 51	Data Collection and Evaluation													
Task 52	Stakeholder Coordination Meetings			SM				SM						
Task 53	Roadway Realignments/Modifications													
Task 54	Public and Private Utility Coordination													
Task 55	Minimum Recreation Elements													
Task 56	Fishery Enhancement Opportunity													
TASK SERIES 60 SURVEY AND RIGHT OF WAY LEGAL DESCRIPTIONS														
Task 61	Data Collection and Evaluation													
Task 63	Acquisition and ROW Plan Development													
TASK SERIES 70 DELIVERABLES														
Task 71	Design Analyses Report													
Task 72	Drawing Production													
Task 73	Opinion of Probable Construction Cost													

KM Kickoff-Meeting
CM Denotes an internal coordination meeting with P-MRNRD & HDR
PM Denotes a Plan in Progress Meeting (30%) - Finalize alignments

BM Denotes a P-M Denotes a P-MRNRD Subcommittee or Board meeting
DM Denotes a ND Denotes a NDNR Meeting
UM Denotes a US Denotes a USACE Meeting

SM Denotes a Stakeholder Meeting

This is **EXHIBIT E**, consisting of 2 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

NOTICE OF ACCEPTABILITY OF WORK

PROJECT:

OWNER: Papio-Missouri River Natural Resources District

CONTRACTOR:

OWNER'S CONSTRUCTION CONTRACT IDENTIFICATION:

EFFECTIVE DATE OF THE CONSTRUCTION CONTRACT:

ENGINEER:

NOTICE DATE:

To: Papio-Missouri River Natural Resources District
Owner

And To: _____
Contractor

From: _____
Engineer

The Engineer hereby gives notice to the above Owner and Contractor that that the Work furnished and performed by Contractor under the above Construction Contract is acceptable, expressly subject to the provisions of the related Contract Documents, the Agreement between Owner and Engineer for Professional Services dated _____, and the following terms and conditions of this Notice, and that Engineer has recommended final payment of Contractor:

CONDITIONS OF NOTICE OF ACCEPTABILITY OF WORK

The Notice of Acceptability of Work ("Notice") is expressly made subject to the following terms and conditions to which all those who receive said Notice and rely thereon agree:

1. This Notice is given with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in Nebraska.

2. This Notice reflects and is an expression of the Engineer's professional opinion.

3. This Notice is given as to the best of Engineer's knowledge, information, and belief as of the Notice Date.

4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation and/or inspection of the Contractor's work) under Engineer's Agreement with Owner, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Agreement.

5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the related Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Construction Contract Documents, or to otherwise comply with the Construction Contract Documents or the terms of any special guarantees specified therein.

6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

By: _____

Title: _____

Dated: _____

This is **EXHIBIT G**, consisting of [ ] pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Insurance

Paragraph 6.05 of the Agreement is supplemented to include the following agreement of the parties:

G6.05 *Insurance*

A. The limits of liability for the insurance required by Paragraph 6.05.A and 6.05.B of the Agreement are as follows:

1. By Engineer:

a. Workers' Compensation: Statutory

b. Employer's Liability --

1) Bodily injury, each accident: $500,000
2) Bodily injury by disease, each employee: $500,000
3) Bodily injury/disease, aggregate: $500,000

c. General Liability --

1) Each Occurrence (Bodily Injury and Property Damage): $1,000,000
2) General Aggregate: $2,000,000

d. Excess or Umbrella Liability --

1) Per Occurrence: $5,000,000
2) General Aggregate: $5,000,000

e. Automobile Liability --Combined Single Limit (Bodily Injury and Property Damage):

$1,000,000

f. Professional Liability –

1) Each Claim Made $1,000,000
2) Annual Aggregate $2,000,000

B. *Additional Insureds:*

1. The Owner shall be listed on Engineer's general liability policy as provided in Paragraph 6.05.A.

This is **EXHIBIT H**, consisting of 1 page, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Dispute Resolution

Paragraph 6.09 of the Agreement is supplemented to include the following agreement of the parties:

H6.08 *Dispute Resolution*

A. *Mediation*: Owner and Engineer agree that they shall first submit any and all unsettled claims, counterclaims, disputes, and other matters in question between them arising out of or relating to this Agreement or the breach thereof ("Disputes") to mediation by a mediator to be mutually agreed upon by Owner and Engineer. Owner and Engineer agree to participate in the mediation process in good faith. The process shall be conducted on a confidential basis, and shall be completed within 120 days. If such mediation is unsuccessful in resolving a Dispute, then (1) the parties may mutually agree to a dispute resolution of their choice, or (2) either party may seek to have the Dispute resolved by a court of competent jurisdiction.

This is **EXHIBIT J**, consisting of 1 page, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

Special Provisions

Paragraph(s) [ ] of the Agreement is/are supplemented to include the following agreement(s) of the parties:

This is **EXHIBIT K**, consisting of [ ] pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated [ ].

AMENDMENT TO OWNER-ENGINEER AGREEMENT
Amendment No. _____

The Effective Date of this Amendment is: _____.

Background Data

Effective Date of Owner-Engineer Agreement:

Owner: Papio-Missouri River Natural Resources District

Engineer:

Project:

Nature of Amendment: [Check those that are applicable and delete those that are inapplicable.]

____ Additional Services to be performed by Engineer

____ Modifications to services of Engineer

____ Modifications to responsibilities of Owner

____ Modifications of payment to Engineer

____ Modifications to time(s) for rendering services

____ Modifications to other terms and conditions of the Agreement

Description of Modifications:

Here describe the modifications, in as much specificity and detail as needed. Use an attachment if necessary.

Agreement Summary:

Original agreement amount:	$_____
Net change for prior amendments:	$_____
This amendment amount:	$_____
Adjusted Agreement amount:	$_____

Change in time for services (days or date, as applicable): _____

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit C.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect.

OWNER:	ENGINEER:
Papio-Missouri River Natural Resources District	
By: _____	By: _____
Name: John Winkler	Name: _____
Title: General Manager	Title: _____
Date Signed:	Date Signed: