Memorandum

To: Papillion Creek 319 Watershed Small Flood Control and Water Quality

Structure Project Professional Services Ad-Hoc Consultant Selection

Subcommittee

From: Terry Schumacher, Land & Water Program Coordinator

Date: December 3, 2021

Re: Review and Recommendation on Professional Services Agreement with

HDR Engineering, Inc. for the Papillion Creek 319 Watershed Small Flood

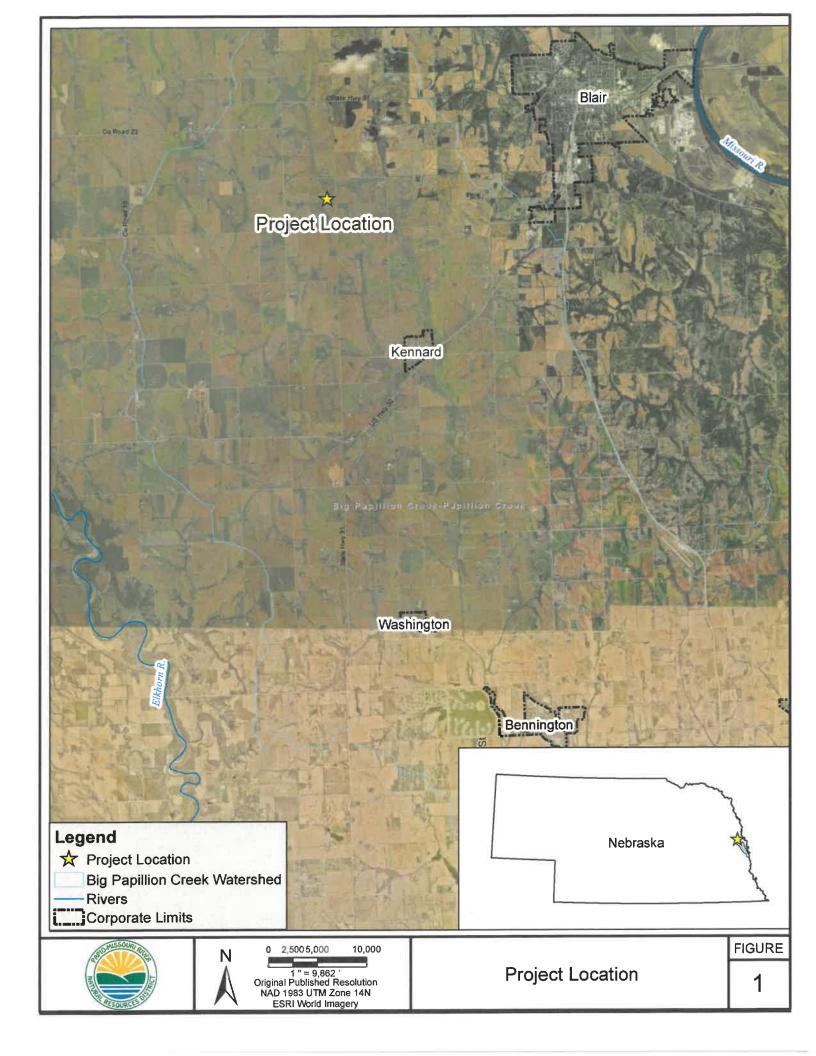
Control and Water Quality Structure Project

On November 4, 2021, the Ad Hoc Consultant Selection Subcommittee selected HDR Engineering, Inc. to provide professional services necessary for to plan, permit, design and construct a Small Flood Control and Water Quality Structure in the Papillion Creek 319 Watershed.

HDR Engineering, Inc. and District staff have discussed and prepared a professional services agreement with a scope of services, time, and cost estimate for the project, which will be divided into phases. The agreement for a maximum fee of \$474,500.00, will include professional services necessary to plan, permit, design and bid a Small Flood Control and Water Quality Structure in Washington County (see attached map).

The proposed scope of work, cost estimate and schedule are attached.

Management recommends that the Subcommittee recommend to the Board that the General Manger be authorized to execute a professional services agreement with HDR Engineering, Inc. for the Papillion Creek 319 Watershed Small Flood Control and Water Quality Project, for a maximum fee of \$474,500.00, subject to changes deemed necessary by the General Manager and approval as to form by District legal counsel.



BACKGROUND AND BASIS OF PROPOSAL

HDR Engineering, Inc. was selected by the P-MRNRD to provide planning, permitting, preliminary and final design for a water quality basin in rural Washington County under the P-MRNRD Small Dams program. The water quality basin is consistent with the Papillion Creek Watershed Plan completed under the EPA Section 319 program. The basin is located on the Dunker property north of Kennard Nebraska, and is primarily agricultural land.

To more concisely respond to project requirements, a phased approach is proposed. In Phase I, preliminary and final design will be conducted, determining project details and generally including preparing final design documents and providing bidding assistance. Following completion of Phase I, the Phase II scope of services detailing construction contract administration services will be developed and associated fees negotiated.

A1.01 Phase I - Design Phase

This Scope of Services is to document Phase I professional services to the Papio-Missouri River NRD (P-MRNRD) for the preliminary design of the Dunker Water Quality Basin (Project).

The Phase I scope of work is segmented into 10 task series:

- Task Series 100 Project Management
- Task Series 200 Section 319 Coordination
- Task Series 300 USACE Section 404 Permit and Section 401 Water Quality Certification
- Task Series 400 Modeling and Spillway/Pool Alternatives Evaluation
- Task Series 500 Geotechnical Investigation and Evaluation
- Task Series 600 Preliminary Design (60%)
- Task Series 700 Final Design
- Task Series 800 Right-of-Way Documentation
- Task Series 900 NeDNR and SWPPP Permitting
- Task Series 1000 Phase I Environmental Site Assessment
- Task Series 1100 Bidding Phase Services

HDR proposes to provide the following professional services over an anticipated 11 – month project period from the time of contract authorization. This schedule assumes a Nationwide Permit (NWP) will be required for the Project.

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 Project Management. 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. Conduct Project Approach and Resource Review (PARR) review.

<u>Task 120 Client Coordination Meetings.</u> Coordination meetings will be conducted with P-MRNRD during the Project.

- 120.1 <u>Kickoff Meeting.</u> Meet with P-MRNRD and landowner to discuss project details and review the project scope.
- 120.2 <u>Coordination Meetings</u>. Monthly coordination meetings with P-MRNRD staff to coordination project activities.
- 120.3 <u>Board/Subcommittee Presentation.</u> Conduct a presentation to the P-MRNRD Board/Subcommittee to provide the results of the Phase I 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 11 months.
- Meetings will be held at the offices of the P-MRNRD and attended by two (2) HDR professionals.

TASK SERIES 200 – SECTION 319 NONPOINT SOURCE PROGRAM COORDINATION

Task Objective:

Provide coordination and develop materials needed to support Nebraska Department of Environment and Energy funding and reporting through the Section 319 Nonpoint Source Program.

HDR Activities:

<u>Task 210 Coordination Meetings.</u> Coordination meetings will be conducted with P-MRNRD and NDEE to address the approach for Section 319 funding.

<u>Task 220 Notice of Interest/Project Implementation Plan.</u> Prepare a Notice of Interest for development of a unique project implementation plan for the Project. Upon review and approval by NDEE, prepare a Project Implementation Plan for the Project.

<u>Task 230 Bacteria/Nutrient Reduction Reporting.</u> Communicate results of Sub-task 430.6 to NDEE.

<u>Task 240 Reporting and Reimbursement Assistance.</u> Assist the P-MRNRD in developing required interim and final reporting and reimbursement requirements during the Project.

Task Deliverables:

- · Meeting agenda and notes
- Notice of Interest
- Project Implementation Plan
- Bacteria/Nutrient Reduction Analysis Results
- NDEE reporting language
- · Reimbursement request forms

Key Understandings:

- Up to three meetings will be held at the offices of the P-MRNRD and/or by teleconference and attended by two HDR professionals.
- Reimbursement request forms will be submitted monthly.

TASK 300 USACE SECTION 404 PERMIT AND SECTION 401 WATER QUALITY CERTIFICATION

Task Objective:

Secure necessary Section 404 approvals for the Project in accordance with Section 404 and Section 401 of the Clean Water Act.

Activities:

<u>Task 310 Data Collection and Evaluation.</u> Environmental data collected for the Project area include:

- Data on threatened or endangered species known locations (obtained via the USFWS Information for Planning and Conservation website and Nebraska Game and Parks Commission county species list)
- National Wetland Inventory (NWI) mapping
- Surface water quality impaired streams inventory from NDEE (2020 Water Quality Integrated Report)

<u>Task 320 Waters of the U.S Identification.</u> HDR will identify wetlands and jurisdictional waters of the U.S. on Project lands.

- 320.1 <u>Wetland Determination.</u> A wetland determination will be performed using NWI mapping and NRCS aerial photography with site verification to preliminarily identify potential wetland impacts to aid in initial determination of impacts. Identification of wetlands in agricultural environments will be performed using the most recent NRCS agricultural wetland determination methodology.
- 320.2 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 U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual] shall be provided for areas within the normal pool area and limits of construction of the structure(s).
- 320.3 <u>Stream Functional Assessment.</u> Perform a stream functional assessment of all impacted stream and associated riparian areas for assessment of stream impacts and potential mitigation requirements. The Nebraska Stream Capability Assessment Procedure (October 2016) will be used to perform the functional assessment.

<u>Task 330 USACE Coordination.</u> Meet with USACE after desktop determinations to discuss the Project and potential for meeting Nationwide Permit #43 – Stormwater Management Facilities. A second meeting is anticipated prior to submittal of a Pre-Construction Notification. Meeting materials and meeting notes will be developed for each meeting. A total of two (2) meetings are assumed.

<u>Task 340 Section 404 Authorization.</u> Based on initial identification of permitting issues, HDR will develop a permit application for the Project. It is assumed that Section 404 authorization will either be secured through an Nationwide Permit #43. A pre-construction notification and an on-site wetland and stream mitigation plan will be developed.

Task 350 Cultural Resources (Section 106) Assessment. The USACE is the federal agency responsible for Section 106 compliance as a result of their federal action (issuance of a Section 404). USACE typically requires information from the applicant that documents potential impacts to cultural resources. HDR will submit a request to USACE to coordinate with Nebraska State Historic Preservation Office (SHPO) for their recommendation on the need for a Phase I Archaeological Survey. Assuming their response would be to recommend a survey, HDR will perform a Phase I Archaeological survey (pedestrian survey) for all areas below the top of dam.

Task Deliverables:

- Wetland Determination Technical Memorandum
- Wetland Delineation Report and Stream Functional Assessment
- Pre-application meeting agenda and notes
- USACE meeting agenda's and notes
- Section 404 Pre-Construction Notification
- Phase I Archaeological Survey

Key Understandings:

- Right of entry with landowners to conduct cultural resources and wetland surveys will be coordinated by P-MRNRD.
- Native American Tribal coordination would occur between USACE and tribes as government-to-government consultation. No additional effort to assist USACE in this consultation is anticipated.
- · No agency scoping meeting is planned.
- 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 the wetland and stream channel mitigation will be on-site. The concept plans will depict the type, size and location of the mitigation resource and will follow 33 CFR 332.4 (c)(2-14).
- No tree mitigation (excluding forested wetlands) will be required.
- No threatened or endangered species surveys will be required and no Section 7 of the Endangered Species Act informal or formal consultation will be required.
- The Section 401 Water Quality Certification is automatically granted under NWP #43.

TASK 400 MODELING AND SPILLWAY/POOL ALTERNATIVES EVALUATION

Task Objective:

Develop hydrologic model for use in evaluating and optimizing dam and water quality features for the basin. Impacts of varying pool levels will be determined.

Activities:

Task 410 Data Collection and Evaluation.

- 410.1 Data Collection. Data to be evaluated includes:
 - Existing HMS model of Papillion Creek Watershed
 - Available LiDAR data
 - Aerial photography for Washington County.
 - Previous studies and concepts developed for site
 - Available water quality information for basin and surrounding watershed.
- 410.2 <u>Stage-Storage Data.</u> Develop stage-area-storage relationship for the dam and reservoir using available LiDAR topographic mapping.

Task 420 Hydrologic Model Development. HEC-HMS will be used to route design hydrographs through the proposed water quality basin. The hydrologic model of the Papillion Creek watershed will be used for this analysis and subbasin definition in project area refined as necessary. The principal spillway hydrograph, auxiliary spillway hydrograph, and freeboard hydrographs will be determined per NRCS Technical Release No. 210-60 for a 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.

420.1 HEC-HMS Model Update. Key hydrologic parameters such as land use and percent impervious areas will be updated to future conditions that correspond to anticipated future development conditions and coordinated with the Washington County land use plans. Update rainfall distributions using NOAA Atlas 14 Midwest Region 3 temporal distribution for Nebraska.

<u>Task 430 Spillway Refinement.</u> The principal and auxiliary spillway configurations will be optimized to meet P-MRNRD and landowner goals for the basin. The configurations will maximize pool, water quality, and flood control benefits and minimize adjacent landowner impacts.

430.1 <u>Dam Features for Alternatives.</u> Variations in the spillway configurations will be investigated to further maximize the normal pool surface area (and therefore contact treatment time, sediment storage and trap efficiency) and minimize impacts to infrastructure, land and environmental resources. Variations in spillway design, such as structural chutes and two-stage spillways will be investigated. Rating curves

- for various spillways will be developed for use in reservoir routing. Up to five (5) spillway alternative configurations will be investigated.
- 430.2 Reservoir Routing. HEC-HMS model will be used to route hydrographs through the basin. Top of dam elevations will be established through these routings based on NRCS TR-60 and State of Nebraska Dam Safety criteria.
- 430.3 <u>Sediment Loading.</u> Determine at-reservoir sediment yield from upland erosion and channel bank sources using RUSLE, or other appropriate estimating technique.
- 430.4 <u>Design Life.</u> Provide for a minimum of a 50-year service life. Compute the trap efficiencies of the proposed sediment basin to quantify sediment deposition in cubic yards and percentage of basin volume.
- 430.5 <u>Impact Evaluation.</u> Infrastructure impacts for each design hydrograph will be determined for each alternative. Potential mitigation measures for impacted infrastructure will be investigated.
- 430.6 Water Quality Analysis, Estimate nutrient (nitrogen and phosphorous) and bacteria (e.coli) loading to basin. Develop water quality treatment concepts (wetlands, granular berms, etc.) to reduce pool loadings. Determine treatment efficiency and reduction in pool loading. Simulate pool water quality and basin effluent loading for estimating project water quality benefits.
- 430.7 <u>Alternative Summary</u>. A summary of the spillway alternatives investigated will be prepared that provides a comparison of key features, including:
 - Normal Pool Elevation
 - Top of Dam Elevation
 - ROW acquisition requirements
 - Spillway costs
 - Wetland/permitting impacts
 - Sediment Storage
 - Capture efficiency/Design Life
 - Water Quality Benefits

<u>Task 440 Draft Report Section.</u> Prepare preliminary and final draft of modeling and dam alternatives section of the design report.

- 440.1 <u>Preliminary Draft Report Section.</u> Document analysis in a preliminary draft dam alternative section of the design report.
- 440.2 <u>Final Draft Report Section</u>. Document analysis in a final draft dam alternative section of the design report. Incorporate review comments.

Task Deliverables:

Draft and final dam alternatives section of design report.

Key Understandings:

- The hydrologic analysis will be performed using the HEC-HMS model for the Papillion Creek Watershed as a basis.
- 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 five (5) spillway configurations will be evaluated.
- Structure will be classified as a high hazard structure.
- Bacteria/Nutrient reduction analysis will be spreadsheet based and supported by literature values based on published studies
- Effects of climate change will not be considered beyond what is described in the proposed approach.

TASK 500 GEOTECHNICAL INVESTIGATION AND EVALUATION

Task Objective:

Conduct subsurface geotechnical investigation and conduct geotechnical evaluation of embankment.

Activities:

Task 510 Data Collection and Review. Data to be reviewed include:

- Available geotechnical data from adjacent projects, if available.
- NRCS Soil survey data

<u>Task 520 Subsurface Investigation Plan.</u> HDR to conduct a geotechnical investigation to evaluate the subsurface conditions along the dam centerline, spillway, and borrow areas. HDR will visit the site to prepare a boring plan showing the location of the borings and a laboratory testing program assigning tests to specific samples.

The laboratory testing program requirements is anticipated to include:

- Atterberg Limits (silts and clays, per ASTM D 4318).
- Grain size analyses with hydrometer (sands, silts, and clays per ASTM D 6913 and ASTM D 7928).
- Moisture Content/Dry Density tests (Shelby tube and bag samples, per ASTM D 2166, ASTM D 7263).
- Standard Proctor compaction test, per ASTM D 698.
- Unconfined Compressive Strength tests (Shelby tube samples, per ASTM D 2166).
- Triaxial compression tests (UU) on undisturbed samples (tube samples, per ASTM D 2850).
- Consolidation tests (tube samples, per ASTM D 2435).
- Pin-hole dispersion tests, ASTM D 4647.

<u>Task 530 Subsurface Investigation Exploration</u>. Thiele Geotech Inc. to conduct field exploration and sampling, conduct laboratory tests and prepare geotechnical material data report. Geotechnical data report includes boring logs and laboratory test data. LRA will survey the location of the borings (pre- and then post-drilling).

Task 540 Preliminary Geotechnical Design and Analysis.

Preliminary geotechnical design will be performed. The design 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)
- · Perform slope stability analyses for end of construction case
- Perform seepage analyses (does not include reservoir water balance)
- Evaluate foundation underseepage
- Evaluate seepage through the embankment
- Perform slope stability analyses for rapid drawdown, steady state seepage and earthquake cases
- · Perform settlement analyses along:
 - Embankment centerline
 - Drawdown pipe

550 Final Geotechnical Design and Analysis. Final geotechnical design will be performed. The design includes:

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

- Assist in development of geotechnical aspects of plans and specifications.
- Evaluate instrumentation and upstream face slope protection.

<u>Task 560 Geotechnical Investigation and Evaluation Documentation.</u> Prepare geotechnical evaluation report documenting the results of the geotechnical investigation and design.

- 560.1 <u>Draft Geotechnical Investigation and Design Report.</u> Document the results of the field investigation, laboratory testing program, and engineering evaluations.
- 560.2 <u>Final Geotechnical Investigation and Design Report.</u> Incorporate review comments and revise geotechnical report.

Task Deliverables:

Draft and Final Geotechnical Investigation and Design Reports

Key Understandings:

- Site is accessible to drill rig with no clearing or crop issues.
- Thiele Geotech Inc., as a subconsultant to HDR, will conduct field investigation and laboratory testing program.
- LRA as a subconsultant to HDR, will survey the pre- and post locations of the boring holes
- The final geotechnical report will be ready for inclusion in the NDNR dam safety permit application.

TASK 600 PRELIMINARY DESIGN

Task Objective:

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

Activities:

Task 610 Data Collection and Evaluation.

- 610.1 <u>Data Collection</u>. Collect necessary data. Data to be evaluated includes:
 - Existing GIS mapping including aerials, topographic data, and parcels
- 610.2 Topographic Survey. Conduct a topographic survey of the proposed water quality basin embankment/spillway footprint. Include a limited topographic survey, including drainage structure information (approx. 200 feet upstream and downstream of the existing drainage structure centerline).
- 610.3 <u>Topographic Base Map.</u> Topographic survey will be supplemented with LiDAR topographic data. Merge topographic data with LiDAR data and proposed grading from adjacent developments.

<u>Task 620 Drawing Production</u> - Develop conceptual design of water quality basin and preferred spillway configuration. A preliminary drawing list of sheets includes:

- Title Sheet (1 sheet)
- General Notes, Legend, Abbreviations, Hydrologic/Hydraulic Data (1 sheet)
- Topographic Maps of Pool Area (1 sheet)
- Plan View of Site (1 sheet)
- Profile of Drawdown (1 sheet)
- Grading Plan and Embankment Drain Plan (1"= 50', 3 sheets)
- Drain Details (e.g. embankment drain detail and toe drain detail, 1 sheet)
- Water Quality Treatment (plan and details 2 sheets)
- Spillway Plan and Section (e.g. spillway configuration, 2 sheets)
- Miscellaneous Details (1 sheet)
- Geological Boring Location Plan (1 sheet)
- Geological Profiles (2 sheets)

<u>Task 630 Conceptual Opinion of Probable Construction Costs.</u> Develop conceptual level opinion of probable construction costs.

<u>Task 640 Design Analysis Documentation.</u> Prepare a design analysis report for the construction elements section of the report.

<u>Task 650 Design Review Meeting.</u> Prepare a design analysis report for the construction elements section of the report.

Task Deliverables:

- Conceptual Design Drawings (approximately 60% level)
- · Design Analysis Report

Key Understandings:

- LRA, as a subconsultant to HDR, will provide the land surveying services.
- Preliminary design will be for one (1) recommended alternative
- Drawings will be provided in 11" x 17" format.
- Technical specifications will not be prepared during Phase I.
- One (1) electronic copy and one (1) hard copy of Design Analysis Report will be provided to P-MRNRD.
- P-MRNRD will be responsible for report reproduction.

TASK 700 FINAL DESIGN

Task Objective:

To define design elements and prepare set of drawings to approximately a 100% level.

Activities:

<u>Task 710 Final Civil Design</u> – Final design of water quality basin, earthen embankment grading and earthwork plans, finalize H&H analysis, final design of water quality features, and final site grading.

<u>Task 720 Final Geotechnical Design</u> - Complete geotechnical design, including final embankment design, construction phasing, internal drainage design, joint extensibility, and dam instrumentation.

<u>Task 730 Final Structural Design.</u> Develop final design of principal and auxiliary spillway structural elements.

<u>Task 740 Final Water Quality Treatment Design.</u> Prepare a final design and details of water quality treatment measures.

<u>Task 750 Final Construction Drawings and Specifications.</u> Develop conceptual level opinion of probable construction costs.

- 750.1 <u>Drawing Production.</u> Complete drawing production. Incorporate review comments and finalize drawings for bidding.
- 750.2 <u>Technical Specifications.</u> Finalize technical specification for civil elements. Incorporate review comments and finalize for bidding.

<u>Task 760 Conceptual Opinion of Probable Construction Costs.</u> Develop final opinion of probable construction costs.

Task 770 Final Design Documentation. Develop final design documentation.

Task Deliverables:

- · Final Design Drawings
- Final Specifications
- · Final Design Analysis Report

Key Understandings:

- HDR Standard specifications will be used.
- Drawings will be produced in AutoCAD (current version)
- Drawings will be provided in 11" x 17" format.
- One (1) electronic copy and one (1) hard copy of Design Analysis Report will be provided to P-MRNRD.
- P-MRNRD will be responsible for report reproduction.

TASK 800 RIGHT-OF-WAY ASSISTANCE

Task Objective:

To determine right-of-way (ROW) requirements based on a design and determine legal descriptions in support of ROW acquisition/designation by P-MRNRD.

<u>Task 810 Acquisition and ROW Plan Development.</u> This task includes defining the preliminary acquisition/boundary plans preparing preliminary ROW tract maps for up to 3 parcels.

- 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 water quality treatment features. Coordinate with P-MRNRD and determine boundary extents for acquisition.
- Preliminary Acquisition/Boundary Plans. Conduct field survey to locate section corners and establish initial control. Develop preliminary ROW map tract plans based on current title commitments, dimensional control provided by recorded subdivision plats, utility records, and other recorded surveys and documentation at the Washington County Surveyor's office and Washington County Register of Deeds Office. Items depicted on these plans include: 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.
- 820.3 <u>Legal Descriptions.</u> Provide title commitment and develop legal descriptions for acquisition/designation of 2 parcels.

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:

- 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
- It is assumed that the number of revisions to the preliminary boundary is limited to 1 per parcel.

TASK 900 NeDNR AND NPDES PERMITTING

<u>Task 910 NeDNR Permit Preparation</u>. Prepare documentation to complete a NDNR Application for a "Permit to Impound Water" and "Application for Approval of Plans for Dams" for the water quality basin.

- 910.1 <u>Coordination Meetings.</u> Attend up to two (2) meetings with NDNR relevant to the water quality basin design. The scope/subject of these meetings is anticipated to be:
 - Preliminary Design Review Meeting. Conduct meeting to review and discuss the Preliminary Design.
 - Final Design Review Meeting. Conduct meeting to review and discuss the comments on the Pre-Bidding design.
- 910.2 <u>Plan Approval Application.</u> Preparation of approval of dam plan permit application, including:
 - Permit Drawings
 - Technical specifications
 - o Design Analysis Report
 - o Completed permit application
- 910.3 Impound Water. Preparation and submittal of permit to impound water.
- 910.4 Dam Breach Analysis. A dam breach analysis will be conducted to define potential inundation areas should the structure fail. The breach routing will extend from the structure downstream to a point where the flood wave water surface has been attenuated below the regulatory 100-yr water surface elevation. The current HEC-RAS model used in the preliminary design effort will be the basis for the dam breach analysis. Two dam breach scenarios will be evaluated. Inundation maps will be prepared as part of the dam breach analysis for inclusion in the Emergency Action Plan.
- 910.5 <u>Emergency Action Plan.</u> HDR will develop a draft emergency action plan based on the current NDNR template. Comments from NDNR will be solicited and a final emergency action plan submitted.

<u>Task 920 NPDES Construction Activity Permit.</u> NPDES construction activity permit and grading permit. Prepare drawings, narrative plan, application, and NDEQ NPDES Notice of Intent (NOI) to comply with NPDES stormwater associated with construction activity.

Sheet	Section Description
Section 02-SWPF	pp
ES-1	SWPPP Overall Site Plan
ES-2 to ES-3	SWPPP General Notes and Details
ES-4	SWPPP WQ Basin

Task Deliverables:

- NDNR permit applications
- NPDES permits
- Emergency Action Plan (Draft and Final)

Key Understandings:

 P-MRNRD is responsible for permit submittal and payment of permit application fees.

TASK 1000 PHASE I ENVIRONMENTAL SITE ASSESSMENT

Task Objective:

Identify Recognized Environmental Conditions (RECs) that either exist or have existed on or around the Site as defined under the ASTM Method E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

<u>Task 1010 Database Research.</u> Conduct a database search and a search of existing public records to document RECs.

- 1010.1 <u>Database Research.</u> Utilize a database research firm to provide a regulatory database search of the Site and surrounding properties that will include: federal standards, state standards, and federal supplemental, state supplemental, and local and brownfields databases within the regulatory minimum-search distance of the property, as defined by ASTM E1527-13. If available, the database report will also include Sanborn, city directory, and historical topographical maps. If necessary, HDR will attempt to obtain additional file information for site(s) listed in the database that, in the view of an HDR environmental professional, may pose an impact to the Site.
- 1010.2 <u>Landuse Survey.</u> Provide a historical land-use review based on a review of readily-available sources of information as stated in ASTM E1527-13, such as aerial photographs, USGS 7.5-minute topographic maps, fire-insurance maps, local street-directories search, property-tax files, building-department records, recorded land title/deed records, and zoning/land-use records.
- 1010.3 <u>Geology/Soil Conditions</u>. Review regional and local geology/soil conditions as documented by USGS.
- 1010.4 Floodplain Maps. Review readily-available site-related floodplain maps.

Task 1020 Site Visit & Interviews. Conduct a site visit and interviews to document RECs.

- 1020.1 <u>Site Visit.</u> Perform a site visit for purposes of reconnaissance of the Site and surrounding properties. The site reconnaissance will be conducted in order to identify potential RECs located on the Site or surrounding properties. The site reconnaissance will document the general site setting and exterior and interior observations.
- 1020.2 <u>Landowner Interviews</u>. Conduct interviews with the property owner and a Duonix representative, as available, to determine current and past uses of the property. If conditions warrant interviews with surrounding property owners, they will be conducted at the time of the site visit. A narrative will be prepared to document the past use(s) of the property.
- 1020.3 Other Interviews. Interviews will be conducted, as appropriate, with local government officials who may have specific information on the property, including the local fire department, health department, planning department and historical society/library to determine any additional information on the historical land usage of the property and surrounding properties.

<u>Task 1030 Phase I ESA Report Preparation & Submittal.</u> Prepare a draft and final Phase I report.

- 1030.1 <u>Draft Phase I.</u> HDR will prepare a draft Phase I Environmental Site Assessment report that complies with the All Appropriate Inquiries standard as found at ASTM E1527-13, except as noted below. The report will include opinions and/or recommendations of the environmental professional.
- 1030.2 <u>Final Phase I.</u> HDR will prepare a final Phase I Environmental Site Assessment report based on review comments.

Task Deliverables:

- Draft Phase I Report, electronically
- Final Phase I Report, electronically and 2 hard copies.

Key Understandings:

- P-MRNRD will verify the tract location and approximate area that are the subject of this site assessment.
- Client to arrange access to the site and provide contact information for Site owner that may be aware of Site's history.
- No invasive site work, quantitative chemical analysis, asbestos, lead-based paint, components of building materials, radon, wetlands, archaeological or threatened & endangered species reviews are included in the scope of this ESA.
- The ASTM standard currently requires a real-estate assessment to be completed in the event there is a significant devaluation of the subject property due to an environmental condition. HDR's professional services do not include this assessment and this will be noted as an exception to the ASTM standard.
- This task covers the Phase I ESA only, and does not include any services related to additional investigation of any portion of the Site and/or Phase II ESA services.

TASK 1100 BIDDING PHASE SERVICES

Task Objectives:

To provide bidding assistance. For purposes of this scope development, it is assumed that one (1) bid package will be prepared.

HDR Activities:

<u>Task 1110 Prepare Documents for Distribution</u>. Provide electronic copy of plans and specifications to reprographic firm for reproduction as the Issuing Agency. Coordinate distribution of contract documents to Plan Houses.

Task 1120 Bid Phase Assistance. Respond to technical questions from bidders.

<u>Task 1130 Addendum Preparation/Distribution.</u> Issue addenda as appropriate to interpret, clarify or expand Contract Documents and to respond to Contractor's questions.

<u>Task 1140 Pre-bid/Site Showing.</u> Attend pre-bid/site showing hosted by P-MRNRD. HDR to prepare agenda and record meeting notes. P-MRNRD to distribute record meeting notes.

<u>Task 1150 Bid Opening.</u> Attend bid opening, tabulate bidder's project costs and make a recommendation of award.

Task Deliverables:

- Project description for advertising
- Addendums
- Pre-bid/Site Showing agenda, record meeting notes.
- Bid tabulation and letter of award recommendation

Key Understandings:

- P-MRNRD will coordinate and pay any fees with reprographic firm as issuing agent for contract documents and issuing addenda.
- P-MRNRD will be responsible for cost of reproduction of contract documents for plan house distribution, HDR and P-MRNRD.
- P-MRNRD will be responsible for advertising.
- P-MRNRD will be responsible for arranging pre-bid meeting room.
- Bid Phase services will include the services set forth in Section A1.04 of Exhibit A to the EJCDC E-500 and listed below:

Section A1.04 After acceptance by Owner of the final Drawings and Specifications, other Construction Contract Documents, bidding-related documents (or requests for proposals or other construction procurement documents), and the most recent opinion of probable Construction Cost as determined in the Final Design Phase, Engineer shall:

- Assist Owner in advertising for and obtaining bids or proposals for the Work, assist Owner
 in issuing assembled design, contract, and bidding-related documents (or requests for
 proposals or other construction procurement documents) to prospective contractors, and,
 where applicable, maintain a record of prospective contractors to which documents have
 been issued, attend pre-bid conferences, if any, and receive and process contractor deposits
 or charges for the issued documents.
- 2. Prepare and issue Addenda as appropriate to clarify, correct, or change the issued documents.
- 3. Provide information or assistance needed by Owner in the course of any review of proposals or negotiations with prospective contractors.
- 4. Consult with Owner as to the qualifications of prospective contractors.
- 5. Consult with Owner as to the qualifications of subcontractors, suppliers, and other individuals and entities proposed by prospective contractors, for those portions of the Work as to which review of qualifications is required by the issued documents.
- 6. If the issued documents require, the Engineer shall evaluate and determine the acceptability of "or equals" and substitute materials and equipment proposed by prospective contractors, provided that such proposals are allowed by the bidding-related documents (or requests for proposals or other construction procurement documents) prior to award of contracts for the Work. Services under this paragraph are subject to the provisions of Paragraph A2.02.A.2 of this Exhibit A.
- 7. Attend the bid opening, prepare bid tabulation sheets to meet Owner's schedule, and assist Owner in evaluating bids or proposals, assembling final contracts for the Work for execution by Owner and Contractor, and in issuing notices of award of such contracts.
- 8. If Owner engages in negotiations with bidders or proposers, assist Owner with respect to technical and engineering issues that arise during the negotiations.

The Bidding or Negotiating Phase will be considered complete upon commencement of the Construction Phase or upon cessation of negotiations with prospective contractors.

EXHIBIT "C", APPENDIX 2 PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT PRELIMINARY and FINAL DESIGN OF DUNKER WATER QUALITY BASIN

								MINIE	DLUL	MBER 2, 20	/A, 1										Est. Tota
		HE	OR Engine	ering, Inc	c. Estimate	d Hours/	Costs						Expenses			HDR	Sub-Consultant Estimated Costs				Cost
	Tasks	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Clerical	Total Hours	Total Labor Cost	Pr	inting	Travel	Misc.	Total Expenses	Totals	LRA	Thiele Geotech	History Nebraska	Total Sub- Consult.	
ASK SERIES 1	00 - PROJECT MANAGEMENT					C1074					- 1					2				3	
Task 110	Project Management (11 months)	24		4				22	50	\$10,379					\$0	\$10,379				\$0	\$10.3
ask 120	Client Coordination Meetinus														-						
Subtask 120.1	Kickoff Masting	4			4	4			12	\$2.692			\$22		\$22	\$2,714				\$0	\$2
Subtask 120.2	Coordination Meetings				12	12			24	\$4,838			\$22		\$22	\$4,860				\$0	
Subtask 120,3	Board/Subcommittee Presentation	2				4			6	31.244			\$11		\$11	\$1,255				\$0	\$1.2
	Estimated Task Hours Subtotal	30	- 0		16	20	0	22	92												
	Estimated Task Cost Sublotal	\$8,094	50	\$1,088	\$1,635			12.816		119,153	50	10	356	30	155	\$19,208	50	. 50	31	\$6	£19,2
TACK SERIES 1	00 - SECTION 319 NONPOINT SOURCE PROGRAM COORDINATION								-		200								CETTO		A
Task 210	Coordination Meetings		-		Τ θ	4			12	\$2,522					\$0	\$2,522				\$0	\$2,5
Task 220	Notice of Interest/Project Implementation Plan			_		8			16						\$0	\$3,226				\$0	\$3,2
Task 230	Bacteria/Nutrient Reduction Reporting			_	<u> </u>	4			4	\$704					\$0	\$704				\$0	57
Task 240	Reporting and Reimbursement Assistance				8	8			16	\$3,226					\$0	\$3,226				\$6	\$3,2
143K 240	Estimated Task Hours Subtotal	0	-		24	24	0	0	48									-	-		_
	Estimated Task Cost Subtotal			160						\$9,677	50	30	10	10	10	19,677	50	30	30	50	39,6
TACK SAS IN	ACE SECTION 404 PERMIT AND 401 WATER QUALITY CERTIFICATION			-	1		-		_						-		A 114		-	V Carrier III	-
Task 310	Data Collection and Evaluation			_		T.	- 4		1	\$538					50	\$538				\$6	3 55
	Waters of the U.S Identification				_	_	- 4			3000					-						
Task 320					2		16		18	\$2,605					50	\$2,605				\$0	\$2.0
Subtask 320.1	Wetland Determination	_	_		8		68		76			\$20	\$33	\$174	\$227	\$11.784			1	Sc	
Sublask 320,2	Wetland Delineation					-			10			320	333	31/7	\$0	\$1.530		-	-	50	
Subtask 320,3	Stream Functional Assessment		_	_	2	-	8		10			_	_		\$0	\$1,550				\$6	
Task 330	USACE Coordination					-			56			_			50					\$6	
Task 340	Section 404 Authorization		_		16	_	40		56			-			50	\$9,077		_	\$5.000		
Task 350	Cultural Resources (Section 106) Assessment								0	\$0		_			30	50			\$5,000	\$5,000	
Task 360	Section 401 Water Quality Certification								0		_				30	30			-		
	Estimated Task Hours Subtotal			1 0				0	164		***	Anal	133	1174	\$ 227	\$24,867	\$6	30	15,00	15,000	\$29,0
	Estimated Task Cost Subtotal	\$0	\$0	\$ \$0	\$6,362	50	\$18,278	\$0		\$24,640	20	\$20	133	3174	\$221	324,807	30	36	10,000	30,000	323,
TASK SERIES	100 - MODELING AND SPILLWAY/POOL ALTERNATIVES EVALUATION		0		- 1				1										11	10.1	
Task 410	Data Collection and Evaluation																				
Subtask 410.1	Data Collection					2	2						\$14		\$14					30	
Subtask 410,2	Stage-Storage Data Verification					2	2		1 4	\$621					\$0	\$621				31	0 \$4
Task 420	Hydrologic Model Development					X						-						2			
Subtask 420.1	HEC-HMS Model Update				T	2	2		4	\$621					\$0	\$621				\$6	0 S4
Task 430	Spillway Refinement								30 T												
Subtask 430.1	Dam Features for Alternatives	4			1	1	20		32	\$5 175					\$0					\$1	
Subtask 430.2	Reservoir Routing					4	4			\$1 242					\$0					St	
Subtask 430,3	Sediment Loading						16		24	\$3 558					\$0					Si	
Subtask 430,4	Design Life					2	4		- 6	\$890					\$0					\$1	
Subtask 430,5	Impact Evaluation					1	4		1 8	\$1,242					\$0	\$1,242				\$4	
Subtask 430,6	Water Quality Analysis	10			2 16	40	24		92						.\$0	\$17 143				Si	0 517
Subtask 430.7	Alternative Summary	2				16			34	\$5,506			-		\$0	\$5,506				Si	0 \$5.
Task 440	Draft Report Section					-		-		-		-							111		
Subtask 440.1	Preliminary Draft Report Section	2		T	2 .				24	\$4,424					\$6	\$4.424				S	
Subtask 440.1	Final Draft Report Section	2			2		12		28						\$0	\$4,616				S	0 \$4,0
	I man arrain requisit Common			-	6 20	1 10-												•			

EXHIBIT "C", APPENDIX 2 PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT PRELIMINARY and FINAL DESIGN OF DUNKER WATER QUALITY BASIN

							LL LOI	MAIC	- DLCL	MBER 2, 20	J4 I										Est, Total
		н	OR Engine	eering, In	c. Estimate	d Hours/	Costs						Ехрепвез	5		HDR	R Sub-Consultant Estimated Costs				Cost
	TASKS	Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Clerical	Total Hours	Total Labor Cost	Pi	rinting	Travel	MIsc.	Total Expenses	Totals	LRA	Thiele Geotech	History Nebraska	Total Sub- Consult.	
	00 - GEOTECHNICAL INVESTIGATION AND EVALUATION		10.0		g- A 7 B				150												
Task 510	Data Collection and Review		2			4			6	41,200					\$0					\$0	\$1,28
Task 620	Subsurface Investination Plan		8			12			20	\$4,416			\$22		\$22	\$4,438				\$0	\$4,43
Task 530	Subsurface Investigation Exploration	2							6	\$1,692			\$22	\$100		\$1.814	\$1,500	\$65,000		\$66,500	\$68,37
ask 540	Preliminary Geotechnical Design and Analysis		82			160			266	\$55,002					\$0	\$55,002				\$0	\$55,00
Task 550	Final Geotechnical Design and Analysis		26			46			74	\$16,160	- 1				\$0	\$16,160				\$0	\$16,16
Task 560	Geofechnical Investigation and Evaluation Documentation																				
Subtask 560.1	Draft Geotechnical Investigation and Design Report		24			24			54						\$0					\$0	
Subtask 560.2	Final Geotechnical Investigation and Design Report		12			24			56						\$0	\$10,368				\$0	\$10,36
1	Estimated Task Hours Subtotal							0			15/25/1			615							0.0
	Estimated Task Cost Subtotal	\$540	\$44,080	30	\$0	\$47,520	\$8,064	10		\$102,204	30	\$0	544	\$100	\$144	\$102,348	\$1,500	#65,000	10	\$88,500	1168,84
ASK 600 - PR	ELIMINARY DESIGN										- 10					HILL					
Task 610	Data Collection and Evaluation																				
Sublask 510.1	Data Collection	2		T		2	2		6	\$1,160					50	\$1.160				\$0	\$1 16
Subtask 610.2	Topographic Survey	2					2		4	\$808					50	\$808	\$5,000			\$5,000	
Subtask 610,3	Topographic Base May			1			8		8	\$1,075					\$0					\$0	
Task 620	Drawing Production	- 4			3 40	80	200		332	\$53,303		52			52	\$53,305				50	
ľask 630	Conceptual Opinion of Probable Construction Costs				4	8	76		28	\$4,467					\$0	\$4,467				50	\$4,46
Task 640	Design Analysis Documentation				8	16	16		42			\$10			\$10	\$7,338				50	\$7,33
Task 650	Design Review Meeting	- 2			2				4	\$994					\$0	\$994					
	Estimated Task Hours Subtotal	10				106		0	424			- 8					A1 - 4			de etale	oli sa sa sa
	Estimated Task Cost Subtotal	\$2,698	\$0	\$2,72	112,269	\$18,656	\$32,794	\$0		\$69,136	50	512	\$0	50	112	189,148	\$5,000	50	\$0	\$5,000	\$74,14
TASK SERSES 7	700 - FINAL DESIGN		7.0		10											THE REAL PROPERTY.				11	
Task 710	Final Civil Design	2				16	40		58	\$6,732					50					50	
Task 720	Final Geotechnical Design (INCLUDED IN TASK 600 HOURS)								0	\$0					\$0					50	
Task 730	Final Structural Design	1			20	40	40		101	\$17,230					\$0					\$0	
Task 740	Final Water Quality Treatment Design	2				24	40		66	\$10,140					50	\$10,140				50	\$10,14
Task 760	Final Construction Drawings and Specifications																				
Subtask 750,1	Drawing Production				12	24	80		116	\$17,702					\$0					\$0	
Subtask 750,2	Technial Specifications	8			40	32		24	104	\$19.950					\$0	\$19,950				\$0	
Task 760	Conceptual Opinion of Probable Construction Costs					8	8		16						\$0	\$2,483				\$0	
Task 770	Final Design Documentation					16	16		32	\$4,966					30	\$4,966				\$0	\$4,96
	Estimated Task Hours Subtotal	13		2	72	160	224	24	493												
	Estimated Task Cost Subfotal	\$3,507	36	5	\$16,354	\$28,160	\$30,106	\$3,072		\$81,203	10	50	10	50	50	101,203	10	50	\$0	50	\$81,20
TASK SERIES E	800 - RIGHT-OF-WAY ASSISTANCE			50.									- "			A 100 - 100					
Task 810	Acquisition and ROW Plan Development																				
Subtask 820.1	Real Property Work Maps						4		6	5992					\$0	\$992				\$0	\$99
Subtask 820,2	Preliminary Acquisition/Boundary Plans				1 2		4		6	5992					\$0	\$992	\$2,500			\$2,500	
Subtask 820.3	Legal Descriptions				1 2			2	4	5710					50	\$710				\$0	\$71
	Estimated Task Hours Subtotal	0	_	2	0 6	0	8	2	16						•					***************************************	
	Estimated Task Cost Subtotal	10	- 50	9 5	51,363	50	\$1,075	\$256		\$2,694	50	10	50	\$0	50	\$2,694	\$2,500	50	\$0	\$2,600	\$ 5,15
TASK SERIES S	900 - NEDNR and NPDES PERMITTING		-	-	1					-								1000			
Task 910	NeDNR Permit Preparation																				
Subtask 910.1	Coordination Meetings	2		1	T	,			1 4	\$892	- 1"				\$0	\$892				\$0	\$89
Subtask 910.2	Plan Approval Application	2		1		8		- 2	12			-			50	\$2.204				\$0	
Subtask 910.3	Impound Water	1				2			1 3	\$622					\$0	\$622				\$0	
Subtask 910.4	Dam Breach Analysis			1	1		16		24						50	\$3,558				\$0	
Subtask 910.4 Subtask 910.5	Emergency Action Plan			1	1	16	16		36						50	\$5,478				\$0	
Task 920	NPDES Construction Activity Permit				1	16	16		32	\$4,966					50	\$4,966				\$0	
	Estimated Task Hours Subtotal	-		0	0 6				-											•	
	Estimated Task Cost Subtotal			9 5						\$17,720	10		10	\$6	10	\$17,720	\$0	30	10		\$17,72

EXHIBIT "C", APPENDIX 2 PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT PRELIMINARY and FINAL DESIGN OF DUNKER WATER QUALITY BASIN

			Н	OR Engine	eering, In	c. Estimate	d Hours/C	Costs						Expense	S		HDR	Sub-Consultant Estimated Costs				Est. Total Cost
	TASKS		Project Manager	Specialist	Principal Staff	Senior Staff	Technical Staff	Tech Support	Ciericai	Total Hours	Total Labor Cost		Printing	Travel	Misc,	Total Expenses	Totals	LRA	Thiele Geotech	History Nebraska	Total Sub- Consult,	
ASK SERIES 1	000 - PHASE I ENVIRONMENTAL SITE ASSE	SSMENT		7.00			11-160												- 100	323		
Task 1010	Database Research																					
Subtask 1010,1	Database Research					14		2		2	\$269				\$500						\$0	\$765
Subtask 1010.2	Land use Survey							2		2	\$269					\$0					\$0	\$765 \$265 \$265 \$265
Subtask 1010.3	Geology/Soil Conditions							2		2	\$269					\$0					\$0	\$269
Subtask 1010,4	Floodplain Maps							2		2	\$269					\$0	\$269				\$0	\$269
Task 1020	Site Visit & Interviews																					
Subtask 1020.1	Site Visit							8		8	\$1 075			\$28	\$100						50	\$1,200
Subtask 1020.2	Landowner Interviews						2	2		4	\$621					50					50	\$1,203 \$621 \$890
Subtask 1020.3	Other Interviews						2	4		6	\$890					\$0	\$890				\$0	3890
Task 1030	Phase I ESA Report Preparation & Submit	ttal																				
Subtask 1030.1	Draft Phase I			2	2		24	6	2	36						50	\$6,131				\$0	\$6,131 \$2,516
Subtask 1030.2				1	2		8	5	2	14	\$2,509		\$10			\$10	\$2,519				\$0	\$2,519
		Estimated Task Hours Subtotal	0	4	1	0	36	32	- 4	76												
		Estimated Task Cost Subtotal	10	\$1,152	2 50	\$0	\$6,336	\$4,301	\$512		\$12,301	20	\$10	\$28	\$400	\$638	\$12,938	10	50	10	50	\$12,938
TASK SERIES 1	100 - BIDDING PHASE SERVICES																					
Task 1110	Prepare Documents for Distribution				3		8			8	\$1,408					SO					50	
Task 1120	Bid Phase Assistance		2			4	8			14						\$0	\$2,856				\$0	\$2,856 \$3,721 \$1,613 \$454
Task 1130	Addendum Preparation/Distribution		2				12	8		22	\$3,727					30	\$3,727				\$0	\$3,72
Task 1140	Pre-bid/Site Showing					4	4			8	\$1,613					\$0	\$1,613				\$0	\$1,61
Task 1150	Bid Opening					2				2	\$454					\$6	\$454				\$0	\$45
		Estimated Task Hours Subtotal		- 6	9 (10		8	0	54			-									
		Estimated Task Cost Subtotal	11,079								\$10,058	10	\$6	50	5.0	\$0	\$10,058	10	30	50	30	\$10,058
		TOTAL HOURS	14	16-	2	230	694	800	76	2,238												
		TOTAL COST (ROUNDED)					1				\$394,400	50	342	\$200	\$900	\$1,100	\$395,500	\$9,600	\$88,000	\$6,000	\$79,000	\$474,500

