***Project Title****:* Phase 2 of theLower Green Bay and Fox River AOC Fish and Wildlife Habitat and Population Assessment

***Fiscal Agent****:*

University of Wisconsin-Green Bay, Cofrin Center for Biodiversity

Dr. Robert Howe and Dr. Amy Wolf

Mary Ann Cofrin Hall 212, 2420 Nicolet Drive, Green Bay, WI 54311-7001

(920) 465-2272 (Howe); (920) 465-5030 (Wolf)

[hower@uwgb.edu](mailto:hower@uwgb.edu) (Howe); [wolfa@uwgb.edu](mailto:wolfa@uwgb.edu) (Wolf)

***DUNS#****:* 782431803

***Project Location****:*Lower Green Bay and Fox River Area of Concern (Brown County, WI)

***Proposed Work****:*

This project will support a two-year, two-phase project to assess baseline fish and wildlife habitat conditions and document potential habitat restoration opportunities in the Lower Green Bay and Fox River Area of Concern (LGB&FR AOC) and its immediately contributing watershed.

This Scope of Work (SOW) applies to the second phase of a project that Wisconsin Department of Natural Resources (WDNR) intends to fund through June 2017. Phase 1 of the project, which was extended to 30 June 2016, has focused primarily (but not exclusively) on finding, organizing, updating, and evaluating existing information related to fish and wildlife habitat and populations within the delineated LGB&FR AOC. During Phase 2, additional details will be compiled on historical conditions, habitat dynamics, and restoration opportunities within the designated AOC boundary and in ecologically relevant portions of the contributing watershed. The primary focus will be on the area within 1 km of the ordinary high water mark (hereafter defined as the AOC project area), but the boundaries are extended with respect to the watershed planning component led by The Nature Conservancy (TNC). The TNC watershed planning sub-project will extend further upstream in the Lower Fox River Watershed in order to address breeding habitat for mobile species like northern pike (*Esox lucius*) and important sources of pollutants that directly affect fish and wildlife populations within the AOC boundary. In addition to completing the overall project outcomes, Phase 2 will address several data and information needs that were identified during Phase 1.

Phase 2 will synthesize historical and current fish and wildlife habitat and population data and will outline potential opportunities for restoration within the AOC and ecologically relevant portions of the contributing watershed. Results will help inform decision makers about the current state of the AOC and will provide a suite of potential opportunity areas where habitat and populations can be enhanced.

The specific goals of the project are to:

1. Assess the current status of the fish and wildlife habitat in the AOC;
2. Identify specific opportunities for protection, restoration, and rehabilitation of fish and wildlife habitat in the AOC and contributing watershed and secondarily identify opportunities to reduce excessive nonpoint pollution potentially impacting fish and wildlife;
3. Develop monitoring protocols and metrics for measuring the status of fish and wildlife habitat and populations in the AOC.
4. Propose quantitative targets for de-listing the AOC status of the Lower Green Bay and Fox River with respect to two fish and wildlife related beneficial use impairments (BUI’s);
5. Develop and communicate systematic information resources (maps, databases, etc.) that will be available to support de-listing efforts.

During all phases of the project, UW-Green Bay and TNC staff will maintain close communication with WDNR staff and will solicit information and recommendations from experts on the conservation of fish and wildlife populations in the AOC.

***Deliverables for Phase 1/Year 1 (from original proposal)****:*

*Since this project agreement is between UW-Green Bay and WDNR, UW-Green Bay assumes all responsibility for any deliverables listed below, including any that are being completed under a subcontract award from UW-Green Bay. UW-Green Bay should ensure that subcontracts have adequate provisions to ensure completion of deliverables listed below.*

1. A quality assurance project plan (QAPP) that is approved by WDNR and U.S. Environmental Protection Agency (EPA). As noted below, the QAPP will further outline in more detail deliverables, final products, and project expectations and will serve as an extension of this SOW. Project-specific outcomes that are not identified below will be identified during the project planning process. The QAPP will be one of the first tasks of Phase 1. This document will further detail the project deliverables, final products, and project expectations.
2. Quarterly written updates that address
   * Amount of money spent that quarter;
   * Deliverables and work accomplished during the quarter;
   * Any problems that were encountered and how they were resolved; and
   * Planned tasks/deliverables for the next quarter

Updates will be e-mailed to WDNR project manager.

1. Consultations with WDNR regarding completion of the project goals (frequency and logistics of these consultations will be outlined in the QAPP).
2. Stakeholder debriefing/input meetings (frequency and logistics outlined in the QAPP).
3. A preliminary status assessment report, including
   * Maps of habitat conditions and identification of critical biotic and abiotic elements of the LGB&FR ecosystem;
   * Maps and descriptions of all public and privately-owned habitats of significance within the AOC project area (i.e., within 1 km of the shoreline);
   * Annotated lists (including relevant local occurrences) of all known and expected species of vertebrates, vascular plants, and invertebrates of conservation concern or special ecological significance within the project area;
   * Catalogue of current and historical conservation projects within the project area;
   * Recommended metrics and monitoring protocols (in accordance with WDNR consultations);
   * Identified data gaps (based on data reviews; metadata should be included); and
   * Recommendations for which types of monitoring are needed (at the end of Year 1, UW-Green Bay should consult with WDNR about prioritizing monitoring for Year 2).
4. Progress report on the initial stages of a contributing watershed assessment. When completed (during Phase 2) this component of the project will identify watershed-based fish and wildlife habitat opportunities that would support delisting of fish and wildlife beneficial use impairments (BUI) in the AOC and lead to an integrated list of potentially feasible habitat restoration projects within specific watersheds.

7. Preliminary list of recommended AOC de-listing targets for fish and wildlife BUIs. This list will be continuously refined and revised during both phases of the project.

***Planned Deliverables for Phase 2/Year 2:***

*Since this project agreement is between UW-Green Bay and WDNR, UW-Green Bay assumes all responsibility for any deliverables listed below, including any that are being completed under a subcontract award from UW-Green Bay. UW-Green Bay should ensure that subcontracts have adequate provisions to ensure completion of deliverables listed below.*

1. Quarterly written updates that address

* + Amount of money spent that quarter;
  + Deliverables and work accomplished during the quarter;
  + Any problems that were encountered and how they were resolved; and
  + Planned tasks/deliverables for the next quarter

Updates will be e-mailed to WDNR project manager.

2. Revised quality assurance project plan (QAPP) that describes project-specific outcomes and further descriptions of data acquisition methods, project deliverables, final products, and project expectations.

3. Summary of results from field work on AOC features that are lacking recent information, including 1) bats, 2) native vascular plants, 3) coastal plant communities, and 4) beaches.

4. Analysis and map of aquatic features (lake bed, submergent aquatic vegetation, shoals, tributaries, etc.) to complement GIS map of nearshore habitats, including water quality information from collaborators at NEW Water.

5. Stakeholder debriefing/input meetings (frequency and logistics to be determined).

6. A status assessment report, including

* + Maps of current habitat conditions in the AOC project area (i.e., within approximately 1 km of the shoreline);
  + Annotated lists (including relevant local occurrences) of all known and expected species of vertebrates, vascular plants, and invertebrates of conservation concern or special ecological significance within the project area;
  + Maps of current and historical locations of critical biotic and abiotic elements of the LGB&FR ecosystem;
  + Maps and descriptions of public and privately-owned conservation areas within the AOC project area;
  + Catalogue of current and historical conservation projects within the project area, including environmental monitoring programs, ecological restoration projects, land use planning, and fish and wildlife conservation activities;
  + Recommended fish and wildlife assessment metrics and monitoring protocols (in accordance with WDNR consultations);
  + Identified data gaps (based on data reviews; metadata should be included).

7. Refinement of the draft Lower Fox River Watershed Approach utilizing new and existing information.

* 1. New information includes farm soil phosphorus levels and agricultural fields with drainage tiles, mapped in Year 1. This will be incorporated into the Water Quality function.
  2. To the extent relevant, the climate change impact modeling done as part of the “Restoring the health of the Green Bay ecosystem under a changing climate: Landuse, Management and Future Outcomes” project funded by the University of Michigan Water Center will be used, possibly as weighting factors for wetland services.
  3. The existing migratory fish connectivity model for tributaries entering the Fox River below the De Pere dam will also be considered for refinement of the Fish Habitat function.

8. Final report on the contributing watershed assessment (i.e. TNC’s Watershed Approach).

9. Online mapping tool that allows conservation stakeholders easy access and use of the TNC Watershed Approach and Fish Connectivity results.

10. Validated results for the top sites identified via the GIS-based Watershed Approach. This will be done through field visits to check site value for AOC fish and wildlife goals.

11. A ranked list of potential habitat projects in the contributing watershed that, if completed would contribute to the removal of the Loss of Fish and Wildlife Habitat and Degraded Fish and Wildlife Population BUIs.

12. Final list of recommended AOC de-listing targets for fish and wildlife BUIs.

***Communication with WDNR Project Manager***

*Any problems that the UW-Green Bay encounters with the project that have the potential to affect the project timeline must be reported immediately to the WDNR Project Manager. Any field data collection efforts associated with this project must be discussed with WDNR in advance of the field work and supported by the approved QAPP.*

***Budget Table****:*

|  |  |  |  |
| --- | --- | --- | --- |
| **ITEM** | **PHASE 1 (original)** | **PHASE 1 (revised)\*** | **PHASE 2 (revised)\*** |
| **Personnel/Salaries/Fringe Benefits** |  |  |  |
| **UW-Green Bay** |  |  |  |
| Personnel/Salaries | $73,819 | $85,441 | $57,518 |
| Fringe Benefits | $21,101 | $22,802 | $19,318 |
| **Sub total** | **$94,920** | **$108,242** | **$76,836** |
| **UW-Green Bay** |  |  |  |
| Travel | $1,974 | $1,067 | $2,326 |
| Supplies | $500 | $800 | $1,530 |
| Other Costs | $50 | $450 | $450 |
| **Sub total** | **$2,524** | **$2,317** | **$4,306** |
| **Contracts** |  |  |  |
| Sub-award 1 (NEW Water) | $13,000 | $13,000 | $13,000 |
| Sub-award 2 (The Nature Conservancy) | $126,489 | $101,489 | $117,100 |
| **Sub total** | **$139,489** | **$114,489** | **$130,100** |
|  |  |  |  |
| **Total Direct Charges** | **$236,933** | **$225,048** | **$211,242** |
| Indirect Charges (15% salaries + fringes) | $14,238 | $16,236 | $11,525 |
|  |  |  |  |
| **Total Cost** | **$251,171** | **$241,284** | **$222,768** |
|  |  |  |  |
| **Total planned cost for project over 2 years** |  |  | **$464,052** |

*\*Adjustments made based on actual expenditures in year 1.*

**Budget Narrative**

*Salaries*:

UW-Green Bay: UW-Green Bay contributors to this project will include Data Specialist Erin Giese, GIS/Mapping Technician Michael Stiefvater, Program Assistant Kimberlee McKeefry, Principal Investigators Robert Howe and Amy Wolf, and graduate student assistants. Giese (20 hr/week) will be responsible for assembling, organizing, and archiving information about fish and wildlife habitat in the LGB&FR AOC. Giese also will assist with training and coordination of field workers and will be responsible for managing the data and metadata that they collect. A student assistant (10-20 hr/week) will be hired to help Giese with the information management tasks. Stiefvater (5 hr/week on this project) will organize existing maps and aerial photographs, in addition to generating new maps based on information acquired during the project. McKeefry (approximately 8 hr/week) will administer the hiring of student field assistants and other logistics, including preparation of reports and archived materials and purchasing supplies. Wolf (approximately one-month summer salary) will oversee UW-Green Bay contributions to the project and will be responsible for preparing relevant parts of the final report and other deliverables. Howe will collaborate with Wolf on project oversight; his time will be contributed as match through his appointment as Director of the Cofrin Center for Biodiversity (CCB). Bobbie Webster will also contribute to the project as part of her appointment as Natural Areas Ecologist for the CCB. During summer 2016, Dr. James Horn, Curator of the Gary A., Fewless Herbarium at UW-Green Bay, will help design and conduct field surveys of plant communities to improve information in the project’s GIS data base and habitat map. Field assistants (two to three full-time summer researchers) will be students in the UW-Green Bay Environmental Science and Policy graduate program or advanced undergraduates, all of whom will be required to pass rigorous training and testing protocols used in previous Great Lakes coastal research projects. Fringe benefits for UW-Green Bay contributors vary by employee class according to contractual rates established by the University of Wisconsin System. UW-Green Bay fringe benefit rates will change beginning on July 1, 2016, leading to changes in the original Phase 2 budget. These have been incorporated in to the “revised” columns in the budget table. Also, we have shifted $1,415 from the combined salary/fringe/indirect cost lines into the travel/supplies/other categories in order to cover expected increases in costs and to balance the adjusted amounts due to the changes in fringe benefit rates.

UW-Green Bay

*Travel*: Travel costs in the UW-Green Bay portion of the budget will cover trips to and from field sites by summer student researchers. A wetland training workshop also will be attended by Wolf, Horn, Giese, and several student assistants during June 2016. Budgeted amounts have been adjusted to account for lower expenses during Phase 1 and higher expenses expected for Phase 2.

*Supplies*: Supplies include costs of miscellaneous field supplies and computer storage devices like external disk drives. The budgeted amount has been increased for Phase 2 to support anticipated costs for server space.

*Other* *Costs*: Other costs primarily include printing and copying. This amount has been increased form the original budget to account for higher anticipated costs associated with stakeholder meetings and other presentations.

*Indirect* *Costs*: Indirect costs will be applied to salaries and fringes at the off-campus rate of 15%.

*Budget Adjustments*: In order to meet expenses during the month of June (last month of extended Phase 1), we request a shift of $15,113 from the UW-Green Bay portion of the budget of Phase 2 to Phase 1. Changes in specific categories are indicated in the budget table above. Coupled with the requested (opposite) shift of $25,000 from Phase 1 to Phase 2 by The Nature Conservancy (see below), the net shift in funds would be $9,887 from Phase 1 to Phase 2. The total budget for this project, however, will not change from the original $464,052.

The Nature Conservancy (TNC)

TNC respectfully requests $117,100 for Year 2. TNC’s original Year 2 budget was $92,100. By the end of the extended Year 1, TNC anticipates having $25,000 in unspent funds ($20,500 direct costs and $4,500 indirect costs) due to work efficiencies and contractor savings. We propose utilizing these leftover Year 1 funds in Year 2 by adding an exciting new deliverable: validating through field visits the top sites in the contributing watershed identified by the GIS-based Watershed Approach. A small part of the leftover funds would bolster the online mapping tool deliverable.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Original budget | Est. expenses through 6/30/16 | Unspent funds | Revised budget request |
| Year 1 | $126,489 | $101,489 | $25,000 |  |
| Year 2 | $92,100 |  |  | **$117,100** |

***Contracts*:**

GBMSD (NEW Water): Scientists from the Green Bay Metropolitan Sewerage District (now called NEW Water) will contribute information from ongoing water quality studies in the AOC; this information will be used to identify changes in habitat conditions for aquatic species and will help document long-term changes in environmental stressors of the lower Green Bay ecosystem.

TNC: Biologists from The Nature Conservancy (TNC) will collaborate with UW-Green Bay staff during all phases of this project and will contribute information and expertise to the proposed deliverables. In particular, TNC collaborators will lead the contributing watershed assessment and will be instrumental in delivering a list of potentially feasible habitat projects that could be implemented to achieve de-listing status. As part of the watershed assessment, TNC will oversee two complementary tasks: 1) digitizing available soil phosphorus (P) data from Nutrient Management Plans that have not yet been digitized (small portion of Calumet County in watershed and additional un-mapped data for Outagamie or Brown County) and 2) mapping drain tiled agricultural fields and the water/nutrient flow paths from fields in the AOC. Soil P mapping and cover drain tile mapping within the project area and contributing watersheds that affect fish and wildlife BUIs will also be completed as part of this contract.

***Timeline:***

|  |  |
| --- | --- |
| **Timeframe** | **Deliverables for end of Phase 1 (April-June 2016) and Phase 2 (July 2016-June 2017).** |
| April 1, 2016 - June 30, 2016 | * Quarterly update and invoice (Q6) due July 7, 2016 * Updated QAPP and recommendations for assessment/monitoring metrics. |
| July 1, 2016 –  September 30, 2016 | * Quarterly update and invoice (Q7) due October 7, 2016 * Summary of 2016 field work and historical research. * Written input (TNC) on list of recommended quantitative AOC delisting targets for fish and wildlife BUIs (recommended targets will be developed collaboratively with UWGB and DNR). * Complete matrix for Wildlife Tool (TNC). |
| October 1, 2016 – December 31, 2016 | * Quarterly update and invoice (Q8) due January 7, 2017 * Updated habitat map and site summaries based on 2016 field work; draft recommendations for AOC monitoring and metrics |
| January 1, 2017 – March 31, 2017 | * Quarterly update and invoice (Q9) due April 7, 2017 * Draft recommendations for AOC de-listing. * Complete Lower Fox River watershed wildlife tool (TNC). * Refinement of the draft Lower Fox River Watershed Approach utilizing new and existing information (TNC). * Draft maps/list of potential fish and wildlife habitat projects in the contributing watershed (TNC). * Field validation methods developed (TNC). |
| April 1, 2017-June 30, 2017 | * Quarterly update and invoice (Q10) due July 7, 2017 * Final map and list of habitat conservation and restoration projects. * Landowner permission sought to visit any privately-owned sites for validation (TNC). * Field validation visits completed for the top fish and wildlife habitat project sites identified via the GIS-based Watershed Approach. Check site value for fish and wildlife habitat and population contributions to BUI removal goals (TNC). * Online mapping tool containing watershed approach and fish connectivity results (TNC). * Final report on the contributing watershed assessment (TNC). * Ranked list of potential habitat projects in the contributing watershed that may be necessary to address BUIs (TNC). * **Final reporting & deliverables due w/in 60 days of end date** |

***Acknowledgement of Grant Funding*:**

For any materials (presentations, handouts, promotional materials, etc.) that are produced as part of this grant, UW-Green Bay and contractors will acknowledge that this project was done with funding from the WDNR Office of Great Lakes and the Great Lakes Restoration Initiative. Logos will be provided for this purpose.