

Assessment of NMFS' Draft Biological Opinion on the
Bureau of Reclamation's Klamath Project Operation

External Independent Peer Review by the Center for Independent Experts

Thomas Clair, PhD

Executive summary:

The Opinion on the Review of Operations of the proposed Klamath project is based on Viable Salmon Population (VSP) approach described in the report. The background to the project and the biology of the population are well laid out, logical and are linked to the issue at hand. The hydrology section which is key to the project could use more elaboration, especially as it relates to salmon biology. The water chemistry description is poorly done.

My major problem with the Opinion is that it is strictly based on an assumption of no deviation expected from an assumption of "normal" conditions. There is no analysis of what could happen to habitat or ecosystem use in case of either short or long-term changes to regional climate, and thus hydrology. It seems that the operating conditions proposed are too close to minimum tolerance levels that if unusual conditions occur, then the system may not be in conditions to either buffer or recover. There is also no analysis of what would happen if returning ocean fish populations are further reduced from their current status. Moreover, hatchery fish are treated as if they were a different species and need to be better incorporated into the analysis.

The above comment leads to the belief that a risk analysis needs to be done using the VSP and other approaches to assess the potential effects of irregular occurrences such as a long drought or the loss of a cohort in the ocean. There should also be an assessment of the predicted effects of climate change, as well as in an increase in land use, as previous banked lands in the upper watershed might be returned to agriculture as world markets and US energy policies now encourage more biofuels.

The Opinion also does not address the problem that the Klamath hydrological system is being moved even further away from its original state, and though its main conclusion is that the new operating plan will not cause a loss of coho, the concept of returning the population to a viable status is receding further.

Approach taken by the reviewer:

As I am not a Pacific salmon specialist, but am more familiar with habitat issues, I took the approach of reading and assimilating the contents of the Opinion such

as they were presented. Except in one case (water chemistry), I did not question the validity of the biological, hydrological and other information in the document.

I therefore took the view of an educated ecologist and looked for inconsistencies in the arguments presented and tried to assess if the authors overlooked important issues in their analysis. I also answered the questions posed by the contracting authority in the Statement of Work based on my perception of the material presented.

General Comments:

The report writing is uneven in quality and the report could be reduced in size to make it easier to understand. For example, the “Habitat conditions in the study area” and the Effects of the action” information could be summarized in tables, allowing comparisons between the various reaches to be more easily done.

In this report, the National Marine Fisheries Service, the Fish and Wildlife Service and the Federal Energy Regulatory Commission are NMFS, FWS and FERC, respectively. The Bureau of Reclamation is referred to as “Reclamation”, not BoR in the text. Colloquially, this is probably what the organization is called. In a report like this though, it sounds unprofessional.

There should be better reference checking. For instance, NRC 2004 and 2007 are cited in the text, but are not to be found in the reference section. There is also an incorrect date on the Sutton et al. reference. I have not done a thorough check of references, but when two key ones are not there, it does not reflect well on the report.

Maps

The maps describing the region are haphazard in their design and utility, as there are at least three different styles. I found it confusing finding places mentioned as I was reading the text. I suggest improving Figure 3 to highlight the various river reaches and key sites so that the maps in the appendix are not needed. A reader should not have had to scan the maps every time the reader is looking for Iron Gate Dam (IGD), or some other key feature. Figure 1 should be moved to the appendix, as the information it contains is secondary to the story.

Hydrology

I felt that the description of the hydrological effects was too terse and required several readings before the meaning began to make sense. As this is what is driving the whole process, it is important to make it clear. The terminology is also

a bit confusing. “No project” means no new Klamath project, and it does not mean that there is nothing going on. Also, current operations need to be better discussed and identified. The writers assume a good familiarity among readers with existing conditions, but the report should better describe what conditions currently exist, e.g. the COPCO dams are not explained. A better description of the hydrological conditions above and below the dams would help the the report..

Mention is made of a precipitation index in the text and table, but it is not described. Also, the term “Thousand acre feet?” is specific only to US hydrologists. It is recommended the report use volume figures that non-US readers understand. There is also a mix of US (cfs) and metric (degrees C) measurements in the text. As this is a scientific report, the metric measurements are more acceptable.

The Interactive Management process is a very good idea and is logically organized. However, regular semi-monthly meetings seem a bit rigid. There are times when more hands-on management is needed, and times when there is no need for close monitoring. I suggest that a more flexible schedule be devised, otherwise, people will lose interest.

Analytical Approach

This is an excellent section; it is well written, logical, and easy to understand. The assumptions used to assess ecological effects make sense. The VSP framework is well presented. As will be seen in my comments below, this framework is well followed in the “Biological Opinion” when assessing the project impacts.

Again, I make the point that labels are important. “No project” almost sounds benign – when in fact it means “Existing conditions” or something to that effect.

Life History and Critical Habitat

This is also very well written section. The status summary (p. 47) is to the point and clear and factual, The factors contributing to salmon decline are described briefly with the ocean factors and climate change being mentioned, but not in detail or a quantitative manner.

In Table 8, the term N_a is not defined.

Environmental Baseline

Most parts of this section are very thorough and generally well written, but there are specific issues which are addressed below.

The activities affecting the fish and their habitat are well described. There is no need to spend too much time describing conditions above IGD (except for hydrology) as these are only relevant in so much as they affect the downstream conditions where the salmon problems are situated. The information regarding fish ladders being built is interesting, but irrelevant to this Opinion, unless the authors can make a quantitative case that these will contribute to the well-being of the population in the near future. As it is, all that is provided is speculation.

I liked the section on hydrological alteration for the long-term view it provided. The point made by Figure 8 is that this project, on average, will produce reduced flows below IGD for much of the year, and not simply the summer. This, as the text emphasizes, has the potential to negatively affect the VSP parameters regarding juvenile rearing and adult migration.

The water quality section is unsatisfactory as it stands. The intensive agriculture occurring in the reaches above IGD have the potential to cause serious problems to the water chemistry. One of the most important issues with agriculture impacts on fish and fish habitat is siltation or turbidity. This factor is not mentioned in the report. It may not be a problem if measurements show that the reservoirs settle out suspended matter and that the downstream water is clear, but this has to be shown.

Water temperature and dissolved oxygen (DO) are closely related, as are nutrients and DO. Low DO concentrations in the summer are partly due to the low oxygen saturation potential of warm water. At 24°C (typical summer temperature according to p. 79), DO concentration at saturation is ~ 8.5 ppm which is close to the comfort zone for coho. Were pre-agricultural temperatures lower, with more forest cover in the catchment? Granted, a turbulent river with low oxygen demand should be close to saturation, even in the summer, but the link between these two variables explains some of the low summer oxygen values and at the very least needs to be mentioned. Moreover, increases in nutrients will increase primary productivity, which will then increase biological oxygen demand in the fall, as well as produce wilder swings in diurnal DO. If more farmland is returned to production, this might be another stress to the downstream populations. This is one extra risk to the population which is not addressed.

I have never heard of “natural eutrophication”. My guess is that it is caused by anthropogenically-derived nutrients which are precipitated into the sediments and which are then seasonally recycled. Natural ecosystems do not usually contain excess nutrients and this term should be expunged from the report, unless there

are apatite or other odd geological deposits in the upper watershed. The term needs either to be explained or removed.

Description of reach specific conditions:

The remainder of the text is slow going as much of the information is redundant and could be better summarized in tables to make comparisons easier. I will not discuss the individual sections in the report which follow, but will answer the following questions asked by the contract authority based on my assessment of the overall report.

Questions provided by contracting authority to focus the review:

Does the draft biological opinion incorporate a biological framework?

The report does a good job of qualitatively laying out the life history of coho and its relationship to the hydrological cycle, as well as to other factors affecting the population (ocean conditions, estuarine predation). This put the other parts of the report in a proper context.

Does the draft biological opinion consider a range of climatological conditions and water demand scenarios in the analysis?

The report generally discusses the hydrological conditions that the Bureau of Reclamation is supposed to provide under the new flow regime. As the new anticipated discharges are generally lower than current ones, the system downstream of IGD will be further degraded from the current situation. There seems to be little room for error in this analysis, especially if late spring to early fall runoff values end up being lower than currently anticipated. There is no attempt to discuss what would happen under unusually low runoff years, as can occur during drought conditions. The authors have gone to the trouble of calculating exceedence probabilities (Table 6), but have not applied that information in evaluating how deviations from expected values (especially in low flow conditions) might affect coho populations. Moreover, there is no analysis of potential climate change effects to the region. Good general circulation models predictions exist for this region and should be looked at to see what the future might bring to the region. The report therefore needs an assessment of worst case scenario runoff and its potential impact on coho life stages. In other words, there is no risk analysis for the modifications being proposed.

Does the draft biological opinion consider a range of ocean conditions in the analysis?

Ocean conditions are mentioned in the report as important, but not in a way that would quantitatively link ocean changes to changes in river coho populations. I am aware that there are some quantitative analyses of the relationship between ocean conditions and salmon return, but these are not used in assessing the sensitivity of Klamath River coho populations to changes in the ocean.

Does the draft biological opinion consider the effects of hatchery fish on listed fish?

An overall problem I have with this Opinion is that the contribution to the population by hatchery fish is not well incorporated in the analysis. The issue of hatchery versus wild fish populations occurs everywhere in the world, so it is not unique to the Klamath. Is this report only about the wild coho? The report is written as if the hatchery fish were a separate species which happen to be in the river at the same time and it is unclear how these two populations interact. The report discusses the problems that hatchery fish pose to the wild fish populations (e.g. genetic mixing, competition for habitat); however, it does not put the hatchery versus wild fish issue in the context of the proposed change in flow regime.

Did NMFS' draft biological opinion present convincing scientific evidence about the spatial and temporal extent of young-of-year and juvenile coho salmon use and occurrence in the mainstem Klamath River?

I found the description of the life cycle and its relationship to the river's hydrological cycle quite good and thorough. I believe that Figure 7 and the section on periodicity and life history were key points made with this review. The section is well written and logical, though it might be useful to overlay median new expected and current flows onto this figure (a form of Figure 8) to identify what life-stages are most vulnerable to low-flow conditions and how that would change.

Has the draft biological opinion adequately evaluated the potential effects of mainstem flows on the survivorship of coho smolts?

The review does an excellent job describing the interaction between flow and salmon populations under the expected conditions. What it does not do is provide predictions of population changes if the short or long-term climate or the demands of water users change. What will happen to adult migration and spawning if there is a drier fall than usual? Or what will happen to smolt outmigration if there is a dry winter or spring runoff occurs much earlier? There is no analysis of potential effects if the Bureau of Reclamation cannot meet its flow requirements at critical times of the year and/or increasing temperature

trends continue, even though the review does refer to work showing that temperature is increasing (Bartholow 2005).

Are the draft biological opinion's scientific findings on the influence of mainstem flows on the spatial and temporal extent of coho juvenile survivorship in the summer months scientifically supportable?

Sutton et al. 2007 (not 2006 as in the report) show that cool-water refugia are needed to maintain resident populations. They also show that higher flows in the summer may not necessarily be an advantage to mainstem coho populations as discharge water from IGD is often too warm for coho, which suggests that the 1000 cfs flows are probably adequate to maintain the minimal activity going on in the summer. However, they also report that during their study, discharge minima of 615 cfs were reached, which leads to the suggestion that maintaining 1000 cfs may be much more difficult than expected. Though higher summer flows may not be an advantage, could lower than expected flows cause problems? This is not discussed in the Opinion. Moreover, low flows in the fall may cause more serious problems to the population as there is more activity. This is not addressed in the Opinion.

Overall discussion:

The use of the VSP approach to situate the population in an ecological and hydrological context was done well in this report. The description of the coho life cycle is merged with seasonal hydrological conditions and the interactions and dependencies between the two are described. This setting of the scene allowed a logical review of the remainder of the report.

In summary, I have two main concerns regarding the results of the review however.

a) Long term climate change, natural climate variability and changes in ocean conditions are occurring. This analysis assumes a consistent world where the Bureau of Reclamation can control flow perfectly and where the coho numbers will return to the river as they always have within a fluctuating range of values. The analysis does not allow for significant changes in ocean returns, increases in air/water temperatures, and increasing demand by farms being returned into production which will increase evapotranspiration and water pollution in the catchment.

It is clear that the 1000 cfs target cannot be met consistently (see the Sutton et al. 2007 reference which shows values 2/3rds of the target sometimes occurring in the summer). It is also clear from General Circulation Model outputs that because of a warming climate, spring time floods will come earlier and summer drought will last longer than is currently the case. This Opinion does not use the

VSP approach to assess what might happen under these probable changes. Without quantitative analysis, it would seem obvious that preservation of the coho population would require a less restrictive approach to water flow management than is being proposed.

b) Though not stated directly, it seems that the proposed new flow regulations will have, as a result, a reduction of total annual flows from the catchment. This will move the river flows further from a natural hydrological regime, and will thus further change the habitat conditions specific to the native coho salmon population. In the ideal situation identified in this review (i.e. no risk that hydrological and biological systems will show major deviations from the recent norm), the use of the VSP approach suggests that no major change in population would be expected to occur, maintaining the population status quo. Nevertheless the change will further degrade the aquatic ecosystem from a coho population point of view and will keep the population from ever being in a position to recover to viable levels.

Appendix 1: Statement of Work for Dr. Tom Clair

External Independent Peer Review by the Center for Independent Experts

Assessment of NMFS' Draft Biological Opinion on the Bureau of Reclamation's Klamath Project Operation

Project Background:

The purpose of this independent review is to evaluate and comment on the use of the best available scientific and commercial information in our draft biological opinion concerning effects of the Bureau of Reclamation's (Reclamation's) Klamath Project Operations (Project) on the listed threatened Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) and its designated critical habitat for the period of 2008 through 2018. The review will focus on the technical aspects of the NMFS draft biological opinion; the review will not determine if NMFS' conclusions regarding the project's potential to adversely modify or destroy critical habitat or jeopardize the continued existence or recovery of listed SONCC coho salmon are correct.

Due to water limitations to meet all of the needs of humans, wildlife and fisheries resources, NMFS' 2001 and 2002 biological opinions on the effects of the Bureau of Reclamation's Klamath Project Operation (Project), including water deliveries to the Klamath Irrigation Project, have been subject to intense scrutiny and litigation. In an effort to ensure we correctly analyzed the effects of the Project, NMFS sought review from the National Academies Committee on Endangered and Threatened Fishes in the Klamath River Basin (NRC) on the strength of scientific support for the biological assessment and biological opinion. The NRC released its 2002 Interim Report on NMFS' 2001 biological opinion and their conclusions included:

- A lack of evidence indicating high mainstem flows influence coho year class strength.
- The relative increase in available habitat for coho salmon in the mainstem Klamath River resulting from higher flows required in NMFS' Reasonable and Prudent Alternative to the Proposed Action were minor.
- A lack of scientific evidence in the Klamath River of a positive relationship between mainstem Klamath River flows and coho smolt survivorship.
- Higher summer flows could be disadvantageous by further increasing water temperature and reducing available thermal refugial habitat in the mainstem Klamath River.

Following the release of NMFS' 2002 biological opinion on the Project for the period 2002-2012, the NRC released their Final Report on Endangered and Threatened Fishes in the Klamath River Basin (2004) in which the above

conclusions were reiterated and additional information and recommendations for the continued survival of Klamath River coho salmon were provided.

Coincident to the NRC's review and recommendations, NMFS sought peer review on its Central Valley Project and State Water Project Operations, Criteria, and Plan (OCAP) biological opinion. NMFS asked the CalFed Bay-Delta Authority Science Program (CBDA) and the Center for Independent Experts (CIE) each to conduct independent peer reviews to evaluate whether the scientific information used in the biological opinion was the best available. The peer review reports raised multiple and complex issues that merited evaluation in the context of future improvements to NMFS' biological opinions on large-scale projects (*i.e.*, OCAP, Klamath Project Operations). In response to the OCAP reviews, NMFS' Science Center developed recommendations and guidance for the development of future NMFS biological opinions. NMFS' Science Center Review (Lindley *et al.* 2006) includes recommendations to improve the conceptual framework of section 7 analyses on large-scale projects. NMFS has in hand a general life cycle approach outlined by the Viable Salmonid Populations (VSP) report (McElhaney *et al.* 2000). VSP is accepted by NMFS as best available science. Lindley *et al.* (2006) concluded that within the framework provided by VSP, further improvements could be made by systematically examining all of the important linkages between project effects and VSP parameters, addressing climate variation and climate change, accounting for uncertainty, and making the connections between data, assumptions, analyses, and conclusions more transparent.

New Information:

NMFS' draft biological opinion will utilize the body of new scientific information on coho salmon in the Klamath River. This information includes (1) SONCC Technical Recovery Team documents defining the historical population structure of Klamath River basin coho salmon (Williams *et al.* 2006), and population viability (Williams *et al.* 2007); (2) Cramer Fish Sciences Klamath River Coho Life Cycle Model; (3) Evaluation of Instream Flow Needs in the Lower Klamath River Phase II Final Report (Hardy *et al.* 2006) ; (4) Reclamation's Undepleted Natural Flow Study Final Report (Reclamation 2005); (5) NRC's Review of Hardy *et al.* 2006, and Reclamation 2005; (6) new information on the effects of mainstream flow and water quality on fish disease; and (7) other information provided in Reclamation's final biological assessment (2007). The breadth of new information includes disparate conclusions relevant to the potential effects of the Project on coho salmon and NMFS will need to reconcile these disparate conclusions in our draft biological opinion.

Overview of CIE Peer Review Process:

The Office of Science and Technology implements measures to strengthen the National Marine Fisheries Service's (NMFS) Science Quality Assurance Program

(SQAP) to ensure the best available high quality science for fisheries management. For this reason, the NMFS Office of Science and Technology coordinates and manages a contract for obtaining external expertise through the Center for Independent Experts (CIE) to conduct independent peer reviews of stock assessments and various scientific research projects. The primary objective of the CIE peer review is to provide an impartial review, evaluation, and recommendations in accordance to the Statement of Work (SoW), including the Terms of Reference (ToR) herein, to ensure the best available science is utilized for the National Marine Fisheries Service management decisions.

The NMFS Office of Science and Technology serves as the liaison with the NMFS Project Contact to establish the SoW which includes the expertise requirements, ToR, statement of tasks for the CIE reviewers, and description of deliverable milestones with dates. The CIE, comprised of a Coordination Team and Steering Committee, reviews the SoW to ensure it meets the CIE standards and selects the most qualified CIE reviewers according to the expertise requirements in the SoW. The CIE selection process also requires that CIE reviewers can conduct an impartial and unbiased peer review without the influence from government managers, the fishing industry, or any other interest group resulting in conflict of interest concerns. Each CIE reviewer is required by the CIE selection process to complete a Lack of Conflict of Interest Statement ensuring no advocacy or funding concerns exist that may adversely affect the perception of impartiality of the CIE peer review. The CIE reviewers conduct the peer review, often participating as a member in a panel review or as a desk review, in accordance with the ToR producing a CIE independent peer review report as a deliverable. The Office of Science and Technology serves as the COTR for the CIE contract with the responsibilities to review and approve the deliverables for compliance with the SoW and ToR. When the deliverables are approved by the COTR, the Office of Science and Technology has the responsibility for the distribution of the CIE reports to the Project Contact.

Requirements for CIE Reviewers:

The CIE shall provide three independent scientists to conduct an independent peer review; this review will be conducted as a desk review and no travel is required. Expertise is required in water manipulation and management, instream flow and salmonid habitat modeling, application of the Endangered Species Act, salmonid population risk assessment methodologies, and conservation biology. Each reviewer's duties shall not exceed a maximum of 7 days to conduct the literature review, peer review, and completion of the CIE peer review report in accordance to the Terms of Reference (ToR).

Statement of Tasks for CIE Reviewers:

The CIE reviewers shall conduct necessary preparations prior to the peer review, conduct the peer review, and complete the deliverables in accordance with the ToR and milestone dates as specified in the Schedule section.

Prior to the Peer Review: The CIE shall provide the CIE reviewers contact information (name, affiliation, address, email, and phone) to the Office of Science and Technology COTR no later than the date as specified in the SoW, and this information will be forwarded to the Project Contact.

Pre-review Documents: Approximately two weeks before the peer review, the Project Contact will send the CIE reviewers the necessary documents for the peer review, including supplementary documents for background information. The CIE reviewers shall read the pre-review documents in preparation for the peer review.

CIE reviewers shall review the following document which is the focus of the questions listed above:

1. NMFS' Draft Biological Opinion on Bureau of Reclamation's Klamath Project Operations 2008-2018.
2. To aid the reviewers, copies of relevant documents cited in this statement of work will be provided.

The above material will be provided by the NMFS Southwest Regional's (SWR) Project Contact.

This list of pre-review documents may be updated up to two weeks before the peer review. Any delays in submission of pre-review documents for the CIE peer review will result in delays with the CIE peer review process. Furthermore, the CIE reviewers are responsible for only the pre-review documents that are delivered to them in accordance to the SoW scheduled deadlines specified herein.

Desk Peer Review:

The primary role of the CIE reviewer is to conduct an impartial peer review in accordance to the ToR herein, to ensure the best available science is utilized for the National Marine Fisheries Service (NMFS) management decisions (refer to the ToR in Annex 1).

The itemized tasks for each reviewer consist of the following.

1. Read the draft biological opinion with a focus on the effects analysis.

2. Consider additional scientific information as necessary.
3. The CIE reviewers shall conduct an independent peer review and complete an independent peer-review report addressing each task in accordance to the Terms of Reference with a copy each sent to Dr. David Die at ddie@rsmas.miami.edu and Mr. Manoj Shivlani at shivlanim@bellsouth.net.

Each report is to be based on the individual reviewer's findings, and no consensus report shall be accepted.

Terms of Reference

CIE reviewers shall evaluate the draft Opinion to determine whether the following questions resulting from the Science Center review are adequately addressed:

1. Does the draft biological opinion incorporate an ecological framework that emphasizes the geographic structure of habitats, populations, and diverse salmon life histories that contribute to salmon resilience and productivity (*i.e.*, VSP concept, see McElhaney *et al.* 2000 and Lindley *et al.* 2006)?
2. Does the draft biological opinion consider a range of climatological conditions and water demand scenarios in the analysis?
3. Does the draft biological opinion consider a range of ocean conditions in the analysis?
4. Does the draft biological opinion consider the effects of hatchery fish on listed fish?

Additionally, CIE reviewers shall evaluate the draft biological opinion to determine whether the following questions resulting from the NRC's 2002 and 2004 reports are adequately addressed:

5. Did NMFS' draft biological opinion present convincing scientific evidence about the spatial and temporal extent of young-of-year and juvenile coho salmon use and occurrence in the mainstem Klamath River?
6. Has the draft biological opinion adequately evaluated the potential effects of mainstem flows on the survivorship of coho smolts?
7. Are the draft biological opinion's scientific findings on the influence of mainstem flows on the spatial and temporal extent of coho juvenile survivorship in the summer months scientifically supportable?

Schedule of Milestones and Deliverables:

5 March 2008	CIE shall provide the COTR with the CIE reviewer contact information, which will then be sent to the Project Contact
5 March 2008	The Project Contact shall send the CIE Reviewers the pre-review documents
19 March 2008	Each reviewer shall submit an independent peer review report to the CIE
2 April 2008	CIE shall submit draft CIE independent peer review reports to the COTRs
11 April 2008	CIE shall submit final CIE independent peer review reports to the COTRs
15 April 2008	The COTRs shall distribute the final CIE reports to the Project Contact

Submission and Acceptance of Deliverables (CIE Reports):

Upon review and acceptance of the CIE reports by the CIE Coordination and Steering Committees, CIE shall send via e-mail the CIE reports to the COTRs (William Michaels William.Michaels@noaa.gov and Stephen K. Brown Stephen.K.Brown@noaa.gov) at the NMFS Office of Science and Technology by the date in the Schedule of Milestones and Deliverables. The COTRs will review the CIE reports to ensure compliance with the SoW and ToR herein, and have the responsibility of approval and acceptance of the deliverables. Upon notification of acceptance, CIE shall send via e-mail the final CIE report in *.PDF format to the COTRs. The COTRs at the Office of Science and Technology have the responsibility for the distribution of the final CIE reports to the Project Contacts.

Key Personnel:

Contracting Officer's Technical Representative (COTR):

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Request for Changes:

Requests for changes shall be submitted to the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting

Officer will notify the Contractor within 10 working days after receipt of all required information of the decision on substitutions. The contract will be modified to reflect any approved changes. The Terms of Reference (ToR) and list of pre-review documents herein may be updated without contract modification as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToR are not adversely impacted.

ANNEX 1

REPORT GENERATION AND PROCEDURAL ITEMS

1. The report shall be prefaced with an executive summary of comments and/or recommendations.
2. The main body of the report shall consist of a background, description of review activities, summary of analyses and comments, and conclusions/recommendations.
3. The report shall also include as separate appendices the bibliography of materials reviewed and a copy of the statement of work.