COLORADO WATER CONSERVATION BOARD

WATER SUPPLY RESERVE ACCOUNT
2009-2010 GRANT APPLICATION FORM

YAMPA WHITE BASIN NONCONSUMPTIVE NEEDS ASSESSMENT WATERSHED FLOW EVALUATION TOOL

Name of Water Activity/Project **Approving Basin Roundtable**

$169,002.35	**Amount from Statewide Account**	
Total Amount of Funds Requested	**Amount from Basin Account**	$169,002.35

Application Content

Attachments

1. Reference Information
2. Insurance Requirements (Projects Over $100,000)
3. WSRA Standard Contract (Projects Over $100,000)
4. W-9 Form (Required for All Projects)

Instructions

To receive funding from the Water Supply Reserve Account (WSRA), a proposed water activity must be approved by the local Basin Roundtable AND the Colorado Water Conservation Board (CWCB). The process for Basin Roundtable consideration/approval is outlined in Attachment 1.

Once approved by the local Basin Roundtable, the applicant should submit this application, a detailed

statement of work, detailed project budget, and project schedule to the CWCB staff by the application deadline.

The application deadlines are:

- Basin Account – 60 days prior to the bi-monthly Board meeting
- Statewide Account – 60 days prior to the March and September Board meeting

Board Meeting Dates	Basin Account Deadlines	Statewide Account Deadlines
3/17 - 3/18/2009	1/16/2009	1/16/2009
5/19 - 5/20/2009	3/19/2009	n/a
7/21 - 7/22/2009	5/21/2009	n/a
9/15 - 9/16/2009	7/15/2009	7/15/2009
11/17 - 11/18/2009	9/17/2009	n/a
January 2010	11/15/2010	n/a
March 2010	1/15/2010	1/15/2010
May 2010	3/15/2010	n/a

When completing this application, the applicant should refer to the WSRA Criteria and Guidelines available at: http://cwcb.state.co.us/IWMD.

The application, statement of work, budget, and schedule must be submitted in electronic format (Microsoft Word or text-enabled PDF are preferred) and can be emailed or mailed on a disk to:

Mr. Todd Doherty
Colorado Water Conservation Board
Intrastate Water Management and Development Section
WSRA Application
1580 Logan Street, Suite 600
Denver, CO 80203
Todd.Doherty@state.co.us

If you have questions or need additional assistance, please contact Todd Doherty of the IWMD Section at 303-866-3441 x3210 or todd.doherty@state.co.us.

Part A. - Description of the Applicant (Project Sponsor or Owner);

1. Applicant Name(s): The Nature Conservancy

Mailing address: 2424 Spruce Street
Boulder, CO 80302

Taxpayer ID#: 53-0242652 Email address: dmcdonald@tnc.org

Phone Numbers: Business: (720) 974-7001

Home:

Fax:

2. Person to contact regarding this application if different from above:

Name:	Diana McDonald
Position/Title	Grants Manager

3. Eligible entities that may apply for grants from the WSRA include the following. What type of entity is the Applicant?

	Public (Government) – municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities and the local entity should be the grant recipient. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts) – special, water and sanitation, conservancy, conservation, irrigation, or water activity enterprises.
	Private Incorporated – mutual ditch companies, homeowners associations, corporations.
	Private individuals, partnerships, and sole proprietors are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
x	Non-governmental organizations – broadly defined as any organization that is not part of the government.

4. Provide a brief description of your organization

The Nature Conservancy was founded in 1951 and is one of the leading conservation organizations working around the world to protect ecologically important lands and waters for nature and people. The Nature Conservancy uses a science-based approach to pursue non-confrontational, pragmatic solutions to conservation challenges. The Nature Conservancy partners with indigenous communities, businesses, governments, multilateral institutions, other non-profits.

5. If the Contracting Entity is different then the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here.

Not applicable

6. Successful applicants will have to execute a contract with the CWCB prior to beginning work on the portion of the project funded by the WSRA grant. In order to expedite the contracting process the CWCB has established a standard contract with provisions the applicant must adhere to. A copy of this standard contract is included in Attachment 3. Please review this contract and check the appropriate box.

[x] The Applicant will be able to contract with the CWCB using the Standard Contract

[ ] The Applicant has reviewed the standard contract and has some questions/issues/concerns. Please be aware that any deviation from the standard contract could result in a significant delay between grant approval and the funds being available.

7. The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.

None.

Part B. - Description of the Water Activity

1. Name of the Water Activity/Project:

   YAMPA WHITE BASIN NONCONSUMPTIVE NEEDS ASSESSMENT WATERSHED FLOW EVALUATION TOOL

2. What is the purpose of this grant application? (Please check all that apply.)

[ ] Environmental compliance and feasibility study

[ ] Technical Assistance regarding permitting, feasibility studies, and environmental compliance

[x] Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects

Study or Analysis of:

- [ ] Structural project or activity
- [ ] Nonstructural project or activity
- [ ] Consumptive project or activity
- [x] Nonconsumptive project or activity

[ ] Structural and/ or nonstructural water project or activity

3. Please provide an overview/summary of the proposed water activity (no more than one page). Include a description of the overall water activity and specifically what the WSRA funding will be used for.

The Yampa-White Basin has completed Phase I of its nonconsumptive needs assessments as required by HB05-1177. Phase I was a focus area map showing areas in the Yampa-White Basin where environmental and recreational activity occur. The effort described in this statement of work will utilize the Watershed Flow Evaluation Tool (WFET) that was piloted by the Colorado Water Conservation Board (CWCB) during 2009 to further assess and quantify the Yampa-White Basin's nonconsumptive needs. The WFET provides a framework for examining ecological risk related to flow conditions at a watershed or regional level. The WFET will use hydrology predicted by CWCB's Colorado Decision Support System (CDSS) models and ecological risk relationships developed as part of the CWCB pilot as starting point for this effort. The benefit of using the WFET as part of the nonconsumptive needs assessment for the Yampa-White Basin is that is allows for a cost effective estimate of the ecological and recreational risk related to flow and can develop a range of flows for the environmental and recreational focus reaches in the basin.

The objectives of the study are as follows:

- Develop the Watershed Flow Evaluation Tool (WFET) in the Yampa-White Basin
- Develop Ecological and Recreational Risk Mapping and a range of flows related to the risk mapping
- Include results from the Colorado River Water Availability Study in WFET results
- Provide a general assessment of whether or not current river management to meet existing water rights and Colorado River Compact deliveries from the Yampa-White Basin support nonconsumptive needs

Part C. – Threshold and Evaluation Criteria

1. Describe how the water activity meets these **Threshold Criteria.** (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

a) The water activity is consistent with Section 37-75-102 Colorado Revised Statutes.[1]

The water needs assessment will not restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted by Colorado law and is consistent with CRS 37-75-102

[1] 37-75-102. Water rights - protections. (1) It is the policy of the General Assembly that the current system of allocating water within Colorado shall not be superseded, abrogated, or otherwise impaired by this article. Nothing in this article shall be interpreted to repeal or in any manner amend the existing water rights adjudication system. The General Assembly affirms the state constitution's recognition of water rights as a private usufructuary property right, and this article is not intended to restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted under Colorado law. (2) The General Assembly affirms the protections for contractual and property rights recognized by the contract and takings protections under the state constitution and related statutes. This article shall not be implemented in any way that would diminish, impair, or cause injury to any property or contractual right created by intergovernmental agreements, contracts, stipulations among parties to water cases, terms and conditions in water decrees, or any other similar document related to the allocation or use of water. This article shall not be construed to supersede, abrogate, or cause injury to vested water rights or decreed conditional water rights. The General Assembly affirms that this article does not impair, limit, or otherwise affect the rights of persons or entities to enter into agreements, contracts, or memoranda of understanding with other persons or entities relating to the appropriation, movement, or use of water under other provisions of law.

b) The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRTs evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

Please see letter from Tom Gray regarding roundtable activity to date. The roundtable voted to approve the grant for submittal on December 16, 2009.

c) The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes.[2] Specifically describe how the water activity either furthers the Roundtable's basin-wide water needs assessment or meets a consumptive or non-consumptive water supply need identified in the Roundtable's working needs assessment.

This is exactly in keeping with section 37-75-104(2)(c) of the Colorado Revised Statutes in that it is designed to develop the information necessary for the Yampa-White River Basin nonconsumptive needs assessment.

[2] 37-75-104 (2)(c). Using data and information from the Statewide Water Supply Initiative and other appropriate sources and in cooperation with the on-going Statewide Water Supply Initiative, develop a basin-wide consumptive and nonconsumptive water supply needs assessment, conduct an analysis of available unappropriated waters within the basin, and propose projects or methods, both structural and nonstructural, for meeting those needs and utilizing those unappropriated waters where appropriate. Basin Roundtables shall actively seek the input and advice of affected local governments, water providers, and other interested stakeholders and persons in establishing its needs assessment, and shall propose projects or methods for meeting those needs. Recommendations from this assessment shall be forwarded to the Interbasin Compact Committee and other basin roundtables for analysis and consideration after the General Assembly has approved the Interbasin Compact Charter.

d) Matching Requirement: For requests from the Statewide Fund, the applicants is required to demonstrate a 20 percent (or greater) match of the request from the Statewide Account. Sources of matching funds include but are not limited to Basin Funds, in-kind services, funding from other sources, and/or direct cash match. Past expenditures directly related to the project may be considered as matching funds if the expenditures occurred within 9 months of the date the application was submitted to the CWCB. Please describe the source(s) of matching funds. (NOTE: These matching funds should also be reflected in your Detailed Budget in Part D of this application)

Not Applicable

2. For Applications that include a request for funds from the Statewide Account, describe how the water activity meets the **Evaluation Criteria.** (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

Not Applicable

Part D. – Required Supporting Material

1. Water Rights, Availability, and Sustainability

This information is needed to assess the viability of the water project or activity. Please provide a description of the water supply source to be utilized, or the water body to be affected by, the water activity. This should include a description of applicable water rights and the name/location of water bodies affected by the water activity.

The main purpose of this project is to summarize the nonconsumptive needs related to flow conditions in the Yampa-White Basin. This project is not a water development project and will not identify or utilize water supply sources for project development. The Yampa and White Decision Support System model will be used to simulate hydrology in the basin.

2. Please provide a brief narrative of any related or relevant previous studies.

In June 2009, CWCB completed two pilot studies using the "Watershed Flow Evaluation Tool": one in the Fountain Creek Watershed, the other in the Roaring Fork Watershed. This proposed Yampa-White Basin wide study will use the same methodology, thereby building upon the common technical platform being developed by the state for all Roundtables to use in the evaluation of non-consumptive needs. This study also will be build upon existing quantification studies in the basin such as instream flow studies.

3. Statement of Work, Detailed Budget, and Project Schedule

The statement of work will form the basis for the contract between the Applicant and the State of Colorado. In short, the Applicant is agreeing to undertake the work for the compensation outlined in the statement of work and budget, and in return, the State of Colorado is receiving the deliverables/products specified. Please note that costs incurred prior to execution of a contract or purchase order are not subject to reimbursement.

Please provide a detailed statement of work using the following template. Additional sections or modifications may be included as necessary. Please define all acronyms. If a grant is awarded an independent statement of work document will be required with correct page numbers.

SEE ATTACHED STATEMENT OF WORK, DETAILED BUDGET AND PROJECT SCHEDULE

The above statements are true to the best of my knowledge:

Signature of Applicant:

Print Applicant's Name:

Project Title: YAMPA WHITE BASIN NONCONSUMPTIVE NEEDS ASSESSMENT WATERSHED FLOW EVALUATION TOOL

Return this application to:

Mr. Todd Doherty
Intrastate Water Management and Development Section
COLORADO WATER CONSERVATION BOARD
1580 Logan Street, Suite 600
Denver, CO 80203

To submit applications by Email, send to: todd.doherty@state.co.us
To submit applications by Fax, send to: (303) 894-2578
For questions, call Telephone No.: (303) 866-3426

Statement of Work

WATER ACTIVITY NAME – YAMPA WHITE BASIN NONCONSUMPTIVE NEEDS ASSESSMENT WATERSHED FLOW EVALUATION TOOL

GRANT RECIPIENT – THE NATURE CONSERVANCY

FUNDING SOURCE – YAMPA-WHITE BASIN ROUNDTABLE WATER SUPPLY RESERVE ACCOUNT BASIN FUNDS

INTRODUCTION AND BACKGROUND

The Yampa-White Basin has completed Phase I of its nonconsumptive needs assessments as required by HB05-1177. Phase I was a focus area map showing areas in the Yampa-White Basin where environmental and recreational activity occur. The effort described in this statement of work will utilize the Watershed Flow Evaluation Tool (WFET) that was piloted by the Colorado Water Conservation Board (CWCB) during 2009 to further assess and quantify the Yampa-White Basin's nonconsumptive needs. The WFET uses hydrologic modeling, literature information relating flow conditions to environmental and recreational attributes, and Geographic Information System (GIS) software to examine flow conditions at the a watershed or regional level and relates the flow conditions to environmental or recreational attributes similar to what were identified as part of the focus area mapping effort. After relating flow conditions to the environmental or recreational attribute, the WFET allows stakeholders to characterize the ecological or recreational "risk" that a given attribute may or may not be degraded based on flow conditions. The risk levels can be translated into a range of flows for a given attribute. Not all of the attributes identified by the Yampa-White Basin Roundtable as part of its mapping effort have flow relationships. A summary of the attributes identified by the Yampa-White Basin and whether there is a flow relationship available for the attribute is listed below. In general, flow relationships exist for the following attributes: trout, some of the warm water fish, riparian, and whitewater boating. The attributes where there are not flow relationships available will not be included in this study except for instream flows, natural lake levels and RICDS. These attributes will not be modeled but information about the flow levels will be catalogued for the focus area reaches.

Attribute	**Will the Study Develop Flow Relationship for Attribute Based on Literature and Expert Opinion?**
Attribute 1 – Federal & Endangered Fish	
Bonytail Chub	Yes (Management Plan for Endangered Fishes in the Yampa River Basin and other studies)
Razorback Sucker	Yes (Management Plan for Endangered Fishes in the Yampa River Basin and other studies)

Attribute	Will the Study Develop Flow Relationship for Attribute Based on Literature and Expert Opinion?
Humpback Chub	Yes (Management Plan for Endangered Fishes in the Yampa River Basin and other studies)
Colorado Pikeminnow	Yes (Management Plan for Endangered Fishes in the Yampa River Basin and other studies)
Attribute 2 – State Threatened & Endangered Species	
Bluehead Sucker	Yes
Roundtail Chub	Yes
Flannelmouth Sucker	Yes
Colorado River Cutthroat Trout	Yes
River Otter	No
Northern Leopard Frog	No
Boreal Toad	No
Attribute 3 – Important Riparian Habitat	
Riparian/Wetland - Dependent Rare Plants	Yes (riparian not wetlands)
Significant Riparian/Wetland Plant Communities	Yes (riparian not wetlands)
Audubon Important Bird Areas	No
Attribute 4 - Instream Flows and Natural Lake Levels	
CWCB Instream Flow Water Rights	No (Instream Flow water rights decreed amounts will be catalogued for focus area reach where they exist)
CWCB Natural Lake Level Water Rights	No (Natural Lake level decree will be catalogued for focus area reach where they exist)
Attribute 5 - Fishing	
Gold Metal Trout Streams	Yes
Gold Metal Trout Lake	No
Significant Fishing Waters (based on local knowledge)	No
Attribute 6 – Boating	
Rafting/kayaking/flatwater Reaches	Yes (whitewater only)
Recreational In-Channel Diversion Structures	No (RICD flows will be summarized for focus area reach where they exist)
Attribute 7 – Waterfowl Hunting	
Waterfowl Hunting	No

OBJECTIVES

The objectives of the study are as follows:

- Develop the Watershed Flow Evaluation Tool (WFET) in the Yampa-White Basin
- Develop ecological and recreational risk mapping and the associated range of flow for the attributes listed in Table 1 for locations mapped previously by the Yampa-White Basin Roundtable
- Include results from the Colorado River Water Availability Study in WFET results

- Assess whether water that is being delivered as part of existing water rights and Colorado River Compact deliveries in the Yampa-White Basin supports nonconsumptive needs in the basin

TASKS

Task 1 - Stakeholder Meeting and Facilitation

Description of Task

The primary means of coordinating on project activities will take place through the Yampa-White Basin Nonconsumptive Needs Assessment Subcommittee. The consultant team will meet with the Subcommittee during four workshops during the project.

Method/Procedure

There will be four workshops with the Yampa-White Basin Nonconsumptive Needs Assessment Subcommittee during the project. Following is a summary of discussion topics at each workshop.

Workshop No. 1:

- Review scope of work and schedule
- Review information developed as part of Task 2
- Review information that has been developed as part of Task 4

Workshop No. 2:

- Review schedule
- Review draft modeling results from Task 3
- Review draft final information from Task 4
- Review preliminary risk mapping

Workshop No.3:

- Review draft final risk mapping for attributes
- Review draft flow ranges for attributes
- Review draft information from Task 6
- Review draft report from project

Workshop No. 4:

- Review finalized project deliverables

In addition to the workshops, the consultant team's project manager will be available for 2 additional meetings with the subcommittee to address project progress and schedule. The project team will also be available for three conference calls with the Yampa-White Basin Subcommittee between workshops to follow-up on action items from the workshops.

Deliverable

Consultant will provide meeting agendas and summaries of action items from each meeting.

Task 2 – Confirmation of CDSS WFET Locations

Description of Task

Consultant will work the Yampa-White Basin Subcommittee to finalize the CDSS nodes in the basin where the WFET will be applied. The Yampa-White Basin Roundtable Focus Area Map will be basis for where the WFET will be applied.

Method/Procedure

Consultant will present mapping and CDSS model nodes that are located on the Yampa-White's environmental and recreational focus area map. Consultant will work with Yampa-White Nonconsumptive Subcommittee to confirm locations where the WFET will be applied. Consultant will identify if there is any redundancy in the information from the nodes on a given segment. Figure 1 shows the preliminary CDSS nodes to be included in the WFET. Table 2 at the end of the Statement of Work shows is an update version of the Roundtable's Focus Area Mapping table with the potential node(s) that could be used in each reach as well as the attribute(s) that have flow relationships that could be used in the WFET analysis. This will be updated based on feedback from the Yampa-White's Nonconsumptive Subcommittee as part of implementing this task.

Deliverable

Consultant will prepare a technical memorandum summarizing what CDSS nodes will be used in the WFET and will provide GIS files to the Subcommittee. The technical memorandum will be submitted in electronic form.

Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics

Description of Task

Consultant will use the CDSS to develop pre-managed and managed hydrologic data sets and metrics. The CDSS can be run in baseflow mode to predict river conditions that existed prior to river management. The CDSS will not be modified to generate the hydrology as the model can be run in "baseflow" mode to predict the pre-managed data sets. Similarly, the CDSS current conditions simulation will be used to generate the managed data sets.

Method/Procedure

The consultant team will complete the following elements for the hydrologic modeling:

- Utilizing CDSS model, run baseline and current conditions hydrology for nodes agreed upon in Task 2
- Daily and Monthly flow data will be generated from model for agreed upon nodes from Task 2. The White River CDSS model does not have the capability of predicting daily flow.

- Quality Assurance/Quality Control review of model output specifically checking to see if daily predicted flows match monthly flows for pre-managed conditions.

For baseline and current conditions, the consultant team will calculate the following flow statistics that are related to aquatic ecology using IHA software or other methods in Excel:

- mean annual flow (MAF) for each year and per record
- mean of August and September flow for each year and per record
- 30 day high flow (moving average across average daily flow series) for each year and average per record
- annual peak flow (daily average) for each year and average per record
- additional statistics may be developed based on geomorphic conditions in the watershed

Deliverable

The consultant team will prepare a technical memorandum that describes the model simulation conditions, model output and flow statistics. The memorandum will also address any quality assurance issues or concerns with the model simulation.

Task 4 - Further Refine Flow-Ecology Relationships

Description of Task

The consultant will identify the areas where various flow-ecology relationships apply in the basin and refine the flow-ecology relationships if needed based on studies that have been conducted in the Yampa-White Basin. This task will be based on existing data and literature and not field studies. The flow-ecology relationships were developed as part of the pilot study developed by CWCB (http://cwcb.state.co.us/IWMD/COsWaterSupplyFuture/). The flow ecology relationships are associated with various ecological and recreational indicators in the Yampa-White Basin that are trout, riparian, warm-water fish, and whitewater boating.

Method/Procedure

The consultant will use the existing environmental and recreation focus area mapping and the GIS map layers that were used in preparing the focus area mapping to identify where the flow-ecology relationships apply. Using the matrix that was developed as part of the Yampa-White's focus area mapping effort, the flow-ecology relationship that applies to each reach will be summarized for Subcommittee review. This task will utilize information on flow relationships for riparian and whitewater boating that will be improved during the Colorado River Basin's application of WFET. Flow ecology relationships for the riparian attribute will focus on the riparian area along channel margins where active processes of plant establishment related to flow dynamics occur. The riparian flow ecology relationship will not pertain to the broad expanse of the floodplain. For the fishing and whitewater boating flow relationships, literature information will be confirmed with local experts on these subjects in the Yampa-White Basin through a one-day workshop and through working with the Nonconsumptive Committee members.

Deliverable

The consultant will prepare a technical memorandum summarizing the matrix describing the flow-ecology relationship will be applied to each segment of Yampa-White Basin's environmental and recreational focus area mapping.

Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2

Description of Task

Based on information generated in Task 2, Task 3 and Task 4, the consultant will prepare ecological risk mapping for the CDSS nodes identified in Task 2. The mapping will be prepared using GIS and will be based on the CDSS modeling of pre-managed and managed hydrology in combination with the flow-ecology curves associated with the flow metrics described in Task 3. Maps will be created for the various ecological and environmental indicators as described in Task 4. Consultant will then use existing quantification studies in the basin to verify the risk mapping. Consultant will finalize the risk mapping based on any updates from the verification and develop a range of flow ranges associated with the risk levels.

Method/Procedure

The consultant will complete the following steps:

- For the stream reaches identified as part of the focus area mapping and the associated flow-ecology relationships, consultant will develop GIS risk mapping for the pre-managed and managed flow sets for each ecological and recreational indicator
- Consultant will provide a written summary summarizing the risk mapping
- Based on assistance from the Subcommitte, Consultant will gather existing quantification studies that have been conducted in the Yampa-White basin for comparison with the risk mapping results. These studies could include information developed by the Colorado Division of Wildlife and other state agencies in developing instream flow information for the CWCB, studies related to endangered species, and other studies indentified by local biologists.
- The existing studies will be used to verify if the ecological risk levels determined are similar to information generated in existing studies.
- Based on the verification, Consultant will revise the flow-ecology curves and resulting ecological and recreational mapping if needed.
- Develop ranges of seasonal flows based on model and metric calculations developed as part of Task 3 and finalized flow ecology relationships. Flow ranges will be associated with the ecological and recreational risk levels.

Deliverable

The Consultant team will prepare a technical memorandum that describes the procedures used to generate the risk mapping and an overview of the risk mapping. Consultant will provide GIS files for use by the Basin Roundtable. The technical memorandum will also describe the procedures used to verify the risk mapping. Consultant will provide a summary of if the verification resulted in any changes to the flow-ecology relationships. The technical memorandum team will also include a description of the procedures used to generate the range of flows and summarize and changes to the risk mapping.

Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels

Description of Task

Consultant will create additional ecological risk mapping based results from CRWAS Phase I and Phase II. Streamflow results from CRWAS can also be compared to the range of ecological flows developed as part of Task 5.

Method/Procedure

Consultant will request that CRWAS team provide results for the nodes identified in Task 2. The results from CRWAS Phase I and Phase II can then be used to compare if there will be additional ecological and recreational risk created by future depletions and climate change in the Yampa-White Basin.

Deliverable

The consultant team will prepare a technical memorandum that describes the additional ecological risk mapping based on CRWAS. This memorandum will also describe any comparison the range of ecological and recreational flows developed as part of this task.

Task 7 – Existing Water Rights and River Management for Yampa-White Basin and Comparison with Nonconsumptive Needs

Description of Task

This task will provide a general assessment of whether or not current river management to meet existing water rights and Colorado River Compact deliveries from the Yampa-White Basin support nonconsumptive needs.

Method/Procedure

This task will examine in general how current river management to meet existing water rights and compact deliveries support nonconsumptive needs. Using results from Task 5, the consultant will examine whether the attributes described in Task 2 are at low or high ecological or recreational risk. If the attributes are at low risk, it can be assumed that current river management, water rights and compact deliveries are support of nonconsumptive needs. The consultant will identify areas that are at low risk and will work with the Yampa-Basin

Nonconsumptive Subcommittee to identify what water rights or compact deliveries may be associated with these areas.

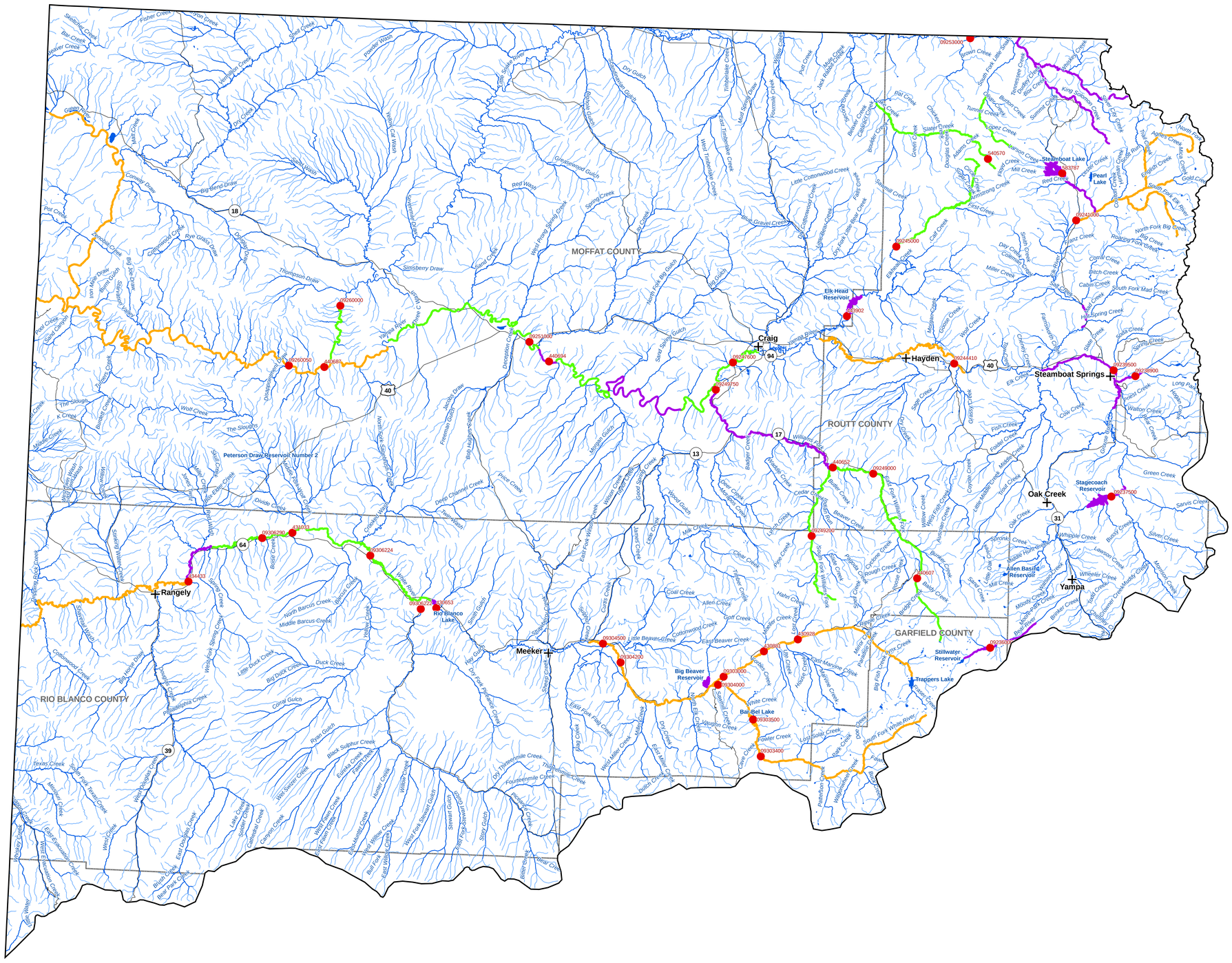
Deliverable

The consultant team will prepare a technical memorandum that summarizes results from this task.

Reporting and Final Deliverable

Reporting: The consultant will provide the Owner a progress report every 6 months, beginning from the date of the executed contract. The progress report will describe the completion or partial completion of the tasks identified in the statement of work including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Deliverable: At the completion of the project, the consultant will provide the Owner a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs. The final report will summarize each of the technical memorandums developed as part of Tasks 2 through 7.



Legend

- WFET Node

Major Environmental and Recreational Segments

- Environmental Segments
- Environmental and Recreational Segments
- Recreational Segments
- Roads
- Rivers and Streams
- Lakes and Reservoirs
- County Boundary

N
W E
S

0 4 8 16 24
Miles

1 inch = 4 miles

Figure 1
Yampa/White Basin
Nonconsumptive Needs Assessment
Major Environmental and Recreational Segments and WFET Nodes

DRAFT

Refer to Appendix B of the NCNA Mapping Report for a complete list of data sources and Appendix D of the Mapping Report for other basin-specific mapping information.

Document: G:\SW\INONCONSUMPTIVE\YAMPA-WHITE\MXD\Figure1_YampaWhite_Basin_WFETNodes_36x48.mxd

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships
Major Environmental & Recreational Segments												
1	Yampa River - from entrance of Cross Mountain Canyon (East Cross Mountain) to confluence with Green River		a,b,c,d,e	a,b,c,f,e	a,b		c	a	a	Multiple environmental values including critical habitats for endangered fish plus Yampa's most sought after white water and overnight rafting destination including Dinosaur National Monument	09260050, 440687	Bluehead Sucker, Roundtail Chub, Flannelmouth Sucker, Riparian, Trout, and Whitewater Boating
2	Yampa River - from Pump Station to confluence of Elkhead Creek			a,c,e,f	a,c		c	a	a	Multiple environmental values plus high use boating and fishing includes TNC's the Carpenter Ranch	09244410	Bluehead Sucker, Flannelmouth Sucker, Riparian, Trout, and Whitewater Boating
3	Green River - from Utah State line (Browns Park Wildlife Refuge) to the Utah State line		a,b,d	a,c,e,f	a,b,c		c	a	a	Multiple environmental and recreational values includes Browns park National Wildlife Refuge and rafting in Dinosaur National Monument	56_ADY027	Bluehead Sucker, Flannelmouth Sucker, Riparian, Trout, and Whitewater Boating
4	Elk River - from headwaters to the County Road 129 bridge at Clark; including the North, Middle and South Fork as well as the mainstem of the Elk			d,f,g	b	a	c	a		Multiple environmental and recreational values including high levels of recreation and significant fisheries use, multiple/critical environmental values	09241000	Riparian, Trout, and Whitewater Boating
5	White River - from headwaters to Meeker; including the North and South Fork and mainstem of the White			c,d,f	a,b	a	c	a	a	Multiple environmental and recreational values including most extensive, valuable connectivity of Colorado Cutthroat Trout populations in the Yampa/White/Green basin; G1-G3 plant/wetland communities; valuable private and public water fisheries providing significant economic benefits for the upper White basin	430928, 430881, 09303000, 09303400, 09303500, 09304000, 09304200, 09304500	Flannelmouth Sucker, Trout, Riparian, and Whitewater Boating
6	White River - below Kenney Reservoir dam to Utah State line		b,d,e	a,b,c,f			c	a	a	Multiple environmental and recreational values including critical habitat for endangered fish	434433	Bluehead Sucker, Roundtail Chub, Flannelmouth Sucker, Trout, and Whitewater Boating
Major Environmental Segments												
7	White River - from Rio Blanco Lake Dam to Kenney Reservoir		b,e	a,b,c				a		Multiple environmental and recreational values including critical habitat for Federal endangered species, multiple state aquatic species of concern	430653, 09306222, 09306224, 431033, 09306290, 434433	Bluehead Sucker, Roundtail Chub, Flannelmouth Sucker, and Whitewater Boating
8	Slater Creek - from headwaters to the Beaver Creek confluence			d	b		c	a		Valuable connectivity of Colorado Cutthroat Trout populations, with G1-G3 plant communities and multiple recreational opportunities	540570	Trout, Riparian, and Whitewater Boating
9	Elkhead Creek - from headwaters to confluence of North Fork of Elkhead Creek			a,d	b	a		a		Valuable connectivity of Colorado Cutthroat Trout populations, Boreal toad as well as G1-G3 plant communities and recreational opportunities	9245000	Bluehead Sucker, Trout, Riparian, Whitewater Boating

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships
10	South Fork of the Little Snake - from headwaters to confluence of Johnson Creek			a,d		a				Valuable connectivity of Colorado Cutthroat Trout populations	9253000	Blehead Sucker, Trout and Riparian
11	South and East Fork of the Williams Fork - from headwaters to the confluence of the Forks			d,f	b	a	c			Valuable connectivity of Colorado Cutthroat Trout populations	440607, 09249000, 09249200, 440652	Trout and Riparian
12	Litte Snake River - from Moffat County Road 10 to confluence of the Yampa River		c,d	b	a,b					Significant environmental values including occurances of Colorado Pikeminnow and rare collections of Humpback Chub, populations of Roundtail Chub and valuable ripairan plant communities	9260000	Roundtail Chub, Riparian
13	Yampa River - from Craig (Hwy 394 Bridge) to mouth of Cross Mountain Canyon		d,e	b,e,f	b		c	a	a	Critical habitat for Federal endangered species, multiple state aquatic species of concern	09247600, 440694, 09251000	Roundtail Chub, Riparian, Trout, and Whitewater Boating
Major Recreational Segments												
14	Yampa River - from Stagecoach Reservoir "Tailwaters" to northern boundary of Sarvis Creek State Wildlife area			a,c	a	a	c		a	High recreation and fisheries use	09237500	Bluehead Sucker, Flannelmouth Sucker, and Riparian
15	Fish Creek - from Fish Creek Falls to confluence of the Yampa River				a	a		a		Most significant, highest use kayaking "creek run" in basin	09238900	Riparian and Whitewater Boating
16	Yampa River - from Chuck Lewis Wildlife Area to Pump Station			a,c,e,f	b		c	a,b	a	Highest recreation use along entire Yampa River allowing for multiple recreational opportunities; only RICD in entire Yampa/Whte/Green Basin	09239500	Bluehead Sucker, Roundtail Chub, Riparian, Trout, and Whitewater Boating
17	Elk River - at Christina State Wildlife Area			c		a	c			Highest public fishery use on Lower Elk River	None	
18	Willow Creek - below Steamboat Lake to confluence				a		c	a		Valuable kayaking creek and fisheries use	583787	Riparian, Trout, and Whitewater Boating
19	Bear River - from headwaters to USFS boundary			d			c			Cutthroat Trout habitat and significant recreational fishing	09236000	Trout
20	Stagecoach Reservoir			a			c	a	a	High recreation and fisheries use	None	No Relationships for Reservoirs
21	Elkhead Reservoir			a,b,c			c	a	a	High recreation and fisheries use	None	No Relationships for Reservoirs
22	Steamboat Lake			d	a		b	a	a	High recreation and fisheries use including only Gold Medal Water in basin	None	No Relationships for Reservoirs
23	Little Snake River - from headwaters of Middle Fork of the Little Snake River and King Solomon Creek to Wyoming border			a,c,d	b	a	c	a		Important fishery including public access and private waters; significant environmental values	09253000	Bluehead Sucker, Flannelmouth Sucker, Trout, Riparian, and Whitewater Boating
24	Williams Fork - from South Fork to confluence of the Yampa River				a,b	a	c			Important Fishery	09249750	Riparian and Trout
25	Avery Lake						c		a	Important recreational destination	None	No Relationships for Reservoirs
26	Rio Blanco Reservoir				b		c		a	Important recreational destination	None	No Relationships for Reservoirs

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships
27	Kenny Reservoir						c	a	a	Important recreational destination	None	No Relationships for Reservoirs
28	Yampa River - Duffy Canyon		d,e	b,e,f	b		c	a	a	Important recreational canyon	440694	Roundtail Chub, Riparian, Trout, and Whitewater Boating
29	Yampa River - Juniper Canyon		d,e	b,e,f	b		c	a	a	Important recreational canyon	440694	Roundtail Chub, Riparian, Trout, and Whitewater Boating
30	Yampa River - Little Yampa Canyon		d,e	b,e,f	b		c	a	a	Important recreational canyon	440694	Roundtail Chub, Riparian, Trout, and Whitewater Boating

KEY TO ATTRIBUTE CODES

Attribute 1 - Federal Threatened & Endangered Fish

a. Bonytail Chub
b. Razorback Sucker
c. Humpback Chub
d. Colorado Pikeminnow
e. Federally Listed Critical Habitat

Attribute 2 - State Threatened and Endangered Species

a. Bluehead Sucker
b. Roundtail Chub
c. Flannelmouth Sucker
d. Colorado River Cutthroat Trout
e. River Otter
f. Northern Leopard Frog
g. Boreal Toad

Attribute 3 - Important Riparian Habitat

a. Riparian/Wetland - Dependent Rare Plants
b. Significant Riparian/Wetland Plant Communities
c. Audubon Important Bird Areas

Attribute 4 - Instream Flows and Natural Lake Levels

a. CWCB Instream Flow Water Rights
b. CWCB Natural Lake Level Water Rights

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships

Attribute 5 - Fishing
- a. Gold Metal Trout Streams
- b. Gold Medal Trout Lakes
- c. Significant Fishing Waters (based on local knowledge)

Attribute 6 - Boating
- a. Rafting/kayaking/flatwater Reaches
- b. Recreational In-Channel Diversion Structures

Attribute 7 - Waterfowl Hunting
- a. Waterfowl Hunting

Notes (disclaimer verbiage):
1. Non-consumptive environmental and/or recreational attributes exist on virtually all stream and lake segments, whether such attributes are identified herein or not. Exclusion of a segment from this chart does not indicate absence of non-consumptive attributes.
2. Attributes associated with the major segments are commonly dependent on conditions in upstream tributary segments. Therefore, the achievement or maintenance of non-consumptive attributes depends upon achieving or maintaining necessary values in upstream segments as well as within the major segment itself.

Important Riparian Habitats were considered based on the following CNHP rankings:

G/S1 Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or 1,000 or fewer individuals), or because some factor of its biology makes it especially

G/S2 Imperiled globally/state because of rarity (6 to 20 occurrences, or 1,000 to 3,000 individuals), or because other factors demonstrably make it very vulnerable to extinction throughout

G/S3 Vulnerable through its range or found locally in a restricted range (21 to 100 occurrences, or 3,000 to 10,000 individuals).

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships
Major Environmental & Recreational Segments												
1	Yampa River - from entrance of Cross Mountain Canyon (East Cross Mountain) to confluence with Green River		a,b,c,d,e	a,b,c,f,e	a,b		c	a	a	Multiple environmental values including critical habitats for endangered fish plus Yampa's most sought after white water and overnight rafting destination including Dinosaur National Monument	09260050, 440687	Bluehead Sucker, Roundtail Chub, Flannelmouth Sucker, Riparian, Trout, and Whitewater Boating
2	Yampa River - from Pump Station to confluence of Elkhead Creek			a,c,e,f	a,c		c	a	a	Multiple environmental values plus high use boating and fishing includes TNC's the Carpenter Ranch	09244410	Bluehead Sucker, Flannelmouth Sucker, Riparian, Trout, and Whitewater Boating
3	Green River - from Utah State line (Browns Park Wildlife Refuge) to the Utah State line		a,b,d	a,c,e,f	a,b,c		c	a	a	Multiple environmental and recreational values includes Browns park National Wildlife Refuge and rafting in Dinosaur National Monument	56_ADY027	Bluehead Sucker, Flannelmouth Sucker, Riparian, Trout, and Whitewater Boating
4	Elk River - from headwaters to the County Road 129 bridge at Clark; including the North, Middle and South Fork as well as the mainstem of the Elk			d,f,g	b	a	c	a		Multiple environmental and recreational values including high levels of recreation and significant fisheries use, multiple/critical environmental values	09241000	Riparian, Trout, and Whitewater Boating
5	White River - from headwaters to Meeker; including the North and South Fork and mainstem of the White			c,d,f	a,b	a	c	a	a	Multiple environmental and recreational values including most extensive, valuable connectivity of Colorado Cutthroat Trout populations in the Yampa/White/Green basin; G1-G3 plant/wetland communities; valuable private and public water fisheries providing significant economic benefits for the upper White basin	430928, 430881, 09303000, 09303400, 09303500, 09304000, 09304200, 09304500	Flannelmouth Sucker, Trout, Riparian, and Whitewater Boating
6	White River - below Kenney Reservoir dam to Utah State line		b,d,e	a,b,c,f			c	a	a	Multiple environmental and recreational values including critical habitat for endangered fish	434433	Bluehead Sucker, Roundtail Chub, Flannelmouth Sucker, Trout, and Whitewater Boating
Major Environmental Segments												
7	White River - from Rio Blanco Lake Dam to Kenney Reservoir		b,e	a,b,c				a		Multiple environmental and recreational values including critical habitat for Federal endangered species, multiple state aquatic species of concern	430653, 09306222, 09306224, 431033, 09306290, 434433	Bluehead Sucker, Roundtail Chub, Flannelmouth Sucker, and Whitewater Boating
8	Slater Creek - from headwaters to the Beaver Creek confluence			d	b		c	a		Valuable connectivity of Colorado Cutthroat Trout populations, with G1-G3 plant communities and multiple recreational opportunities	540570	Trout, Riparian, and Whitewater Boating
9	Elkhead Creek - from headwaters to confluence of North Fork of Elkhead Creek			a,d	b	a		a		Valuable connectivity of Colorado Cutthroat Trout populations, Boreal toad as well as G1-G3 plant communities and recreational opportunities	9245000	Bluehead Sucker, Trout, Riparian, Whitewater Boating

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships
10	South Fork of the Little Snake - from headwaters to confluence of Johnson Creek			a,d		a				Valuable connectivity of Colorado Cutthroat Trout populations	9253000	Blehead Sucker, Trout and Riparian
11	South and East Fork of the Williams Fork - from headwaters to the confluence of the Forks			d,f	b	a	c			Valuable connectivity of Colorado Cutthroat Trout populations	440607, 09249000, 09249200, 440652	Trout and Riparian
12	Litte Snake River - from Moffat County Road 10 to confluence of the Yampa River		c,d	b	a,b					Significant environmental values including occurances of Colorado Pikeminnow and rare collections of Humpback Chub, populations of Roundtail Chub and valuable ripairan plant communities	9260000	Roundtail Chub, Riparian
13	Yampa River - from Craig (Hwy 394 Bridge) to mouth of Cross Mountain Canyon		d,e	b,e,f	b		c	a	a	Critical habitat for Federal endangered species, multiple state aquatic species of concern	09247600, 440694, 09251000	Roundtail Chub, Riparian, Trout, and Whitewater Boating
Major Recreational Segments												
14	Yampa River - from Stagecoach Reservoir "Tailwaters" to northern boundary of Sarvis Creek State Wildlife area			a,c	a	a	c		a	High recreation and fisheries use	09237500	Bluehead Sucker, Flannelmouth Sucker, and Riparian
15	Fish Creek - from Fish Creek Falls to confluence of the Yampa River				a	a		a		Most significant, highest use kayaking "creek run" in basin	09238900	Riparian and Whitewater Boating
16	Yampa River - from Chuck Lewis Wildlife Area to Pump Station			a,c,e,f	b		c	a,b	a	Highest recreation use along entire Yampa River allowing for multiple recreational opportunities; only RICD in entire Yampa/Whte/Green Basin	09239500	Bluehead Sucker, Roundtail Chub, Riparian, Trout, and Whitewater Boating
17	Elk River - at Christina State Wildlife Area			c		a	c			Highest public fishery use on Lower Elk River	None	
18	Willow Creek - below Steamboat Lake to confluence				a		c	a		Valuable kayaking creek and fisheries use	583787	Riparian, Trout, and Whitewater Boating
19	Bear River - from headwaters to USFS boundary			d			c			Cutthroat Trout habitat and significant recreational fishing	09236000	Trout
20	Stagecoach Reservoir			a			c	a	a	High recreation and fisheries use	None	No Relationships for Reservoirs
21	Elkhead Reservoir			a,b,c			c	a	a	High recreation and fisheries use	None	No Relationships for Reservoirs
22	Steamboat Lake			d	a		b	a	a	High recreation and fisheries use including only Gold Medal Water in basin	None	No Relationships for Reservoirs
23	Little Snake River - from headwaters of Middle Fork of the Little Snake River and King Solomon Creek to Wyoming border			a,c,d	b	a	c	a		Important fishery including public access and private waters; significant environmental values	09253000	Bluehead Sucker, Flannelmouth Sucker, Trout, Riparian, and Whitewater Boating
24	Williams Fork - from South Fork to confluence of the Yampa River				a,b	a	c			Important Fishery	09249750	Riparian and Trout
25	Avery Lake						c		a	Important recreational destination	None	No Relationships for Reservoirs
26	Rio Blanco Reservoir				b		c		a	Important recreational destination	None	No Relationships for Reservoirs

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships
27	Kenny Reservoir						c	a	a	Important recreational destination	None	No Relationships for Reservoirs
28	Yampa River - Duffy Canyon		d,e	b,e,f	b		c	a	a	Important recreational canyon	440694	Roundtail Chub, Riparian, Trout, and Whitewater Boating
29	Yampa River - Juniper Canyon		d,e	b,e,f	b		c	a	a	Important recreational canyon	440694	Roundtail Chub, Riparian, Trout, and Whitewater Boating
30	Yampa River - Little Yampa Canyon		d,e	b,e,f	b		c	a	a	Important recreational canyon	440694	Roundtail Chub, Riparian, Trout, and Whitewater Boating

KEY TO ATTRIBUTE CODES

Attribute 1 - Federal Threatened & Endangered Fish

a. Bonytail Chub
b. Razorback Sucker
c. Humpback Chub
d. Colorado Pikeminnow
e. Federally Listed Critical Habitat

Attribute 2 - State Threatened and Endangered Species

a. Bluehead Sucker
b. Roundtail Chub
c. Flannelmouth Sucker
d. Colorado River Cutthroat Trout
e. River Otter
f. Northern Leopard Frog
g. Boreal Toad

Attribute 3 - Important Riparian Habitat

a. Riparian/Wetland - Dependent Rare Plants
b. Significant Riparian/Wetland Plant Communities
c. Audubon Important Bird Areas

Attribute 4 - Instream Flows and Natural Lake Levels

a. CWCB Instream Flow Water Rights
b. CWCB Natural Lake Level Water Rights

Table 2 YAMPA/WHITE/GREEN BASIN NON-CONSUMPTIVE NEEDS ASSESSMENT - IDENTIFICATION OF MAJOR STREAM AND LAKE SEGMENTS

No.	STREAM OR LAKE SEGMENT (Based upon segment maps)	ATTRIBUTE CATEGORY	1. Federal Threatened & Endangered Fish	2. State Threatened and Endangered Species	3. Important Riparian Habitat	4. Instream Flows and Natural Lake Levels	5. Fishing	6. Boating	7. Waterfowl Hunting	RATIONALE FOR CONSIDERATION AS A MAJOR SEGMENT	CDSS Nodes	Attributes with Flow Relationships

Attribute 5 - Fishing
- a. Gold Metal Trout Streams
- b. Gold Medal Trout Lakes
- c. Significant Fishing Waters (based on local knowledge)

Attribute 6 - Boating
- a. Rafting/kayaking/flatwater Reaches
- b. Recreational In-Channel Diversion Structures

Attribute 7 - Waterfowl Hunting
- a. Waterfowl Hunting

Notes (disclaimer verbiage):
1. Non-consumptive environmental and/or recreational attributes exist on virtually all stream and lake segments, whether such attributes are identified herein or not. Exclusion of a segment from this chart does not indicate absence of non-consumptive attributes.
2. Attributes associated with the major segments are commonly dependent on conditions in upstream tributary segments. Therefore, the achievement or maintenance of non-consumptive attributes depends upon achieving or maintaining necessary values in upstream segments as well as within the major segment itself.

Important Riparian Habitats were considered based on the following CNHP rankings:

G/S1 Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or 1,000 or fewer individuals), or because some factor of its biology makes it especially

G/S2 Imperiled globally/state because of rarity (6 to 20 occurrences, or 1,000 to 3,000 individuals), or because other factors demonstrably make it very vulnerable to extinction throughout

G/S3 Vulnerable through its range or found locally in a restricted range (21 to 100 occurrences, or 3,000 to 10,000 individuals).

YAMPA WHITE BASIN NONCONSUMPTIVE NEEDS ASSESSMENT WATERSHED FLOW EVALUATION TOOL

Task	TNC Labor	CDM Subcontractor Labor	Other Subcontractor Labor	Other Direct Costs	Total
Task 1 - Stakeholder Meeting and Facilitation	$2,400	$13,880.00	$756.00	$3,238.00	$20,274.00
Task 2 – Confirmation of CDSS WFET Locations	$480	$2,348.00	$903.00	$255.00	$3,986.00
Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics	$960	$19,240.00	$3,339.00	$245.00	$23,784.00
Task 4 - Further Refine Flow-Ecology Relationships	$960	$3,004.00	$6,888.00	$245.00	$11,097.00
Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2	$2,880	$28,028.00	$11,235.00	$810.00	$42,953.00
Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels	$1,200	$11,640.00	$3,591.00	$320.00	$16,751.00
Task 7 – Colorado River Compact Deliveries from Yampa-White Basin and Support of Nonconsumptive Needs	$480	$8,580.00	$640.50	$245.00	$9,945.50
Final Deliverable	$1,200	$18,960.00	$4,368.00	$320.00	$24,848.00
TNC Adminstration Fee					$15,363.85
Total	$10,560.00	$105,680.00	$31,720.50	$5,678.00	$169,002.35

Other Subcontractor Labor

Task	Sanderson
	$60
Task 1 - Stakeholder Meeting and Facilitation	40
Task 2 – Confirmation of CDSS WFET Locations	8
Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics	16
Task 4 - Further Refine Flow-Ecology Relationships	16
Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2	48
Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels	20
Task 7 – Colorado River Compact Deliveries from Yampa-White Basin and Support of Nonconsumptive Needs	8
Final Deliverable	20
Subtotal	$10,560

Task	Program Manager/ Technical Director	Senior Technical Specialist	Project Manager	Senior Engineer/ Scientist II	Senior Engineer/ Scientist I	Project Engineer/ Scientist	Staff Engineer/ Scientist II	Staff Engineer/ Scientist I	Designer	Education and Communications	Word Processor	Clerical/ Administrative	Subtotal
	$220	$200	$175	$170	$160	$140	$112	$100	$90	$60	$70	$50	
Task 1 - Stakeholder Meeting and Facilitation			40				40				20	20	$13,880
Task 2 – Confirmation of CDSS WFET Locations			4				4	12					$2,348
Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics			16				20	120			20	16	$19,240
Task 4 - Further Refine Flow-Ecology Relationships			12				2	2			4	4	$3,004
Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2			36				24	160			32	16	$28,028
Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels			8				20	80					$11,640
Task 7 – Colorado River Compact Deliveries from Yampa-White Basin and Support of Nonconsumptive Needs			12				40	20					$8,580
Final Deliverable			32				40	60			24	24	$18,960
												Subtotal	$105,680

Other Subcontractor Labor

Task	Poff	Bledsoe	Wilding	Subtotal
	$185	$185	$30	
Task 1 - Stakeholder Meeting and Facilitation			24	$756.00
Task 2 – Confirmation of CDSS WFET Locations		4	4	$903.00
Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics		12	32	$3,339.00
Task 4 - Further Refine Flow-Ecology Relationships	8	8	120	$6,888.00
Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2	16	12	184	$11,235.00
Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels	4	8	40	$3,591.00
Task 7 – Colorado River Compact Deliveries from Yampa-White Basin and Support of Nonconsumptive Needs		2	8	$640.50
Final Deliverable	4	12	40	$4,368.00
Subtotal	$6,216	$11,267	$14,238	$31,720.50

Other Direct Costs

Task	Lodging and Meals	Auto Mileage	Photocopy	Color Copies	Telephone	Fax/Scan	Subtotal
	at cost	Federal Rate	$0.10 per copy	$1.00 per copy	at cost per minute	$1.00 per sheet	
Task 1 - Stakeholder Meeting and Facilitation	750	2250	500	200	500	500	$3,238.00
Task 2 – Confirmation of CDSS WFET Locations			50	50	100	100	$255.00
Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics			200	25	100	100	$245.00
Task 4 - Further Refine Flow-Ecology Relationships			200	25	100	100	$245.00
Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2			600	150	300	300	$810.00
Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels			200	100	100	100	$320.00
Task 7 – Colorado River Compact Deliveries from Yampa-White Basin and Support of Nonconsumptive Needs			200	25	100	100	$245.00
Final Deliverable			200	100	100	100	$320.00
						Subtotal	$5,678.00

Task	Start Date	Finish Date
Task 1 - Stakeholder Meeting and Facilitation	NTP	NTP + 270 Days
Task 2 – Confirmation of CDSS WFET Locations	NTP + 30 Days	NTP + 45 Days
Task 3 – Run CDSS to Develop Pre-managed and Managed Hydrologic Datasets and Metrics	NTP + 30 Days	NTP + 90 Days
Task 4 - Further Refine Flow-Ecology Relationships	NTP + 15 Days	NTP + 120 Days
Task 5 - Develop Ecological Risk Mapping, Verify Risk Mapping and Develop Range of Flows for Attributes for Nodes Identified in Task 2	NTP + 30 Days	NTP + 180 Days
Task 6 - Create Additional Ecological and Recreational Risk Mapping Based on CRWAS Phase I and Phase II Flows and Compare with Flow Ranges Associated with Risk Levels	NTP + 30 Days	NTP + 210 Days
Task 7 – Colorado River Compact Deliveries from Yampa-White Basin and Support of Nonconsumptive Needs	NTP + 30 Days	NTP + 210 Days
Final Deliverable	NTP + 180 Days	NTP + 270 Days