

NPS-USGS Water
Quality
Partnership
Program

2015

Work Group
Comments –
Proposals for
New Projects
Commencing
FY2015

Contents

ASSESSMENT OF POTENTIAL CONTAMINANTS IN THE WETLANDS AND NEAR SHORE WATERS AT AMERICAN MEMORIAL PARK ON THE ISLAND OF SAIPAN.....	5
CATEGORY: INTENSIVE	5
PARK: AMERICAN MEMORIAL PARK (AMME)	5
<i>USGS Pacific Islands Water Science Center</i>	5
YEAR 1 COST: \$ 100,133.....	5
DIFFERENTIATING NATURAL VS. ANTHROPOGENIC MERCURY INPUTS AND SUBSEQUENT SE/HG INTERACTIONS AND BIOGEOCHEMICAL CYCLING IN BIGHORN LAKE, BIGHORN CANYON NATIONAL RECREATION AREA, MONTANA AND WYOMING	7
CATEGORY: INTENSIVE	7
PARK: BIGHORN CANYON NATIONAL RECREATION AREA (BICA).....	7
<i>USGS Wyoming-Montana Water Science Center</i>	7
YEAR 1 COST: \$ 100,000.....	7
ASSESSMENT OF WATER-QUALITY CHARACTERISTICS AND THREATS TO AQUATIC BIOTA IN THE BIG SOUTH FORK/NEW RIVER AND OBED RIVER SYSTEMS.....	9
CATEGORY: INTENSIVE	9
PARK: BIG SOUTH FORK & OBED WILD & SCENIC RIVER (BISO-OBED)	9
<i>USGS Tennessee Water Science Center</i>	9
YEAR 1 COST: \$ 65,000.....	9
ASSESSMENT OF NUTRIENT LOADS AND WATER QUALITY EFFECTS FROM A LARGE CAFO LOCATED ON A MAJOR TRIBUTARY OF BUFFALO RIVER, ARKANSAS.....	11
CATEGORY: INTENSIVE	11
PARK: BUFFALO NATIONAL RIVER (BUFF)	11
<i>USGS Arkansas Water Science Center</i>	11
YEAR 1 COST: \$ 96,810.....	11
WATER QUALITY, THE CONTROLLING FACTOR ON THE HERRING RUN, AQUACULTURE, AND BLUE CARBON AT THE HERRING RIVER SALT-MARSH RESTORATION, CAPE COD NATIONAL SEASHORE	13
CATEGORY: INTENSIVE	13
PARK: CAPE COD NATIONAL SEASHORE (CACO)	13
STATE: <i>New England Water Science Center – Massachusetts-Rhode Island Office</i>	13
YEAR 1 COST: \$ 100,000.....	13
REMEDIATION OF WATERS IMPAIRED BY TOXIC ANTIMONY AND ARSENIC – SLATE AND STAMPEDE CREEKS, DENALI NATIONAL PARK AND PRESERVE, ALASKA.....	15
CATEGORY: INTENSIVE	15
PARK: DENALI NATIONAL PARK AND PRESERVE (DENA)	15
<i>USGS Alaska Water Science Center</i>	15
YEAR 1 COST: \$ 100,000.....	15
MODELING THE CONNECTIONS BETWEEN HYDROLOGY, WATER QUALITY, AND ECOSYSTEM HEALTH TO SUPPORT COASTAL PRESERVATION EFFORTS ACROSS THE NORTHERN GULF COAST.....	17

CATEGORY: INTENSIVE	17
PARK: MULTI (BITH, BIBE)	17
<i>USGS National Wetlands Research Center</i>	17
YEAR 1 COST: \$ 98,834.....	17
DETERMINE OCCURRENCE, SOURCES, AND POTENTIAL FOR BIODEGRADATION OF ENDOCRINE DISRUPTING CHEMICALS IN PROTECTED-RIVER SYSTEMS OF THE NATIONAL PARK SERVICE SOUTHEAST REGION.....	18
CATEGORY: INTENSIVE	18
PARK: MULTI (BISO, CHAT, LIRI, OBRI, WEKIVA).....	18
<i>USGS South Carolina Water Science Center</i>	18
YEAR 1 COST: \$ 99,698.....	18
CONSEQUENCES OF CLIMATE-DRIVEN CHANGES IN WATER QUALITY TO NATIVE TROUT HABITAT	20
CATEGORY: INTENSIVE	20
PARK: ROCKY MOUNTAIN NATIONAL PARK (ROMO).....	20
<i>USGS Colorado Water Science Center</i>	20
YEAR 1 COST: \$ 99,961.....	20
SOURCES AND SINKS OF CURRENT-USE PESTICIDES AND HEAVY METALS IN MONTANE FENS OF SEQUOIA AND KINGS CANYON NATIONAL PARKS	22
CATEGORY: INTENSIVE	22
PARK: SEQUOIA AND KINGS CANYON NATIONAL PARKS (SEKI).....	22
<i>USGS California Water Science Center</i>	22
YEAR 1 COST: \$ 99,850.....	22
EFFECTS OF FIRE AND GRAZING ON WATER QUALITY OF STREAMS AND PONDS IN THE TALLGRASS PRAIRIE NATIONAL PRESERVE, KANSAS	24
CATEGORY: INTENSIVE	24
PARK: TALLGRASS PRAIRIE NATIONAL PRESERVE (TAPR).....	24
<i>USGS Kansas Water Science Center</i>	24
YEAR 1 COST: \$ 99,953.....	24
SPATIAL AND TEMPORAL DISTRIBUTION OF BACTERIA INDICATORS AND MICROBIAL SOURCE TRACKING MARKERS WITHIN TUMCACORI NATIONAL HISTORIC PARK AND THE SANTA CRUZ WATERSHED.....	26
CATEGORY: INTENSIVE	26
PARK: TUMCACORI NATIONAL HISTORICAL PARK (TUMA)	26
<i>USGS Arizona Water Science Center</i>	26
YEAR 1 COST: \$ 99,999.....	26
HYDROLOGIC ASSESSMENT OF ALPO SUMMIT AREA, CAMBRIA AND BLAIR COUNTIES, PA – COLLECTION OF BASELINE WATER-QUALITY AND QUANTITY DATA ON WETLANDS, GROUNDWATER, AND STREAMS	28
CATEGORY: SYNOPTIC	28
PARK: ALLEGHENY PORTAGE RAILROAD NATIONAL HISTORIC SITE (ALPO).....	28
<i>USGS Pennsylvania Water Science Center</i>	28
YEAR 1 COST: \$ 50,000.....	28

ASSESSING BIOLOGICAL IMPACTS FROM ENRICHED NUTRIENT LOADS INTO BISCAYNE BAY FROM AGRICULTURAL CANAL DRAWDOWN DISCHARGE, SUPPLEMENT FRESHWATER RELEASES AND STORM WATER EVENTS FOR BISCAYNE NATIONAL PARK.....	30
CATEGORY: SYNOPTIC.....	30
PARK: BISCAYNE NATIONAL PARK (BISC).....	30
<i>USGS Southeast Ecological Science Center</i>	30
YEAR 1 COST: \$ 50,000.....	30
EFFECTS OF CATTLE TRAILING ON WATER QUALITY IN OAK AND PLEASANT CREEKS, CAPITOL REEF NATIONAL PARK.....	32
CATEGORY: SYNOPTIC.....	32
PARK: CAPITOL REEF NATIONAL PARK (CARE).....	32
<i>USGS Utah Water Science Center</i>	32
YEAR 1 COST: \$ 49,910.....	32
WATER QUALITY OF THE REED AND KOBUK RIVERS, GATES OF THE ARCTIC NATIONAL PARK AND PRESERVE, ALASKA.....	34
CATEGORY: SYNOPTIC.....	34
PARK: GATES OF THE ARCTIC NATIONAL PARK AND PRESERVE (GAAR).....	34
<i>USGS Alaska Water Science Center</i>	34
YEAR 1 COST: \$ 50,000.....	34
UNDERSTANDING THE DIRECT AND INDIRECT EFFECTS OF DAM REMOVAL ON WATER QUALITY AND PRIMARY AND SECONDARY PRODUCTIVITY IN THE ELWHA RIVER	36
CATEGORY: SYNOPTIC.....	36
PARK: OLYMPIC NATIONAL PARK (OLYM).....	36
<i>USGS Western Fisheries Research Center</i>	36
YEAR 1 COST: \$ 49,573.....	36
INVESTIGATE MINE WASTE, GROUNDWATER QUALITY AND FLOW DIRECTIONS TO ASSESS ALTERNATIVE REMEDIATION STRATEGIES AT THE OLD YUMA MINE, SAGUARO NATIONAL PARK, ARIZONA.....	38
CATEGORY: SYNOPTIC/FIXED.....	38
PARK: SAGUARO NATIONAL PARK (SAGU).....	38
<i>USGS Arizona Water Science Center</i>	38
YEAR 1 COST: \$ 49,867.....	38
DYE TRACE AND HYDROLOGIC ASSESSMENT AT MARGARET WHITE SPRING, BUFFALO RIVER.....	40
CATEGORY: TECHNICAL ASSISTANCE.....	40
PARK: BUFFALO NATIONAL RIVER (BUFF).....	40
<i>USGS Arkansas Water Science Center</i>	40
COST: \$ 50,000.....	40
IMPROVING THE WATER QUALITY OF CUB CREEK: USING REAL TIME CONTINUOUS DATA AND ENGAGING THE NEXT GENERATION	41
CATEGORY: TECHNICAL ASSISTANCE.....	41
PARK: HOMESTEAD NATIONAL MONUMENT (HOME).....	41

<i>USGS Nebraska Water Science Center</i>	41
<i>COST: \$ 50,010</i>	41
ASSESSING THE RISK ASSOCIATED WITH MARIJUANA CULTIVATION ON WATER QUALITY IN REDWOOD NATIONAL AND STATE PARKS	43
CATEGORY: TECHNICAL ASSISTANCE	43
PARL: REDWOOD NATIONAL AND STATE PARKS (REDW)	43
<i>USGS California Water Science Center</i>	43
<i>COST: \$ 49,999</i>	43
IDENTIFYING HOTSPOTS FOR BOTULISM TOXIN PRODUCTION AT SLEEPING BEAR DUNES NATIONAL LAKESHORE – THE ROLE OF BEACHES AND SHALLOW WATERS	45
CATEGORY: TECHNICAL ASSISTANCE	45
PARK: SLEEPING BEAR DUNES NATIONAL LAKESHORE (SLBE)	45
<i>USGS Michigan Water Science Center</i>	45
<i>COST: \$ 49,751</i>	45
COMPARING TRACE METAL CONCENTRATIONS IN WATER AND PECTORAL FIN RAYS TO ASSESS LAKE STURGEON POPULATIONS IN VOYAGEURS NATIONAL PARK, MN	46
CATEGORY: TECHNICAL ASSISTANCE	46
PARK: VOYAGEURS NATIONAL PARK (VOYA)	46
<i>USGS Minnesota Water Science Center</i>	46
<i>COST: \$ 50,000</i>	46

Assessment of potential contaminants in the wetlands and near shore waters at American Memorial Park on the island of Saipan

CATEGORY: Intensive	PARK: American Memorial Park (AMME)
USGS Pacific Islands Water Science Center	YEAR 1 COST: \$ 100,133

Comments:

Why not measure ocean contaminant concentrations directly instead of the labor intensive and less definitive approach proposed?
They propose to study the functioning of the constructed wetland but have no hydrologic studies proposed
The proposal does not indicate if collection of fish and marine organisms as food sources is permitted in the park. If not, the food angle is less compelling, and has already been covered by Denton, 2010, not referenced here.
This is an ambitious study to monitor effects of military operations, urbanization, and agriculture on human and wildlife consumption of fish, fish health, contaminant accumulation, and recreation (e.g. fecal bacteria). As well, you will be providing information on the feasibility of wetland expansion. Will you really be able to accomplish all of this work in this study?
They do not appear to be measuring contaminants in water that is coming out of wetlands??
These are not new protocols under development and the information does not apply off the island
In the proposal, you say that the sampling design will allow for an estimate of contaminant loss as water moves through the wetland. Therefore, you will need continuous discharge at both the inlet and outlet. In your costs estimate, it looks like you will only be collecting 6 inlet samples, 6 outlet samples, and 3 QA samples. Will this be sufficient data to compute annual loads?
Sampling in ocean would expect to see significant dilution of any contamination such that signal to noise ratio
No attempt to determine effects on the endangered species (contaminant levels in feathers?)
Not clear how the study results will provide information for deciding whether or not to expand or relocate constructed wetland.
Where are the basic water quality data for the constructed wetland?
Very little emphasis on water quality, no funding in budget for water quality analysis, no effort to quantify the inputs of contaminants from runoff to the constructed wetland--a central question!
In your activity schedule, you do not list the collection of water samples, yet you say you will be monitoring contaminant loss as the water moves through the wetland.
Not clear how the Puerto Rico Dump or military installation (sources of the contaminants in the papers cited by Denton) are related to problems in the wetlands? For any particular contaminant would be challenge to detect. Discussion of this is warranted.

Contamination of biota and sediments in the immediate area of the park has been studied, including studies not referenced in the proposal. Metals contamination related to the dump has been shown to be localized in the area around the dump.
No comment on Cape Cod literature with potential similarities, in general the problem definition is very weak
The concept of estimating "contaminant loss" in the Methods section is particularly weak and ill defined
Working with Garapan to upgrade treatment facilities would be a better use of federal funds.
Proposal does not make a case for studying the role of water hyacinth in pollutant uptake. There appear to be no data on what pollutants are present in the water.
Will you be monitoring dual DO and pH because daytime readings would not necessarily be representative of actual conditions that the biota are encountering?
Budget does not include funds for water quality analyses although groundwater and lagoon sample analyses are referenced in the methods section. What existing water quality data are available from the wetlands? That should be a first priority.
Understanding spatial water quality within the wetlands, especially conductivity, was identified in a recent report as important and should probably be prioritized over the lagoon profiles proposed.
Is this wetland constructed for waste management? Sounds like CNMI wants the waste management wetland to be expanded (capacity) for more waste? So the park has created the resource problem?
Estimating contaminant "losses" through the wetland on the basis of seven sediment samples is a stretch. There are more rigorous ways to develop a mass balance of pollutants.
No explanation of how salinity profiles and current measurements will tell than about fresh water inputs to the Lagoon (nor sampling of lower salinity locations to confirm contaminants)

Differentiating natural vs. anthropogenic mercury inputs and subsequent Se/Hg interactions and biogeochemical cycling in Bighorn Lake, Bighorn Canyon National Recreation Area, Montana and Wyoming

CATEGORY: Intensive	PARK: Bighorn Canyon National Recreation Area (BICA)
USGS Wyoming-Montana Water Science Center	YEAR 1 COST: \$ 100,000

Comments:

Hg isotopic sources is very strong component and should yield Hg sources
Reductions in environmental Hg due to MATS and Minamoto will take decades. Discerning whether the source of the Hg is natural or not does not strike me as the most urgent issue at this point. How will the diverse anthropogenic sources (numerous power plants in the region) be distinguished from natural sources? Why the sources are important compared to the Hg input mass balances and how will sediment management and/or other management alternatives impact potential for methylation?
The assays for potential Hg methylation (laboratory) are only "POTENTIAL" and may or may not have a bearing on what goes on in the field under an entirely different set of conditions.
The proposal was well written and easy to follow.
Question whether any reasonable management action is possible given the nature of the two sources of mercury being differentiated is global and geologic. This should have been discussed further along with anticipated outcomes for management to act upon and what those actions might be.
No specification of geothermal activity in watershed of Shoshone River. Most hydrothermal activity is in watershed of Yellowstone River.
Further investigations of Se/Hg interactions with food web magnification also could be helpful nationwide.
The literature indicates that Hg in fish is most highly correlated with Hg in water and water quality, and less so with sediments. Why not more emphasis on Hg in water and sediment inputs of the Bighorn and Shoshone Rivers at the gaging stations before they empty into the reservoir?
Parts of this project are almost identical to an ongoing project at GLCA. How do results from that study relating to methylation transfer to BICA?
Can sediment coring be used to understand Hg deposition f(time) and how much is originating from natural sources? The dam was in place 10 years before Colstrip came on line.
Not developing new protocols, sharing with state and local regulators?
Not clear specifically how knowing the source of Hg was going to solve the Park's problem per se
The algae bloom-to-Hg methylation connection was largely theoretical (pg 4) and the project resources are not really sufficient to address this connection very directly, the proposed assays are a start.

Technical soundness issue of collecting microbes in yr 1 and substrates for them in yr2 for yr2 assays of Hg methylation
They don't explain very well how gaining a better scientific understanding of the processes will assist in "managing" current and future "Hg issues" - how are they proposing that current inputs would be modified
Significance to the park - is this a "future" sediment issue or a "current" Hg issue the proposal is not clear
Publication of results in an open access USGS Scientific Investigations Report or NPS NRTR is preferred over publication in a journal. Journal articles do not focus on park-specific needs by the nature of the format, and they are typically not available without paying fees, limiting accessibility to both the government and the public. USGS and NPS reports are widely available and easily accessible to the public and government agencies. The increasing trend for USGS to publish in journals instead of USGS report series is very disappointing. Presentations and discussions with park staff do not meet NPS needs for long-term written documentation of the project and its results as they apply specifically to the park.
Technical soundness: will the study really resolve the question of "causes of bioaccumulation" or really address sediment mitigation options directly?
The use of the MC ICPMS instrument to fingerprint sources of mercury will be beneficial in the study.
Determining processes that control microbial community dynamics and the potential for methylation could benefit other Hg problem areas throughout the Nation.

Assessment of Water-Quality Characteristics and Threats to Aquatic Biota in the Big South Fork/New River and Obed River Systems

CATEGORY: Intensive	PARK: Big South Fork & Obed Wild & Scenic River (BISO-OBED)
USGS Tennessee Water Science Center	YEAR 1 COST: \$ 65,000

Comments:

Question whether any reasonable management action is possible given the nature of the two sources of mercury being differentiated is global and geologic. This should have been discussed further along with anticipated outcomes for management to act upon and what those actions might be.
No specification of geothermal activity in watershed of Shoshone River. Most hydrothermal activity is in watershed of Yellowstone River.
This is as much a project designed to understand water quantity as it is water quality, there is an emphasis on ecological flows. Yet they relate the significance and severity to water quality issues that they do not intend to address directly (mine drainage, fracking, urban runoff, waste water treatments
The budget is limited in details so that no specific information is provided for each of the major tasks.
They never define what the QW threats to the mussels actually are. Metals, endocrine disruptors, acid mine drainage fracking compounds, sedimentation, turbidity, nutrients, increasing temperature
They note lots of biological data and flow data and Temp and S.C. but no QW data that is germane to the problems that they list from energy development, mining, residential development.
This project is basically designed to fund data analysis of data collected for other projects, that is not necessarily a bad thing but one wonders whether these activities were funded under the other projects and just not completed
They only addressed 4 of the 9 criteria explicitly at the end of their proposal, making scoring more difficult
I am concerned that in the problem definition they have not explained what water quality factors have been found to be responsible for the declines in mussel populations, did they have anything to do with temperature and S.C. and flow or were they acid mine drainage, sedimentation, heavy metals etc. and they have not made a strong case for how the parameters that they are studying (Temp and S. C.) are related if at all to these other water quality concerns
It was not clear how or whether they were going to model how changes in energy development and increasing residential development were likely to affect stream flow (ecological flows) unless all of this is wrapped up in the OASIS model.
Sadly, this was well written and has what I would think of a high probability of "success" in proving information to the park that could be very helpful in protecting the aquatic habitat
Consideration of alternatives not indicated, not addressed

<p>Primary threats to mussels are cited as suspended sediment, impoundments (habitat loss and slowed water velocity) and thermal stress. This project does not address turbidity at all but that would seem to be very important to the analysis.</p>
<p>Aside from the superintendent's letter, no outside project support is specified.</p>
<p>Since no new data will be developed, a synoptic or technical assistance proposal would be a better way to approach this need.</p>
<p>What type of data are existing that would be used as input to the model? Any "tool" developed will only be as good as the input, and suspended sediment/turbidity appears to be a major player in the mussel habitat equation. There is no mention of turbidity or suspended sediment in the proposal. I am not convinced that the supporting data are there to provide a useful tool.</p>
<p>You need to explain how conductance will be used successfully to reflect biological importance. You seem to feel that conductance will be used to predict the impact of human-coal activity, gas exploration, urbanization (i.e. rapid population growth, expanding urban boundaries, and associated contaminants), point sources, nonpoint sources, flow alterations, and habitat changes on the biota. I believe that your conductance models will over simplify the real-life conditions so they may be of minimal use. For example, conductance is not a good measure of nonpolar organic compounds or even low-level trace element contamination.</p>
<p>Ties in an ongoing study and the APHN monitoring and informs a decision support tool model.</p>

Assessment of Nutrient Loads and Water Quality Effects from a Large CAFO Located on a Major Tributary of Buffalo River, Arkansas

CATEGORY: Intensive	PARK: Buffalo National River (BUFF)
USGS Arkansas Water Science Center	YEAR 1 COST: \$ 96,810

Comments:

<p>The issue of relating timing of land applications of sewage to real-time QW following storms or quarterly QW base flow sampling is fraught with pitfalls, If the timing is greatly delayed (as may happen through complex GW flow paths) or the signal attenuated (due to assimilation, or denitrification) it will be very difficult to relate the application to a stream signal.</p>
<p>Why does the timeline say FY 15, 16, and 17, and the personnel and budget say FY 13, 14, and 15?</p>
<p>I have gone over this study twice and without a diagram or map showing the locations of the gaging and sampling stations I cannot be sure where the proposed WQ and Q station will be located in relation to the existing station UACES station they refer to, is the proposed station on the main stem of the Buffalo River or on Big Creek just above the confluence (I hope so and give them the benefit of the doubt on that) I still don't know exactly where the stations are in relation to the CAFO and how they will know what storm water looks like upstream of the CAFO.</p>
<p>Can this issue be resolved without the groundwater tracer study of T4?</p>
<p>I would like to see the number of project work hours planned in the budget for each position listed.</p>
<p>I don't see the immediacy and urgency that the authors see. This is still a theoretical threat and delay in implementing monitoring would only delay a moratorium on new CAFOs or new BMPs by a year or more</p>
<p>What will happen to the stream gage at the end of the project and what will happen to the continuous nitrate sampler? How will these be utilized into the future?</p>
<p>The threat is currently theoretical as they acknowledge BUFF has some of the best QW in the state it is threatened IF the concentrated animal feeding operation (CAFO) facility results in the kind of pollutant loading that they fear but the connection is not yet established- it is a circumstantial case at present.</p>
<p>Who will be analyzing the samples for fecal bacteria? This could be an extreme problem.</p>
<p>They state that continuous real-time nitrate monitoring will be an invaluable tool in helping understand transport pathways but they don't explain how this can be. If they had multiple sensors of this type deployed in the river above and below suspected sources and in the groundwater I could accept this more easily.</p>
<p>The threat is currently theoretical as they acknowledge BUFF has some of the best QW in the state it</p>
<p>It would be valuable during this project to attempt to develop a correlation between nitrate concentration and another more easily quantified parameter such as turbidity or EC so that after the project it would be feasible for the park to continue indirect monitoring of nitrates in Big Creek.</p>

<p>Understanding the GW pathway seemed to me to be a relatively weak aspect of the proposal. It was not clear from the methodology that the base flow separation techniques were going to tell us how much of the nitrogen or phosphorus was coming from GW. It will tell us how much of the water at that point is base flow but without extensive GW sampling we don't know how to separate that out. We also don't really know of the base flow component how much might represent "karst-derived" quick flow originating as runoff from the area of the CAFO versus how much might be more "normal" base flow derived from slower infiltration and percolation through subsoil to the local aquifers.</p>
<p>A detailed map showing location of Big Creek gage site, its relationship to BUFF mainstream and proposed gage site of UACES would have been helpful along with location of hog farm and waste management fields.</p>
<p>It seems that semi-quantitative descriptions of periphytic algal growth would be beneficial (i.e. nuisance algal growth)</p>
<p>Well written, demonstrates sufficient controls on all aspects of monitoring & QA/QC to ensure defensible data</p>
<p>Will get NO₃(t) how about P? The budget should provide more details about how much the various tests cost and how many</p>
<p>The proposal indicates a USGS SIR or a journal article will be produced; the budget indicates a journal article. If a SIR is too expensive, prefer an NPS Natural Resources Technical Report, with all data and analysis presented, freely accessible to NPS and the public. A journal article mandates a particular approach to a scientific audience, which in general does not serve the park staff well. The park will be best served by a report that focuses on the park's needs, a wider discussion of specific impacts/potential impacts on park resources than is typical for a journal articles, and management recommendations. If a journal article must be the result, a parallel report to the park should be produced (not just a presentation). Due to staff turnover and long-term into the future management needs, written documentation is essential.</p>
<p>NO effort to monitor algal blooms</p>
<p>How will longer-term nutrient releases be captured or quantified by this work? The proposal indicates that these are substantial and important. Would more than 3 years be required to capture those?</p>
<p>Data may not be that transferrable if very specific Karst topography in relation to the point sources and the river itself makes this situation unique</p>
<p>How many samples will be collected, for which parameters, and where; table with costs and details is needed to assess the entire project; the sampling and analysis are the most valuable components of the project but they constitute only 17% of the funds committed. A larger percentage of the project funds should go to the analysis of samples.</p>
<p>How will the investigators collect samples in FYs 15, 16, and 17, and then get a report out in FY 17?</p>
<p>A biological inventory of Big Creek at least within the park seems warranted given the circumstances</p>

Water Quality, the controlling factor on the herring run, aquaculture, and blue carbon at the Herring River salt-marsh restoration, Cape Cod National Seashore	
CATEGORY: Intensive	PARK: Cape Cod National Seashore (CACO)
STATE: New England Water Science Center – Massachusetts-Rhode Island Office	YEAR 1 COST: \$ 100,000

Comments:

A 3-year \$293,000 NPS funded project to conduct ecological evaluation at the Herring River project is halfway completed. This project is not mentioned by the current proposal. Water quality discharging from the estuary should be a part of that project. The draft EIS indicates that water quality will be monitored to determine if there is adverse effect.
Innovative methods will be used to measure vertical and horizontal fluxes to determine the carbon status.
Initially I really liked the research problem and the significance to CACO but as I kept reading I felt the authors began to be weak on details of methodology and how the data collected would really address the issues that they stated it would.
There are a contradictory statements in paragraphs 2 and 3 on page 3: "restoration of sulfate from seawater, the stored carbon is oxidized" versus "methane generation might be suppressed, and carbon sequestration increased" we can't have it both ways.
Since low DO is a potential impact on herring runs within the estuary, will you be measuring continuous DO similar to what you'll be doing for pH and salinity?
This is an ambitious project that appears to be of significant value to CACO since the restoration project that desperately need the pre restoration baseline information.
This is first and foremost a climate change related project, not a water quality project. The limited water quality part of the project would be more suitable for a technical assistance proposal. Except for the carbon, the water quality analyses will be conducted by NPS staff.
Equipment diagram needed to illustrate how gases are captured in vertical and horizontal mode and a discussion of uncertainties associated with their measurement.
Directly addressing the criteria is appreciated. Scientific Merit: Aren't nitrate, seagrass, water quality, sediments, etc. already measured throughout CACO as part of the NCBN I&M network?
Will published literature values be adequate to estimate the carbon budget for sectors if they were returned to salt water habitat?

Based on the following, it hardly seems that there are no water quality data that can be used as a baseline for pre-project conditions: from PMIS 2019 (1998): In summary, over the past 18 years the NPS and cooperators have researched estuarine circulation and salinity regimes (lower basin only), water quality, sediment and porewater chemistry, groundwater hydrology, vegetation change, and mosquito breeding ecology. Both physical (Roman et al. 1995) and biogeochemical (Portnoy & Giblin 1997b) effects of tidal restoration have also been assessed. In addition, NPS and USGS-BRD have implemented a monitoring system for water quality, vegetation, finfish, benthic macro-invertebrates (including shellfish) and water birds; these two agencies are presently developing a program of hydrologic monitoring. All Herring River monitoring will be perpetuated by inclusion in CACO's Prototype Long-term Coastal Inventory and Monitoring Program under development by USGS-BRD and NPS. A detailed NPS-WRD supported hydrodynamic model of the Herring River estuary has been recently completed to guide the physical course of restoration management.

Insufficient substantive information is given regarding the proposed methods to assess what the authors describe as "carbon budget terms" and "Carbon Status" these are complex things to measure and are not adequately explained. How are they going to measure the current carbon stored in the soils/sediments of the existing freshwater meadow and forest sectors (2 of 9) that they are going to characterize? And they don't mention whether they are going to measure carbon storage in the saltwater marsh areas that they say the newly flooded areas would convert to. Typically there is great spatial variability in carbon storage in soils and sediments especially with depth and I don't think comparison with published values in other coastal marshes will be adequate. Then there is the problem of how long it will take to make such a conversion possible, my guess is that it will take centuries, but we don't have centuries given sea level rise and therefore these areas may actually never accrete carbon the way they are proposing since, once inundated the soil carbon will likely be lost (Brinson et al. 1995) see also Moorehead and Brinson, 1995. Ecol. Appl. 5:261-271 and Craft et al., Front Ecol Environ 2009; 7(2): 73-78, doi:10.1890/070219

The water quality monitoring appears a bit peripheral

More discussion needed as to how all the variables are monitored and controlled sufficiently to have credible data to interpret to arrive at a solution.

Concern that there is lots of data to integrate correctly with large number of variables to control making the drawing of credible conclusions that management can then act upon with high level of certainty quite a challenge.

Remediation of waters impaired by toxic antimony and arsenic – Slate and Stampede Creeks, Denali National Park and Preserve, Alaska	
CATEGORY: Intensive	PARK: Denali National Park and Preserve (DENA)
USGS Alaska Water Science Center	YEAR 1 COST: \$ 100,000

Comments:

Although the criteria say that costs are divided between salary and laboratory analyses, they are divided with only 12% going to laboratory analyses.
Study does a good job in using the NAWQA fixed station approach followed by synoptic samplings to improve our knowledge of spatial variability. The study will also benefit by using the synoptic data calibrate water-quality models.
Legacy mining and the project does not include the remediation
Extensive data already exist on water quality in the Slate Creek and the Stampede Creek drainages. What appears to be lacking is spatial post-remediation water quality data for Slate Creek, which could be addressed by a technical assistance or synoptic project. Use of pre-remediation water quality data for Slate Creek in the model is questionable.
Supporting data for a TMDL document development, the management outcomes dictated by the TMDL document will be what may resolve the issue, 2 steps removed from this project.
This is a long-term ongoing issue with known drivers.
Proposal outline is somewhat haphazard making it harder to read and loads of repetition
Once the sources of the trace elements are identified, how will the study determine whether the trace elements are bioavailable from the sediments so that restoration could be effective?
Consideration of alternatives not indicated
The 6 sediment samples may not be sufficient for a very robust characterization
Water samples from unaffected areas also show drinking water exceedances in pH, SO ₄ , As, Mn, Sb, Fe, and TDS (Ritchie 2013). There is a high background that is compounded by the exposure of mineralized zones by mining and remediation activities. No pre-mining data to establish targets, but meeting standards is probably an unrealistic goal.
Overall the proposal strikes me as hastily put together, in need of additional editorial review, and lacking substantial detail about methods of modeling and analysis. The figures lack clarity, they should at least show the location of sampling sites. It seems like they plan to wing it if they get the money and we should just trust them because they are using USGS procedures and models and have NRP support.
Items cited exist in the park regardless of this project therefore do not count as in-kind.
At overhead rates of 20% on the gross, one has to ask how this is possible given rates of >50% in NE USA
Slate Creek was the focus of remediation activities in 1997 and over \$800k was spent on restoration of Slate Creek between 2008-2010. Long-term effects of these efforts on metals loads is not well established but EPA touts the remediation effort as a major success for turbidity. Post remediation As and Sb levels were lower in 2011 although still high.

Lots of language in this proposal about what "MIGHT" happen" if something "else happened" (specific sources have not been identified) and if the proposal is not successful what would the problem resolution be then?

The Alaska DEC conducted water quality modeling in support of its draft 2014 TMDLs for Slate Creek. Another modeling study is not needed. The sources are well established.

I am curious as to who the GS11 and GS12 hydrologists are that are actually doing the work and what experience they have? (the proposal author is at least a GS13 and he is not involved in the staffing)

In Criterion 2 they state "because reclamation is expensive and funds difficult to obtain it is important to identify the best remediation techniques. HOWEVER, THIS PROPOSAL WILL NOT BE EVALUATING DIFFERENT REMEDIATION TECHNIQUES! Problem Resolution: They are not "resolving the problem" they are attempting to find the largest sources of contamination

Sources in Stampede Creek are well established by Ritchie 2013. Background levels of Sb above disturbed sites rise substantially as mineralized zones are reached above the disturbed areas. Tailings at Stampede Creek are the source of As.

The methods are not well described other than to name Models OTIS and OTEC they don't explain how the models work what their limitation are etc. 76 TOTAL samples for analysis from 4 sites (upstream and downstream from the mines) plus synoptic samples seem to me to be too few to characterize this system properly this proposed sampling could miss most of the metal transport if it occurred during storms that were not sampled.

Modeling the connections between hydrology, water quality, and ecosystem health to support coastal preservation efforts across the Northern Gulf Coast

CATEGORY: Intensive	PARK: Multi (BITH, BIBE)
USGS National Wetlands Research Center	YEAR 1 COST: \$ 98,834

Comments:

Important and relevant to NPS goals.
The study seems to be ambitious in attempting to monitor and model surface water, groundwater, root-zone hydrology, and salinity, and then to relate these models to ecosystem health.
Not clear where the Indirect Cost of 25.62% comes from or goes, or what (TDC*0.175)** refers to; no footnotes; the numbers are TDC*25.62%
The problem resolution (model) is not described very well at all. I checked out Kaplan et al. 2010 and I think the dynamic factor model DMF that was developed for the Loxahatchee River in Florida could have been described in at least enough detail that a reader of the proposal would get the basic gist. It was not clear to me from Kaplan that the model actually models salinity - the proposal needs to have addressed this to get a higher rating for Criteria 4, 5, and 9. As far as I could see the Response Variable in the Kaplan Model was water table elevation and not salinity
Pressures of climate and human consumption on freshwater availability will only increase into the future.
Consideration of alternatives not indicated.
Contracting with University of Florida through the CESU program will reduce that overhead from 50% to 17.5%.
Not explained how maintaining freshwater inflows in the context of climate change will still serve to preserve freshwater bald cypress swamps or system will be restored when this variable is set to only increase (sea level rise with climate change)
Budget format is poorly itemized, not easy to follow, needs a lot of improvement
Data will be collected in the third year, and it looks like the analysis, final report, and paper submission will occur after the 3 year study ends. Who will fund the work after Sept 30, 2016?
If sea level rise will occur with climate change anyway, saving these freshwater bald cypress swamps should be a future challenge with or without freshwater "abstraction" by upstream users.
Details about reporting and dissemination of results are vague. Providing lectures to managers is acceptable for short-term reporting, but park-specific reporting in publically available written format is essential for long-term retention of project methods, results and recommendations into the future. Staff turnover and NPS long-term management horizon require targeted written materials for park resource staff. Publication in open-access format is essential for transferability.
In the criteria narratives the problem definition was more of a restatement of the urgency and need not the problem definition

Determine Occurrence, Sources, and Potential for Biodegradation of Endocrine Disrupting Chemicals in Protected-River Systems of the National Park Service Southeast Region

CATEGORY: Intensive	PARK: Multi (BISO, CHAT, LIRI, OBRI, WEKIVA)
USGS South Carolina Water Science Center	YEAR 1 COST: \$ 99,698

Comments:

Outstanding expertise involved in the project.
The significance, severity, and nature of the threat are well explained
Why not incorporate POCIS and SPMD sampling into the project to reduce the hit or miss component of point in time sampling?
Among the best proposals submitted for funding from the NPS-USGS Partnership.
The methods or approach sections are well written and provide sufficient descriptions and citations that a reader is confident that the authors have the knowledge to conduct the study. These authors are have written many research papers using the techniques proposed
Uses a variety of screening tools to identify the occurrence and impact of EDC in NPS SER.
The text is equivocal about the products. The work plan and some of the text indicates that a SIR will be produced, but elsewhere the text indicates a journal article and presentations/consultation with NPS staff. Presentations and consultations will not meet NPS long-term needs as staff turnover and management into the long-term future requires a fully accessible written document including methodologies, data analysis and discussion of park-specific conditions and management recommendations. Journal articles do not fully meet NPS needs, especially if they are not open access. A USGS SIR or NPS Natural Resource Technical Report is a much preferred product.
In-kind contributions are outstanding.
At 15 % overhead one has to ask how this is possible given overhead rates of 50% of the gross in NE USA
How will results of ongoing single-park studies transfer to inform park managers at these parks? Since this proposal will look at only rivers, how will the results be extended to the region?
Unless an open-access document is produced, transferability is reduced.
Innovative use of hormone responsive yeast strains makes cost-effective screening of water possible. There is a mismatch between the Budget and Timeline: The budget calls for \$80,000 in analytical in yr3 but yr. 3 timeline has no analysis in yr. 3
The problem is well defined.
As with other proposals there are instances where information relevant to one criterion is mixed into justification of another criterion. For example, stressing the Toxics EC project in kind contributions for criterions 2 "severity"

It is not clear how delaying the project will affect the severity of the threat. The fact that this project covers multiple parks and fits into a Service-wide data framework should add points (5) to the ranking of this project for cost effectiveness. The prominent display of the responses to the assessment criteria was greatly appreciated and showed that the authors had considered the funding calls requirements.

Study is proposing to get a handle on contaminant degradation to help determine the risk of impact.

Since CEC originate with people, mapping of land use types within the watersheds of each of the rivers proposed for study would benefit NPS managers.

From the Budget and Staffing it is hard for me to see how this project gets written up as a research paper when:

- 1: there are only 96 hours of a GS6 salary request in the 3rd year
- 2: there are no funds for salaries of the proposal author(s) GS15
- 3: there is \$80,000 in chemical analyses in year 3. When is this data from yr. 3 going to be analyzed and written up?
- 4: This project apparently relies 100% on the co-PI's time paid for as in-kind from another national program.

Basically this is looking like a funding supplement for another national program to enhance their existing funded program and as such, I have to rate this poorly in Cost Effectiveness, and Project Support

What would make this proposal stronger and more TRANSFERABLE would be an evaluation pre and post application of a management practice in a known contaminated region. This is apparently not something that Toxics EC is doing and would be a better use of USGS/NPS Partnership funds than simply adding more funds for Toxics to analyze more samples from these Parks.

Problem resolution is a bit weak in the sense that they are going to report on occurrence, vulnerability, and biodegradation capacity they state that they will, "begin to identify important EDC sources" but these sources are known already and many are non-point sources this information may help with location emphasis on BMPs but it will not help resolve effectiveness of BMPs (as in help the Parks resolve this mitigation part of the problem). The proposal does provide "a sound foundation for a problem resolution" but not necessarily any new information that will assist design of mitigation strategies other than, "where to put the mitigation - for the most cost effective use of resources"

Consistently superior proposals with lots of resources to back up proposed work of a high profile nature for parks in general.

Consequences of Climate-driven Changes in Water Quality to Native Trout Habitat	
CATEGORY: Intensive	PARK: Rocky Mountain National Park (ROMO)
USGS Colorado Water Science Center	YEAR 1 COST: \$ 99,961

Comments:

Project personnel seem to have good expertise.
Proposal lessens credibility of outcome through stacking of multiple models with their own multiple variables and levels of uncertainty
Problem Resolution criterion - What are "translocation waters"? This should have been explained
Most of the items listed as project support will exist regardless of this proposal being funded, inclusion of these at 100% is questionable.
Not sure how to best weigh the in-kind of \$315,000 in salary support claimed for two technicians working for another project but that will be leveraged for this project, my inclination is to discount this greatly.
No mention of a longer-term solution that Park Managers could employ to address the problem of ever increasing water temperatures and likely extirpation from areas that are currently near tipping points within ROMO.
I&M does or does not collect temperature data already? Models already exist?
This type of work is being done by others (FS) so may be transferable from them based on elevation and latitude.
Presentations to staff and workshops will not meet NPS long-term needs as staff turnover and management into the very long-term future requires an open access document including methodologies, data analysis and discussion of park-specific conditions and management recommendations which by the very different nature of journal articles would not be provided unless a SIR or NPS Natural Resource Technical Report was produced. Journal articles are of limited utility to the public and NPS staff without access to the specific journals involved.
Ability to predict future water temperature and population persistence will have high uncertainty without further addressing this issue (multiple model uncertainties) - why not very high so that management would be very challenged to act upon/perform adaptive management. Also unclear what management actions might be taken?
The data for a model, model used to revise plan, plan dictates management actions = 4 steps removed from resolution
I'm not sure that ground water contributions could be accurately assessed using statistical models.
For Problem Resolution this project "provides a sound foundation for problem resolution" but it does not provide any evaluation of the proposed resolution. It would be a stronger proposal if, for example, they were evaluating reproduction and survival for fish populations that were translocated to areas identified as having suitable habitat.

For modeling vertical temperature profiles in lakes, it seems that a 2-dimensional model would be better than a one dimensional model unless the lakes are quite small.

The coupling of stream and lake temperature models with the BN model of CRCT persistence models and climate model data will establish a useful decision support framework that has great promise for assisting Park resource managers in fish population translocation and development of "adaptive management plans". However aside from translocation it was not clear how adaptive management plans might work with inexorably rising temperatures

I'm not sure how successful the modeling work will be using statistical models. For assessing climate change, it seems that deterministic modeling efforts would be better. For example, increasing air temperatures and changes in riparian shading have been effectively explored using deterministic models to predict stream temperature.

Sources and Sinks of Current-use Pesticides and Heavy Metals in Montane Fens of Sequoia and Kings Canyon National Parks	
CATEGORY: Intensive	PARK: Sequoia and Kings Canyon National Parks (SEKI)
USGS California Water Science Center	YEAR 1 COST: \$ 99,850

Comments:

Substantial air pollution impacts at SEKI are well established by WACAP.
I'm not sure that this study warrants a \$300K effort. Reconnaissance data could strengthen the need for a future study.
This study (like many of the proposals) will provide foundational information about contaminant occurrence but not provide a remedy or as they say actionable remediation strategy -- problem resolution.
Lack of data on air pollution but know there are pervasive impacts?
Very nice breakdown of costs but maintenance of lab equipment probably not the best source for project support determination
Well detailed budget, thank you. A little generous on the supplemental funding side but generally better than most.
Fens or meadows? Lack of data on air pollution but know there are pervasive impacts?
How will site selection consider cold-fractionation around the park? Sites include 1 low, 1 med and 1 higher elevation site, if all three are included, is elevation the primary/only spatial driver for this study? What about east side -west side, etc.? Very limited spatial coverage will limit extrapolation.
The problem is not severe and an imminent threat, it is a logical threat but has real harm been demonstrated, is it more a future threat. This study may or may not reveal a significant threat, it will depend on the contaminant concentrations and contaminants exported from the fens.
While fens may serve to concentrate some air deposition of COC's through groundwater inflow and change in chemical environment leading to precipitation of COCs, it was not made clear how mobilization of COC's from the fen could be significant enough to affect downstream areas of park aquatic resources, particularly given the small geographic area.
In this proposal, fens will be sampled to determine whether they are sinks for currently used pesticides and heavy metals. It is more of an exploratory assessment rather than starting with a known problem that needs to be solved in a timely fashion. Consequently, severity of the resource threat or problem does not indicate an immediate need for the study.
A very interesting study and approach.
The connection in terms of identifying contaminants being used by the Park to prioritize fens for restoration was not made clear with respect to "Problem Resolution".

In the Scientific Merit section they mention the interesting relation between climate change and peat degradation but this is not addressed scientifically in the proposal (for example relating future climate projections to fen hydrologic changes)
Why not incorporate POCIS and/or SPMD or similar passive sampling for longer-term integrated data on water fluxes?
Recommend sampling and analysis of conifer needles or lichen at fen sites for cross-talk with WACAP results.
Recommend sampling and analysis of conifer needles or lichen at fen sites for cross-talk with WACAP results.
Existing studies of ecological integrity at the sampling sites
Not clear where the pesticide analyses would take place.
Lack of data on air pollution but know there are pervasive impacts?
They mentioned the WACAP study and Smalling et al. 2012 measured contaminants but they stated repeatedly that there was little precedent for the data collection they were proposing.
No direct management actions are possible in the park in response to the findings

Effects of Fire and Grazing on Water Quality of Streams and Ponds in the Tallgrass Prairie National Preserve, Kansas	
CATEGORY: Intensive	PARK: Tallgrass Prairie National Preserve (TAPR)
USGS Kansas Water Science Center	YEAR 1 COST: \$ 99,953

Comments:

Solid study but not sure this rises to the level of national/critical support given the remaining Tallgrass prairie is of such limited extent. Fire and Buffalo were both historic elements to this ecosystem so not clear what is the threat to the ecosystem in this situation.
Delay "could result in degradation".
Budget should include more detail as shown in the guidelines example. Summary of analyses, number of samples, etc. is needed to fully understand.
Preserve managers are "uncertain whether current upstream management actions are leading to impairment - this leads me to rank the proposal only middling in terms of problem severity.
No effort to sample following storms when the largest sediment and nutrient loads may occur
Immediately following a burn and period of grazing, water-quality concentrations could vary greatly during the first major flush over the rise, peak, and falling hydrograph. In fact, water quality may differ greatly over each of the seasonal hydrographs. In order to understand the impact of grazing and fires, many more samples may be needed each year to characterize changes over the hydrograph.
How will differences in the timing and distribution of livestock, weather variables and burn conditions from year to year be considered in the analysis of results?
Grazing and specifically grazing intensity and location relative to riparian areas seems to be of critical importance but difficult to control without fencing and as such may confound results. The authors have not included any effort to monitor grazing that could be used to explain results.
I think it will be difficult to accomplish the goal of answering the question of whether recently burned and heavily grazed prairie is affecting QW in this short-term experiment because you need to have established a baseline of pre-fire and pre-graze before evaluating the effect of fire and graze this is because comparing recently burned and grazed versus "not burned recently" is confounded by the initial differences between the burned and unburned reference site.
I had some trouble understanding the experimental design. At a minimum that should be a larger investment in understanding water quality at the control site to parallel what is known about the "burned and grazed" Palmer Creek site.
Aside from Palmer Creek, will there be discharge measurements made along with the water sampling? Will the continuous measurements include depth parameter?
Please specify what type of report will be produced. A SIR, OFR, journal article or NPS NRTR. Etc.?
The authors should consider trying to reconstruct past burn and grazing history of each parcel since this will influence response to current management - they have not proposed this.

If successful this proposal will really only whether the burn graze cycle impairs water quality. It does not provide a Problem Resolution in a more active sense (for example: monitoring water quality following a BMP for alternative burn grazing perhaps using enclosure in riparian areas. They could also evaluate different burn cycles or grazing regimes that they suggest as potential Preserve management plans that could result from the information they provide (but they won't have evaluated any of these BMPs)

I was surprised not to see any sampling for fecal coliforms this would have added an important dimension

Spatial and Temporal Distribution of Bacteria Indicators and Microbial Source Tracking Markers within Tumcacori National Historic Park and the Santa Cruz Watershed

CATEGORY: Intensive	PARK: Tumcacori National Historical Park (TUMA)
USGS Arizona Water Science Center	YEAR 1 COST: \$ 99,999

Comments:

No specific mention of who is responsible for all the coordination of participants in the study which may be the most challenging element.
How will you determine whether you have a surface water or ground water contribution of fecal bacteria?
Significance and severity are well established based on prior sampling for bacteria and high levels of pathogens found and likelihood of human exposure will be integrated with the ADEQ Watershed implementation plan (WIP) that will be of great value and in developing TMDLs and BMPs. However, like other similar proposals this project will not be able to evaluate the effects of BMPs which would be of greater importance to the park Hence the 3 for problem resolution and transferability
Overhead costs are not shown.
Will stream flow be collected at each sampling site? If not, it will be difficult to interpret the findings.
How does a WWTP upgrade to remove bacteria with UV lead to a reduction of ammonia? Sand is an excellent filter for microbes, the dry conditions of the stream bed would lead to accumulation of bacteria over time and any rain event would wash out microbial life with the sand. None of the sampling sites are on park property. This is not an NPS project. This is an Arizona project.
I was not clear why it was assumed that sources were necessarily downstream of Noagles WWTP just because the effluent was low. Could the bacteria be originating upstream from Mexico or the US, this should be ruled in or out with sampling?
Threat is mitigated by keeping visitors out of the river.
To determine bacterial loads, you need stream flow.
All management to fix any identified problems will be handled by other entities who have not requested this study, data collected is off park property.
Will the sampler bottles and tubing be sterilized after each sample collection? If not you may have a high background level resulting from the collection of water with very large fecal bacteria levels.
Project describes lack of information on park property but all sampling will take place off park property
They don't report the bacterial (Ecoli and Enterococci) analyses costs in their budget of in the in-kind, this is probably just an oversight but I think it greatly improves their project support to a 4
Will auto samplers be refrigerated, and will sample hold times exceed protocols?
There were too many errors in proposal.
Why is NPS using its share of USGS money for a state project?

The salaries of staff not hired specifically for the project don't count
No indication if NIWTP has bypass or overflow events which would provide bacteria to streambed sediment that would cause recurrence of problem.
Very relevant for the state, questionably relevant to the park

Hydrologic Assessment of ALPO Summit area, Cambria and Blair Counties, PA – Collection of Baseline Water-Quality and Quantity Data on Wetlands, Groundwater, and Streams

CATEGORY: Synoptic	PARK: Allegheny Portage Railroad national Historic Site (ALPO)
USGS Pennsylvania Water Science Center	YEAR 1 COST: \$ 50,000

Comments:

It is unclear whether the report will be an interpretive report of just a data report. Hopefully, you have plans for a peer-reviewed interpretive report."
A map is needed to show surface water bodies (wetlands) and topo relationship between mine pool elevations and point AMD discharges.
A map of the entire park and surrounding area showing the drainages would be a major asset to making a case for the need for the project.
Two synoptic samplings would not provide much information on the temporal variability in contaminant concentrations. Informing the Park of baseline conditions will be useful but may not answer the key question of how water diversion would affect water quality
More of local interest than of national hence lower transferability due to uniqueness of ALPO geologic setting.
Current groundwater levels, soils and bedrock types would be important to the understanding of the wetlands situation but there is no information about this in the proposal or obvious plan to include in the study.
Long-term maintenance and monitoring of piezometers, data sensors, and stream gages involve a substantial investment of effort and analysis. How will these investments be utilized after the project is completed?
Study should be useful to confirm there is no surface water mine pool connections.
The proposal will produce an open file report, which is essentially a data summary without analysis. How will interpretation of results be packaged and provided to park staff in a written document?
Primary concern: Proposal is more focused on physical hydrology than water quality, only 5.7% of the requested budget is for QW analysis.
Need to better demonstrate that there is some likely connection between surface wetlands and mine pools or their discharges which appear to be at possibly much lower elevation.
The PADEP wells show that water levels in the mine pool are 100+ feet below the surface at the park. The wetlands and seeps are hydrologically perched and will not be affected by pumping from the mine pool. The most basic issue justifying the proposal is a red herring.
No summary of existing water quality data was provided, making it impossible to assess real need for a sampling and analysis program. The water quality issues raised by the proposal appear to be mostly conjecture. A technical assistance project would meet those needs.

I found the threat to be of "moderate" not high significance and the severity to be urgent but not extensive immediate likely irreversible.

The budget is not detailed enough to fully understand what work will be conducted, how many samples will result and for what parameters, and who will be paying for the various aspects. Only 4% of the project total is devoted to water quality, separate out and resubmit as a technical assistance for the water quality work.

The connection between water extraction and reinjection down gradient and offsite was not a compelling argument for an imminent threat to ALPO water quality - it was a theoretical argument based on potential concentration of contaminants that might be present if wetland water levels were in fact reduced.

The proposed work could contribute to the problem resolution but would not result in a "final resolution"

Assessing biological impacts from enriched nutrient loads into Biscayne Bay from agricultural canal drawdown discharge, supplement freshwater releases and storm water events for Biscayne National Park

CATEGORY: Synoptic	PARK: Biscayne National Park (BISC)
USGS Southeast Ecological Science Center	YEAR 1 COST: \$ 50,000

Comments:

The significance of the problem is high and the severity is moderate we don't really know about the harmful effects to biota (fish) not much information on the nature of the HABs or biological effects.
The collection of continuous nitrate data also may be insightful in improving your nutrient load estimates.
Data would be used in advising another land management agency
Description of project products is equivocal. Proposal indicates that a comprehensive technical report will be produced on page 4 and 8, but later on page 8, indicates that a technical report AND/OR a journal article will be produced. A journal article does not meet NPS needs for long-term, accessible scientific information. If the technical report cannot be published in one of the USGS series, it should be published as an NPS Natural Resource Technical Report.
Question whether rising sea level will make this issue moot in the long term as canal discharge will be reduced and Biscayne Bay will have greater volume of water so less likely to be impacted.
The project would be better served by focusing on one or the other, preferably the latter since it is unlikely that problem resolution would involve land use change.
Salaries of staff not hired specifically for the project don't count, use of NPS funds off NPS property w/o an MOU?
Sampling in the canals periodically during the dry season to assess the rate of increase in nutrients in the captive canal water during the dry season would seem to be prudent as a means of developing best management practices. It is not clear if the SFWMD/DERM weekly sampling covers this.
Seeking funding sufficient to conduct continuous nitrate monitoring may be a better and more informative approach.
On a technical note, simply providing some information on pulsed nutrient inputs will not necessarily provide all of the information needed to understand drivers of algal blooms which may be related more to timing, temperature, cumulative inputs of freshwater and nutrients from land and oceanic inputs.
The focus of the project bounces between the importance of historical land use change to nutrient inputs and the importance of the management of freshwater (nutrient laden) inputs to the forcing of algal blooms.
Why aren't the state and local agencies whose data is to be used and who regulate the land on which the samples are to be collected, doing this project?
Most sampling sites appear to be on private property, will sampling be allowed? Florida regulatory issue under state water quality regulations if there is an impairment. Why isn't South Florida Water Mgt. District doing this study?

You may want to collect continuous blue-green algae data to assist you in getting a handle on the timing of harmful algal blooms in the bay.

Site specific information for Biscayne Bay and the associated management of nutrient inputs may or may not be transferable other than in a very general sense.

I think the notion of the importance of potential mineralization of nitrogen from sediments as a source of nutrients to the bay is interesting but is too big a problem to address in this project and will detract from a more complete assessment of inputs in freshwater.

It may be difficult in determining how to best manage freshwater releases to improve coastal ecosystems.

No alternative management scenarios to pulsed inputs are provided to control nutrient inputs.

Effects of cattle trailing on water quality in Oak and Pleasant Creeks, Capitol Reef National Park	
CATEGORY: Synoptic	PARK: Capitol Reef National Park (CARE)
USGS Utah Water Science Center	YEAR 1 COST: \$ 49,910

Comments:

<p>Written products mentioned include a USGS technical report, an NPS technical report or a journal article. Open access USGS or NPS technical reports are greatly favored over a journal article, which typically has a limited accessibility and by its nature has a very different focus than a technical report developed to assist managers of a specific park in addressing specific resource management questions. Various types of presentations are all well and good but NPS managers need focused written technical materials that will persist beyond staff changes and into the long-term future.</p>
<p>I am concerned that since the streams are different to begin with in many ways it will be difficult to tell what differences in water quality response to cattle trailing are in fact due to differences in the number of cattle and the length of time that the cattle are in the river beds compared with differences in soils, vegetation, bottom sediments, hypothetical interactions and differences in overall hydrology - and differences in the amount of precipitation and runoff. The Pleasant creek site that is larger with fewer cattle will have more dilution of nutrients and bacteria from the outset.</p>
<p>If a lot of cattle trail in one basin and much less in another, how will you use those results to Estimate an acceptable stocking rate?</p>
<p>Seems of limited transferability given resource threat is localized to the two stream canyons where trailing is permitted and few other parks would have enabling legislation that permits this activity. However, this may occur on private land upstream from several parks</p>
<p>How will you use the collected data to determine reduced impacts from reducing transit time for trailing?</p>
<p>Including I&M sampling which would occur anyway at 100% is not a valid cost-matching item.</p>
<p>The problem seems more theoretical than well documented for these systems, there are no citations for severe water quality problems to date.</p>
<p>Not apparent how this can be controlled so desired management outcomes could be positive if part of enabling legislation.</p>
<p>Will you be violating hold times for fecal bacteria samples?</p>
<p>Pleasant Creek has more than twice the watershed area and one-tenth the cattle, Oak Creek has wall to wall trampling and hammered vegetation after the cattle come through. Monitoring macro invertebrates and algae seems to be ignoring the elephant in the room. What about vegetation and soils? The proposal fails to describe the NMDS and BIOENV models in any detail that the reviewer can evaluate the inputs, outputs and use of the models for this application - a few examples would be useful.</p>
<p>Consideration of alternatives not indicated, though do make use of existing NPS monitoring</p>
<p>Will you collect data during periods of runoff when bacteria levels are likely to increase?</p>

Several studies have already been conducted since the 1980's, monthly data are collected by the NPS I&M network, and continuous recording multi-parameter sondes are already deployed in the two streams. There appear to be sufficient data available to answer the questions the proposal seeks to answer, but not the primary management questions listed on page 6, which the proposed work also will not resolve.

The Park Service is well integrated into the proposal and is enthusiastic about the project

Consider sampling upstream and downstream from cattle trailing.

Water Quality of the Reed and Kobuk Rivers, Gates of the Arctic National Park and Preserve, Alaska	
CATEGORY: Synoptic	PARK: Gates of the Arctic National Park and Preserve (GAAR)
USGS Alaska Water Science Center	YEAR 1 COST: \$ 50,000

Comments:

No real problem resolution is provided by this pre-road water quality assessment. This is good background pre-road baseline information but not an evaluation of any road building, culvert, bridge etc. BMPs to reduce impacts or alternative routes, or other mitigation.
It's not readily apparent that even with the scale of this project there will be or is likely to be measureable water quality impacts on a local stream scale above baseline.
Three of the five miscellaneous sampling locations are upstream of the proposed highway route. It is unclear how these data would prove useful in a later effort to prove impacts resulting downstream of the roadway, which is where one would expect the majority of the impact to occur.
How will you be able to separate the impact from ground water quality from stream water processes that also impact water quality?
Just knowing pre road conditions is NOT sufficient for the Park Managers to then "have an understanding of possible effects of road construction on water quality", as the authors state.
Location of the fixed sampling/discharge sites >15 miles (Reed River) and >30 miles (Kobuk River) downstream of the proposed highway route suggests that road impacts are not primary drivers of the project. The proposal does not explain the benefit of locating these stations so far from the route.
Arctic Network I&M has stream water quality as a set of vital signs and includes this park and these rivers.
Since sedimentation is a problem, you need a detailed overview of current sedimentation occurring in the stream during baseline years.
The law allows for the road, proposal indicates there is little the park can do to stop it.
Do they oil the roads in these areas, and are you analyzing for these contaminants?
Project descriptions by the State of Alaska indicate that gravel pits would be located about 10 miles apart. For a 26 mile roadway inside park boundaries, there should not be more than two or three gravel pits required, which does not qualify as "numerous".
Consideration of alternatives not indicated, Arctic Network I&M already receives funds for monitoring and has personnel.
Rather than get complete nutrient analyses, major ion analyses, and trace metal analyses on only 14 samples per year I would think it might be more cost effective (given the limited budget) to have fewer targeted analytes (perhaps fewer selected nutrients and the most likely trace metals) and then have sampling for these analytes at the miscellaneous sites and/or more frequent sampling.
Will you be collecting baseline sediment chemistry data to understand the impact from highway development?

There are very few samples actually being analyzed to achieve the stated: "comprehensive characterization of the water quality of the upper Kobuk River and Reed River near the "proposed Brooks East Highway." The 5 samples per year for 2 years would not cover much variability in flow within a season. There are not enough samples in the budget (14 nutrients per year in years 1 and 2) for sampling and the 15% QA/QC mentioned.

This is a theoretical problem IF the road is built and IF the road results in impairment and IF hauling ore actually contaminates the rivers. As such it is of lower significance and severity and urgency.

After you collect pre-road and post road data, the road will have been constructed. If this is true, how will this study benefit the issue? It may take of number of years before the travel road causes a problem in the area.

There is no mention of the 2013 research permit issued for state sponsored research in the park related to resources which may or may not be impacted by a road. The activities include snow survey, fisheries surveys, wetlands and wetlands vegetation survey, hydrologic and hydraulic surveys of the Kobuk and Reed Rivers, and cultural reconnaissance surveys. The NPS website indicates that additional research on water resources, fisheries and caribou is already planned for next year. (<http://www.nps.gov/gaar/parkmgmt/ambler-mining-district-current-status.htm>). The current proposal does not make the case that the proposed activities are essential.

Understanding the Direct and Indirect Effects of Dam Removal on Water Quality and Primary and Secondary Productivity in the Elwha River

CATEGORY: Synoptic	PARK: Olympic National Park (OLYM)
USGS Western Fisheries Research Center	YEAR 1 COST: \$ 49,573

Comments:

<p>Less than half (40%) of the project will occur within NPS boundaries. Since the USGS is already working with the Lower Elwha Klallam Tribe to conduct work more or less the same as what is proposed here (http://wa.water.usgs.gov/projects/elwhasediment/) in the lower Elwha, the estuary and in the strait, more work within the park would seem to be justified.</p>
<p>Some of the less common methods like "Nutrient diffusing substrates" should be explained and referenced.</p>
<p>The salaries of the principals are counted as "in kind" while they are covered on another project. I discount this somewhat. This makes it clearer that they want this funding to augment their existing project on the Elwha. The price for the nutrient analyses is very "economical" compared with the Central Lab prices.</p>
<p>Dam removal already in progress. Data collection starting now? No data prior to or during removal?</p>
<p>A good study that will attempt to link sedimentation and nutrient enrichment with ecosystem structure and function.</p>
<p>There are no funds included for reporting.</p>
<p>25 microns filtration for nutrients seems much too coarse</p>
<p>Are you really filtering at 25 um or do you mean you are using a 25-mm diameter filter with a pore size around 1 micron or less?</p>
<p>The project does not mitigate the dam removal, nor contribute to future management WRT the dam removal.</p>
<p>Why no sampling sites included above the disturbed area as a baseline?</p>
<p>North Coast Cascades monitors water quality, including many of the parameters described here.</p>
<p>Neither formal nor informal scientific presentations to NPS staff are sufficient to provide information needed for the long-term resource management of the park. NPS manages lands into the distant future and it is well known that staff turnover is frequent. A publically accessible formal USGS scientific investigations report or an NPS Natural Resources Technical Report will provide peer-reviewed, open-access long-term documentation of the project methods, results and management recommendations to NPS that are needed. Journal articles are by nature developed for a different audience and are more often than not unavailable to the general public or even to NPS staff without a fee. Transferability is reduced by publishing in journal articles that are not open access.</p>
<p>Results are likely a function of the type of flow years that you sample. A high flow year may give you much different conditions than a low flow year.</p>

This project appears to build upon and take advantage of much previous work and monitoring infrastructure and data associated with dam removal so study outcome may be that much more informative.

Transferability may be limited by the unique conditions of the Elwha.

Consideration of alternatives not indicated, I&M monitoring?

Problem Resolution: The study does not provide a direct "problem resolution", rather it will inform managers of the current status of primary and secondary productivity as it is impacted by the sediment release relative to the pre-removal condition for which they have comparable data. This is very useful but problem resolution would require evaluation of the ongoing adaptive management of delaying sediment release - HOW does this delay affect sedimentation, turbidity, mobilization of bed sediment compared with the prerelease and ongoing release conditions?

The 15-minute turbidity data from the existing fixed stations would seem to be very important but for two of the stations the data are rated poor and for the third the data collection ended in 2013. Discharge is reported in NWIS only for the station between the two former reservoirs. These very basic data would appear to be critical to the success of the work proposed in this document, why is this not addressed here?

Investigate Mine Waste, Groundwater Quality and Flow Directions to Assess Alternative Remediation Strategies at the Old Yuma Mine, Saguaro National Park, Arizona

CATEGORY: Synoptic/Fixed	PARK: Saguaro National Park (SAGU)
USGS Arizona Water Science Center	YEAR 1 COST: \$ 49,867

Comments:

The project will be valuable in determining isotopic signatures and leach-ability (mobilization potential for various contaminants) for the 3 different potential contaminant sources (Leach pad material, tailings, and waste rock) that could then presumably be handled separately.
While the water contamination issues resemble other projects reviewed, the source of the contamination is on park property, and the responsibility of NPS through CERCLA.
This study will not evaluate the in-situ and in-place capping alternative management practices that could be used to help remediate the site. This study will inform the park about potential GW contamination from the mine wastes because it will determine chemistry of solids leachates and some indication of potential groundwater contamination by trying to determine potential mobility.
CERCLA time critical requirements
No evidence provided for large fluctuation in water table that ends to re-saturate disturbed areas of finer waste rock that can lead to AMD and higher amounts of dissolved metals. Not sure if arid areas such as this poses the kind of threat seen in more humid areas or where there is a big snowpack with large water table fluctuations through waste rock or mine tailings seen in other parts of the country. This was not addressed here.
A technically sound proposal, which should provide good data for management purposes.
Given the potential complexity of the geology (presence of faults) it may be overly optimistic to think that they can really develop a conceptual model from the potentiometric surface that would reveal the actual direction of GW flow. The many millions of dollars spent trying to do this for the Yucca Mountain waste disposal site comes to mind.
Direct applicability to the other AML sites listed is questionable but does have applicability outside of the immediate region
Data beyond scope of current SODN I&M monitoring
I don't really see the urgency for the threat in this project. There is no indication of an imminent threat to GW, no evidence that GW is contaminated.
No indication that depth to groundwater is known at the mine site or if the mine adit reaches the depth of groundwater (400" mine shaft at 45 degree angle). Would not expect groundwater to be highly contaminated under these conditions so down gradient domestic wells would be at low risk of impact.
They don't seem to mention it in the "Expected Outcome" section but the data should provide some indication of the historical movement of contaminants in groundwater and whether this is an ongoing concern. (by sampling wells down gradient from the mine wastes)

Project better evaluated under NPS AML program.

The recognized high risks at this time seem to be more physical than geochemical - dangerous open shafts and unstable incline adit

Waste volumes (waste rock source) appear to be relatively low and not highly mobile given the arid environment.

Surely there must be some information available (though they say there is not metal analysis of GW from the area) that could be gleaned from compiling what is known about GW chemistry in the surrounding wells. You would think that if there had been a problem since mining began it might have been noticed. You could at least say whether the nearest wells with chemical analysis had any indications of mine-related contamination. I would think that mine leachate probably has a distinct signature for at least some more commonly analyzed constituents in regular well water testing.

Usually metal laden streams are a threat to the biota (fish) but with ephemeral streams that are perched above a deep groundwater table and not groundwater fed, this is not a threat.

Dye Trace and Hydrologic Assessment at Margaret White Spring, Buffalo River	
CATEGORY: Technical Assistance	PARK: Buffalo National River (BUFF)
USGS Arkansas Water Science Center	COST: \$ 50,000

Comments:

Excellent expertise for dye studies but not much mentioned regarding expertise needed to define water quality problems and restoration alternatives.
Very few references offered to support the background and problem statements. Why only 12 weeks of sampling after injection , it could take much longer for dye to move to the spring, especially as the authors talk about using a two component hydrograph separation that relies on the assumption that the water sampled may be composed of older diffusive flow matrix water and newer recent precipitation.
While the proposed work is primarily related to hydrogeology of the water source, the justification for its value to water quality protection at the river is adequate for this funding source, if not compelling.
No mention that the dye tracing effort aids in understanding GW flow in the reach where the new hog farm is located which is the overriding park concern at the moment. No map is provided to illustrate whether this study is relative to Big Creek drainage or if this study will provide any information related to that issue.
Proposal doesn't say how large the nitrate levels are and whether they are causing a problem.
Lack of a map showing key locations makes it difficult to evaluate this proposal.
Not clear how the perceived threat of problem of nitrogen is a direct threat to the endangered and threatened or listed biota per se. It is stated but not elaborated. What concentration thresholds are important, are they anywhere near those, and is it reasonable to assume that these levels would be exceeded if any significant land use change occurred? They build a good circumstantial case (GW may be the largest source of N and GW is a big component to flow but the proposal lacks lack real specificity.
It is my understanding that BUFF main stem is P-limited rather than N-limited in terms of causes of algal blooms. It should have been justified further why current Nitrogen levels and their increases are as critical to know.
The criterion for where to do the dye injections is not as well defined as it could be to provide a high degree of "technical soundness" not much information on the choice of tracers is given or how conservative they would be
A known water-quality problem was not identified but a potential for a problem, now or in the future, is possible.
The severity and urgency of the threat is not very high since this is more of an assessment of the amount of GW entering the Park from areas outside the park that may or may not experience changes in land use that would increase their nutrient loads to the river. It is a theoretical threat.
How are the cooler water temperature causing a problem?
Quantifying GW contributions to the river is a primary goal and product and is not strictly QW it is QW secondarily. This activity will not result in "Problem Resolution"

Improving the Water Quality of Cub Creek: Using Real Time Continuous Data and Engaging the Next Generation	
CATEGORY: Technical Assistance	PARK: Homestead National Monument (HOME)
USGS Nebraska Water Science Center	COST: \$ 50,010

Comments:

Regulation of CAFOs is Nebraska's responsibility under the Clean Water Act. Heartland Network I&M samples lower and upper cub creek for fish communities and associated water chemistry including the parameters detailed in this project. Why isn't I&M data included? Why isn't I&M data used to QA/QC the volunteers' data?
Including a plan to partner with NRCS would seem to be a natural for this project topic.
No mention made regarding ecosystem health.
No mention was made regarding the fish sampling data that have been collected since 1988.
It is a very ambitious project, without a lot of resources, but it could be very effective in leveraging "in kind" assets of the volunteer program and in engaging the public through the planned displays and educational material to be displayed at the park.
Nice little/low cost WQ project w/local educational merit .
The collection of data in FY 2015 will not necessarily tell us whether the data collected since 2002 are good.
What is the reach length of the creek inside the park? How about including a map?
The real-time logging does not measure nutrients, which are the focus of the project. According to the text, the continuous data will be gathered April-August, but the schedule has the continuous data collection not slated to begin until the third quarter.
Continuous water quality data will be collected in the first quarter of FY 2016 when you will not have funds to collect, process, check or review those data.
The project assumes that with just this QW sampling the educational benefits will be so effective that adaptive management strategies will be implemented and will be monitored going forward.
Little to no data presented explaining the need for this study, based on data, except for some limited phosphorus data.
Discussion about a short peer-reviewed report with no mention of timelines and report cost.
The threat is more assumed than established since there is no recent evidence from water quality sampling. The threat is based on historic volunteer sampling showing high nutrients and ecoli bacteria.
Nothing stated about the availability of stream flow data.
Not a particularly enthusiastic letter from the NPS
More detail on the costs for the hardware and displays would be helpful here. The budget is very vague and does not provide the level of detail requested by the RFP guidance.

On the basis of water quality data upstream and downstream of the park, it is pretty definite that water quality is a problem in the park.

The key need appears to be education. Timely subject after the drinking water problems in Toledo summer 2014 caused by algae bloom.

Assessing the Risk Associated with Marijuana Cultivation on Water Quality in Redwood National and State Parks

CATEGORY: Technical Assistance	PARL: Redwood National and State Parks (REDW)
USGS California Water Science Center	COST: \$ 49,999

Comments:

<p>The nutrient data are rudimentary by only looking at a spring and fall first flush. I'm not sure that the same data for comparing apples to apples exist in the 1974-76 data set. Also, what about the need to look for sediment erosion and associate suspended phosphorus. Does one sampling of a first flush in spring and then again in fall really tell you whether WQ is being impacted? It is possible to have increases in nutrient concentrations in forested streams, which are heavily shaded from sunlight, so that there are minimal signs of eutrophication. You also need a reference site to assess its conditions during sampling downstream from a major cultivation area.</p>
<p>The proposal should show hydrographs of flow at the USGS gages over the period of record, and the park isn't even on the map.</p>
<p>The introductory part of the proposal talked about various contaminants including pesticides and sediments but the proposed activities only call for nutrients - I think they conflate risks (severity of the problem) with the contaminants that they are not measuring without analysis of sediments and temperature they are missing the two main factors that have been cited in impairment.</p>
<p>Klamath Network I&M samples lakes and streams including Redwood. Is the farming in the park or adjacent to the park? Is it illegal use of state and federal land or is it farming on private land? Is this data collection in support of a 19jj? Is the sampling on the state lands or the NPS lands? Is this really a state water quality regulatory issue? State and county are providing the project support...</p>
<p>Appears that much of the activity occurs in greenhouses so difficult to control other than through the control of water rights and controls on groundwater use.</p>
<p>Only 20 nutrient samples are envisioned for the project, this seems a relatively small number all samples to come from one location, investigators miss golden opportunities to collect samples from locations upstream of cultivation for controls and in tributaries having extensive cultivation to better associate cultivation with nutrients, and they miss altogether the opportunity to sample sediment and take water temperature at these kinds of comparative sites to better understand the impacts of marijuana cultivation.</p>
<p>How are the data linked to marijuana cultivation as a source?</p>
<p>Need to compare suspended sediment data collected from 1972-2002 to data collected in 2015.</p>
<p>Severity is downgraded because, in terms of water quality the scope of the problem is not known.</p>
<p>Would seem that the CA drought would be the bigger concern related to flow quantity and temperature stressors.</p>

<p>The proposal does not make the case that the Basin Characterization Model (BCM) would be superior to other existing watershed models for this application. The Soil and Water Assessment Tool (SWAT) is another GIS-based watershed scale land use model used by USGS researchers. SWAT is able to model water, sediment and nutrient transport from land areas and point sources. The BCM model appears to be geared primarily to the estimation of regional-scale future hydrologic scenarios under climate change, and does not appear able to include transport of sediment or chemical constituents. The current application clearly seems to be well suited for a model that will explicitly include sediment and nutrient transport in addition to water quantity under a range of land uses. As long as the SWAT model would complete the task at hand, the funds would be better spent on application of existing models and/or more water quality characterization.</p>
<p>Would appear to be limited adaptive management capacity given most of the activity that needs to be controlled is outside the park.</p>
<p>Inclusion of stream gage support and model development support that would occur regardless of this proposal being funded is a stretch as far as project support.</p>
<p>How are the data linked to marijuana cultivation as a source?</p>
<p>Sediment impairment is a real problem but how much of this problem is really attributable to marijuana cultivation and why no sediment sampling if this is the case (also for temperature)</p>
<p>Eradication of marijuana on the public lands would seem to just move it to private lands particularly under the ongoing liberalization of use and cultivation so park would seem to have limited control over this ecological threat based on water demand.</p>
<p>No written Report planned - downgraded criterion 4 for that.</p>
<p>Except for maps, no report to document the methods is being planned. Did you overlook the need for a report?</p>
<p>IF the data collected can be connected to marijuana farming, otherwise this is just data that I&M should already be collecting.</p>
<p>Additional information about what water quality monitoring is ongoing would be helpful. Is there continuous temperature monitoring already taking place or other sampling? There seem to be very basic needs that are not addressed by the proposed work and it is not clear that they are being met elsewhere.</p>
<p>Problem is fairly well defined but seems to be more of a problem of water quantity than water quality</p>

Identifying hotspots for botulism toxin production at Sleeping Bear Dunes National Lakeshore – the role of beaches and shallow waters	
CATEGORY: Technical Assistance	PARK: Sleeping Bear Dunes National Lakeshore (SLBE)
USGS Michigan Water Science Center	COST: \$ 49,751

Comments:

Nicely written, and technically sound proposal.
Well documented and compelling need. Timely and cost effective work.
Great Lakes Network does not monitor for anything related to this study.
I am not familiar enough with the lab analytical techniques to evaluate the proposed methods of the NTNH assay or PCR techniques.
Project could be very cost effective by development of a 2-phase assay that would save greatly on analysis for botulinum toxins and identifying species specific serotypes.
Water Quality component of this proposal seems more marginal - more of a BRMD issue and a division for seeking support. Also a human health issue/threat not fully tied to water quality/ actual consumption of water.
Your application of a simplified PCR assay from detection of a C botulinum regardless of stereotype is noteworthy.
Problem is well defined, and severe, and is real not theoretical with impacts to birds including federally endangered Piping Plover.
Will determine safety messages to the public, but no course of action available to help the birds or stop the microbe.
Problem resolution will provide very useful information to allow Park to manage visitors in such a way as to reduce exposure but will not allow for resolution vis-à-vis bird populations
I was concerned as to whether they had evidence that sample holding time from 2012 collection to 2015 analysis would not compromise the samples this should have been addressed.

Comparing Trace Metal Concentrations in Water and Pectoral Fin Rays to Assess Lake Sturgeon Populations in Voyageurs National Park, MN	
CATEGORY: Technical Assistance	PARK: Voyageurs National Park (VOYA)
USGS Minnesota Water Science Center	COST: \$ 50,000

Comments:

Urgency is understood by the fact that VOYA has only a limited amount of time to respond to the impact assessment of dam building on the Namakan River (Primary spawning habitat). This is more of a physical access and hydrologic regime change issue that a water quality issue so I am downgrading scientific Merit.
Voyageurs NP has had USGS-NPS WQ projects funded 4 out of the last 4 years, and 8 total since the beginning of this funding source, and still there is a need for more water quality data?
Proposal will identify habitat use spatially among the tributaries input to Namakan Reservoir and the lakes of Namakan Reservoir
Study raises the question that if one variable is missed or not controlled well, results will be misleading or inclusive to park managers and subject to challenges in using to impact dam construction to protect lake sturgeon habitat or breeding populations.
The study is only funded for FY 2015, yet it runs from Oct 2014 through March 2016.
There is not a "Water Quality Problem/Resolution being investigated here as is usually assumed, rather water quality is going to be related to fin tissue chemistry in an attempt to establish a linkage to which tributaries or lakes the sturgeon are using as habitat.
In the proposal, no mention is made regarding the methyl mercury issues except in the "Severity of threat..." section.
Adequately addressing uncertainties associated with multivariate analysis may make credibility of proposed resolution or adaptive management solution a difficult sell. A very interesting approach, however.
The proposal is a fishing expedition (forgive the pun). However, it is cost effective and if it works out, would provide a useful tool to park managers in negotiations about the power plant.
It seems that the fin ray data should first be lab analyzed and then statistically analyzed to explore differences in trace element ratios prior to spending the funds for the analysis of the water samples.
No evidence provided that the fin tissue chemistry might get quite muddled in fish that have spent years in the lake itself after leaving their spawning rivers. Do metal ions move between growth rings?
Although temperature is important, it is not modeled to explore impacts on fish after hydropower development.
If the trace element concentrations do not exhibit differences then what does the project accomplish?
The work does not improve water quality, but could potentially contribute meaningfully to protection of the sturgeon. Previous studies focused on mercury, which ostensibly came from the coal power plants. Now the proposals for hydroelectric to replace the coal plants are raising other issues.

RE Problem resolution: it was not clear to me how the proposed hydropower development was going to potential affect metal concentrations in the water as suggested in the proposal -- needs more explanation.