AGREEMENT BETWEEN

THE STATE OF WYOMING

WATER DEVELOPMENT COMMISSION

and the

SHERIDAN-LITTLE HORN WATER GROUP

REGARDING DEVELOPMENT OF THE

LITTLE BIG HORN RIVER
AGREEMENT BETWEEN
THE STATE OF WYOMING
WATER DEVELOPMENT COMMISSION
and the
SHERIDAN-LITTLE HORN WATER GROUP
REGARDING DEVELOPMENT OF THE
LITTLE BIG HORN RIVER
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A. Critical Path Method Analysis (CPM)
B. Scope of Work
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AGREEMENT

WHEREAS, the Forty-Sixth Legislature enacted as law Chapter 60, 1982 Wyoming Session Laws Chapter, and

WHEREAS, contained therein is subsection 4(k) which provides for the Little Big Horn Water Project, and

WHEREAS, subsection 4(k)(iii) provides that the Water Development Commission "is authorized and directed to contract with the Water Group to conduct directly, or through subcontracts, activities necessary to accomplish the funding objectives", and

WHEREAS, the Water Development Commission approved this Agreement at its meeting the ____ day of June, 1982.

NOW THEREFORE, pursuant to subsection 4(k) Chapter 60, 1982 Wyoming Session Laws, and in consideration of the mutual obligations contained herein, the Water Development Commission and the Water Group agree as follows:
I.
PURPOSE

The purpose of this contract is to cause to be accomplished the Funding Objectives as set forth in subsection 4(k)(iii) of Chapter 60, 1982 Wyoming Session Laws.

II.
DEFINITIONS

A. The following definitions are quoted from subsection 4(k) of Chapter 60, 1982 Wyoming Session Laws, and are incorporated herein:

1) **Firm Annual Yield** - means a quantity of water in acre-feet projected to be available for delivery on an annual basis from the Water Project with ninety-eight percent (98%) reliability in accordance with accepted engineering and hydrological analysis, pursuant to the water rights;

2) **Water Group** - means the Sheridan-Little Horn Water Group, a partnership under Wyoming law, or its successors in interest to the water rights;

3) **Water Project** - means the facilities (including diversion, intake and pumping facilities, reservoirs, water transmission pipelines, connecting diversion facilities, reservoirs, and all related appurtenances and interests in real property) to optimize development of firm annual yield from the surface waters of the Little Big Horn River and its tributaries pursuant to the water rights;
4) **Water Rights** - means three (3) permits to appropriate surface water and, eight (8) applications for permits to appropriate surface water, all of which belong to the Water Group and which are more particularly identified as follows:

a) **Permits:**
   - Permit No. 7477 Res.
   - Permit No. 23955
   - Permit No. 23956

b) **Applications**
   - Temporary Filing No. 22-1/110
   - Temporary Filing No. 22-2/110
   - Temporary Filing No. 22-3/110
   - Temporary Filing No. 22-4/110
   - Temporary Filing No. 22-4/157
   - Temporary Filing No. 22-5/157
   - Temporary Filing No. 22-2/364
   - Temporary Filing No. 22-3/364

5) **Funding Objectives**

a) To develop, obtain and utilize hydrological, engineering, and legal information to expedite and assist the state in obtaining an equitable apportionment of the waters of the Little Big Horn River among the Crow Indian Tribe, the United States, the State of Montana and the State of Wyoming as soon as reasonably possible, provided that all negotiations, shall be conducted by representatives appointed pursuant to State law;
b) To develop, obtain and utilize hydrological, engineering, environmental, legal and other necessary information to expedite and assist the Water Group in obtaining all permits, licenses, approvals and authorizations, state, federal and local, necessary for commencement of construction of the water project as soon as is reasonably possible and to expedite and assist the Water Group in completion of a watershed development plan to optimize development of the firm annual yield from the water project in the State of Wyoming and optimize development of the entire Little Big Horn watershed, in cooperation with the State of Montana and the Crow Indian Tribe;

c) To obtain geotechnical information necessary to prepare final plans and specifications;

d) To acquire preliminary licenses, easements and rights-of-way necessary to accomplish the funding objectives.

B. The following additional definitions are set forth for purposes of this contract:

1) Commission shall mean the Wyoming Water Development Commission.

2) Administrator shall mean the Administrator of the Wyoming Water Development Commission.

3) Necessary Activities are defined by paragraph III of this Agreement.
III.

NECESSARY ACTIVITIES

It is necessary to conduct a broad range of technical, environmental, legal and management activities to accomplish the Funding Objectives. To define the sequence, scope and cost of these Activities for the purpose of this Agreement, a Critical Path Method analysis (hereinafter, CPM), a Scope of Work, and a Budget have been developed and included as exhibits to this Agreement. The activities set forth therein to accomplish the Funding Objectives are defined as "Necessary Activities."

The CPM (Exhibit "A") is the primary instrument for the management, administration, monitoring and periodic adjustment of the Necessary Activities to be conducted pursuant to this Agreement. It graphically depicts the Necessary Activities to accomplish the Funding Objectives, in the sequence in which they are to be conducted and completed, together with the interrelationships of the Necessary Activities.
The Scope of Work (Exhibit "B") is a narrative description or outline of each Necessary Activity or group of Necessary Activities depicted on the CPM. The Scope of Work may include:

1. a brief statement of the objective or end product of the Necessary Activity;
2. a brief description of the circumstances, conditions and information relating to that Necessary Activity at the time the activity is to be started;
3. a brief description of how the Necessary Activity is to be conducted.

The Budget (Exhibit "C"), by primary category and in three (3) month periods, sets forth the estimated costs to conduct the Necessary Activities set forth on the CPM and described in the Scope of Work. The primary Budget categories are as follows:

1) Project Management
2) Watershed Modeling and Optimum Watershed Development Plan
3) Hydrologic Investigations
4) Engineering
5) Geotechnical Exploration
6) Environmental Program
7) Permitting Program
The CPM, the Scope of Work, and the Budget shall define and limit the general sequence, scope and cost of Necessary Activities conducted pursuant to this Agreement.

The parties recognize that the research on industrial and municipal markets for water from the project is scheduled in the CPM, (see Exhibit B, Management and Modeling, pp. 5-6), to be begun by the Water Group in December, 1982, or January, 1983. However, the Water Group agrees to commence this market research in close cooperation with the Commission immediately upon written request of the Commission.

This Agreement is approved on the condition that no geologic work beyond surficial mapping (Geotechnical-I) and no engineering work as described in the Engineering section of Exhibit B beyond Engineering-I, first stage (Exhibit B, Engineering-I) and first stage Engineering-3, (Exhibit B, Engineering-3) is authorized until the Commission is provided with a re-examination report on the scope of work for geotechnical and engineering work. This re-examination shall be conducted by qualified consultants selected by the Commission for geotechnical work and engineering work on the Project.
The purpose of the re-examination is to determine if there is geotechnical or engineering activity proposed in the scope of work that is related solely to the design or construction of the water project features and that will not provide information to the State that is necessary for the negotiations on the equitable apportionment of the river. The Attorney General's office and the State Engineer will advise the consultant and the Commission regarding the geotechnical and engineering work necessary to accomplish the apportionment. All geotechnical and engineering work identified by the consultant as not being necessary for an apportionment shall be deferred until the apportionment is completed.

In recognition of the fact that certain geotechnical and engineering work can only be conducted during the summer season in the Big Horn Mountains, the parties agree to expedite re-examination of the geotechnical and engineering work and subcontracting therefor so that as much geotechnical and engineering work as possible, essential to apportionment, can be accomplished during the 1982 summer season.
IV.

REVISION OF THE CPM, THE SCOPE OF WORK, AND THE BUDGET

The CPM, the Scope of Work, and the Budget are based on reasonable estimates of the type, sequence and cost of Necessary Activities to accomplish the Funding Objectives which have been reviewed by and agreed to by the parties as of the date of this Agreement. The parties, however, understand that the CPM, the Scope of Work, and the Budget should be regularly reviewed and adjusted to reflect changing circumstances over time. Therefore, semiannually, the Water Group shall submit recommendations to the Commission for revision of the CPM, the Scope of Work, and the Budget to facilitate accomplishment of the Funding Objectives. The Water Group shall meet with the Commission at its next meeting to review the recommended revisions and to agree as to which of the recommended revisions will facilitate accomplishment of the Funding Objectives. The agreed revisions shall be set forth in writing and signed by the Water Group and the Commission. The CPM, the Scope of Work and the Budget shall be revised accordingly, shall be substituted for Exhibits A, B, & C to this Agreement, and shall govern conduct of Necessary Activities under this Agreement.
At any time during the term of this Agreement the parties may agree to the revision of the CPM, the Scope of Work and the Budget. In that event, the revision shall be set forth in writing and signed by the Water Group and the Commission. The CPM, Scope of Work, and the Budget shall be revised accordingly, shall be substituted for Exhibits A, B, & C to this Agreement, and shall govern conduct of Necessary Activities under the terms of this Agreement.

V.

CONDUCT OF NECESSARY ACTIVITIES

To accomplish the Funding Objectives, the Water Group shall conduct directly, through the Managing Engineer, and through subcontracts administered by the Water Group, the Necessary Activities as set forth in the CPM, the Scope of Work, and the Budget.
VI.

SUBCONTRACTS

The parties recognize and agree that the principal amount of the Necessary Activities will be conducted by consultants pursuant to subcontracts. The Water Group shall, through competitive requests for proposals or competitive negotiation, arrange for all subcontracts to conduct Necessary Activities. In arranging for subcontracts, the Water Group shall conform to the standards set forth in Exhibit "F" entitled "Standards for Approval of Subcontracts." All subcontracts shall be approved by the Commission and the Attorney General, based on the standards set forth in Exhibit "F" before Necessary Activities conducted thereunder shall qualify for payment pursuant to this Agreement. The Water Group shall provide the Administrator with such documentation as determined by the Administrator to be necessary for the Commission to approve subcontracts under the standards set forth in Exhibit "F". The documentation shall include a description of the process used by the Water Group to select the subcontractor.

Administration of all subcontracts is and shall be Necessary Activity, and the Water Group shall be responsible
for administration of all subcontracts. Administration of subcontracts shall include, but not be limited to, the following:

1) All activity involved in preparation of, solicitation of, negotiating, and entering into subcontracts;

2) Review, supervision and control of Necessary Activities conducted by subcontractors;

3) All fiscal activity related to subcontracts, including payment of subcontractors;

4) Analysis, reporting and certification of Necessary Activities conducted by subcontractors.

VII.

EXPEDITED APPROVAL

The parties acknowledge and understand that from time to time there will be Necessary Activities which are not specifically covered by an existing subcontract, but which must be contracted for and conducted in an emergency manner to preclude critical and adverse delay in the conduct of other Necessary Activities. In that event the Water Group shall submit to the Administrator a request in writing to subcontract for such emergency Necessary Activities. Thereupon with the
prior written approval of the Administrator, the Water Group may subcontract for such emergency Necessary Activities (including material, equipment and supplies) set forth in the CPM and Scope of Work in an amount not to exceed Ten Thousand Dollars ($10,000) per subcontract, and Necessary Activities conducted pursuant to such expedited subcontracts shall qualify for payment pursuant to this Agreement. The Administrator shall poll available Commission members prior to acting upon the request of the Water Group for emergency approval, but in any case shall act within forty-eight (48) hours of receipt of the request.

VIII.

PAYMENT FOR NECESSARY ACTIVITIES

Subsection 4(k)(iii) authorizes Eight Million Dollars ($8,000,000) to the Commission to cause to be conducted the Necessary Activities to accomplish the Funding Objectives by contracting with the Water Group to conduct the Necessary Activities. Exhibit "C" is the Budget for expenditure of authorized funds agreed to by the parties. The Commission shall pay the Water Group for all Necessary Activities conducted by the Water Group directly, or through
subcontracts, pursuant to paragraph IX of this Agreement, which are within the framework of the Budget. Amounts for conduct of Necessary Activities which are not within the framework of the Budget shall not be paid to the Water Group, unless such Necessary Activities and amounts are approved prior to conduct thereof by the Administrator pursuant to paragraph VII or unless approved for payment thereafter by the Commission.

IX.

AMOUNT OF PAYMENT FOR NECESSARY ACTIVITIES

For all Necessary Activities conducted by others pursuant to approved subcontracts with the Water Group, the Commission shall pay the Water Group the actual amounts due the subcontractor pursuant to the approved subcontract, subject however to retainage set forth in subparagraph 3.

For all Necessary Activities conducted by the Managing Engineer pursuant to this contract, the Commission shall pay the Water Group at the rate of Seventy Dollars ($70) per hour for the Managing Engineer's time devoted to Necessary Activities, together with actual expenses incurred by the Water Group in the course of carrying on Necessary Activities.
Expenses shall not include general overhead and office rental, but shall include, but not be limited to, clerical charges, travel expense, telephone and telexcopy charges, photocopy charges and non-office equipment rental.

The Commission shall deduct and withhold five percent (5%) of the amount submitted for payment on each Request for Payment, which shall hereinafter be referred to as "retainage". The retainage shall be withheld until thirty (30) days after the next semiannual status report is submitted to the Administrator in accordance with paragraph XV of this Agreement. Thereupon, all the retainage in excess of Fifty Thousand Dollars ($50,000) accumulated prior to that semiannual status report shall be paid to the Water Group, unless the Administrator determines that funds have been paid to the Water Group pursuant to Requests for Payment for activities that were not within the CPM, the Scope of Work, the Budget, the terms of the certification or otherwise not in conformity with the terms of this Agreement. In that event, retainage in that amount may be withheld by the Commission pending a determination of the matter as hereinafter set forth.
The amount and procedure for final payment shall be governed by paragraph XI.

No payment made by the State shall constitute an acceptance of any work not in accordance with the Agreement documents.

X.

PAYMENT PROCEDURE

On the 10th day of each month, the Water Group shall submit to the Administrator a Request for Payment for mature obligations for the previous month for conduct of Necessary Activities. The Request for Payment shall contain the following:

1) The account code for each Necessary Activity billed;
2) The amount billed for each Necessary Activity;
3) The entity which conducted each Necessary Activity;
4) Certification by the Managing Engineer of the Water Group in the form set forth as Exhibit "D";
5) Certification by the subcontractor in the form set forth as Exhibit "E";
6) An accounting summary of all expenditures for conduct of Necessary Activities.

7) Such other documentation as may be required by the State Auditor and the Commission.

Together with the Request for Payment, the Water Group shall submit a brief narrative report of the status of the Necessary Activities conducted in the preceding month.

Within five (5) working days of receipt of the Request for Payment, the Administrator shall review the monthly Request for Payment for compliance with this Agreement, approve it for payment and forward the Request for Payment to the appropriate state agency for payment within the normal course of business.

If the Administrator determines that any item in the Request for Payment is not in compliance with this Agreement, that item of the Request for Payment shall not be approved for payment. However, the balance of the Request for Payment shall be approved and forwarded for payment as set forth herein. If any item in a Request for Payment is not approved for payment the Administrator shall immediately notify the Water Group by telephone of the item not approved for payment, to be followed in five (5) days by a detailed written notice of disapproval containing a statement of the reasons for disapproval. If the Water Group disagrees with the disapproval, the Water Group shall, within a
reasonable time, submit a letter to the Administrator containing detailed justification for approval of the item in accordance with this Agreement. If the Administrator, upon the advice of the Attorney General, and the Water Group do not informally resolve the matter within ten (10) days of receipt of the letter of justification, the Water Group may present the matter to the Commission at its next regular meeting.

Upon receipt of payment pursuant to a Request for Payment, the Water Group shall promptly pay each subcontractor the amounts identified in the Request for Payment for each subcontractor, subject to retainage and subject to amounts withheld by the Water Group pending resolution of contract disputes with subcontractors.

XI.

FINAL COMPLETION AND PAYMENT

Neither the final payment nor the remaining retainage shall become due until the Water Group submits to the State:

(a) an affidavit stating that all payrolls, bills for materials and equipment and other indebtedness connected with the Necessary Activities for which the State or its property might in any way be responsible, have been paid or otherwise satisfied except for those to be paid with the proceeds from the final payment and retainage, and except for amounts

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withheld by the Water Group pending resolution of subcontract disputes (b) if required by the State, other reasonable data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens to the extent and in such form as may be reasonably designated by the State, and (c) consent of surety, if any, to final payment.

The making of final payment shall constitute a waiver of all claims by the State, except those arising from: (a) unsettled liens; (b) faulty or defective work appearing after substantial completion; (c) failure of the work to comply with the requirements of the Agreement document; or (d) terms of any special warranties required by the Agreement documents.

The acceptance of final payment by the Water Group shall constitute a waiver of all claims by the Water Group, except those previously made in writing and identified by the Water Group as unsettled at the time of the Request for Payment.

XII.

MANAGING ENGINEER

The Managing Engineer shall be the agent of the Water Group responsible for carrying out the Water Group's management
obligations pursuant to this Agreement as set forth under the Project Management portions of the CPM and Scope of Work. All engineering work shall be conducted under the supervision of a Wyoming Registered Professional Engineer. Larry D. Baccari and Associates, Consulting Engineers, (P.E. License No. 1200, Wyoming) is hereby designated by the Water Group as the Managing Engineer for purposes of this Agreement. Accordingly, the Water Group shall contract with the Firm of Larry D. Baccari and Associates to act as Managing Engineer. The Water Group, with the prior written consent of the Administrator, may designate a qualified engineer to replace the Firm of Larry D. Baccari and Associates as Managing Engineer.

XIII.

HYDROLOGIC INVESTIGATIONS

The parties understand and acknowledge that Larry D. Baccari is currently undertaking stream gaging work pursuant to a contract between the Commission and the Water Group. In keeping with the policy expressed in Paragraph VI requiring competitive bidding, the bulk of the hydrologic investigation identified in the CPM will be subcontracted for through a competitive bid process or contracted with the United States
Geological Survey (U.S.G.S.). If the Commission does not contract with the USGS, the Commission shall develop requests for proposals in consultation with the Water Group to be mailed by the Commission to qualified subcontractors no later than July 1, 1982, with proposals to be returned no later than July 21, 1982. The Commission shall make the final selection of the contractor at the next meeting following receipt and review of the proposals.

Until a subcontract for the hydrologic investigations is awarded, the Commission agrees to contract with the Water Group for those hydrologic investigations that are essential to the development of information for the negotiation of an apportionment of the Little Big Horn River. The Commission shall review the CPM and Scope of Work, and in consultation with the Attorney General and the State Engineer, determine the hydrological investigations that should be continued by the Water Group through Larry D. Baccari until a contractor is selected to continue the work.
XIV.

LEGAL ACTIVITIES

The Scope of Work, (Exhibit B, Management and Modeling), at pages 25 through 35 describe legal activities necessary to accomplish the Funding Objectives. The Attorney General shall cause to be conducted these legal Necessary Activities, either through Deputy or Assistant Attorneys General or through appointment of Special Assistant Attorneys General pursuant to statute. The Commission shall allocate $616,860 of the funding authorization to the Attorney General to cover the costs thereof. It is agreed by the parties that all of the direct equitable apportionment legal work will be conducted by a Special Assistant Attorney General, who is totally independent of the Water Group and any other applicants or appropriators in the Little Big Horn River drainage, appointed by the Attorney General in accordance with a subcontract therefor approved by the Commission. It is further agreed that the Attorney General shall prepare a plan, schedule and budget for conduct of all of the legal activities necessary to accomplish the Funding Objectives as set forth in the Scope of Work, including subcontracts therefor, and that the Attorney General shall submit that to the Commission for review and approval.

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XV.

FUNDING OBJECTIVES

STATUS REPORTS

Semiannually, the Water Group shall submit a Status Report to the Administrator. Each Status Report shall report on the following matters:

1) The progress toward accomplishment of each Funding Objective;

2) A description of the Necessary Activities conducted and a comparison to the (CPM) and the Scope of Work;

3) A complete fiscal report detailing the expenditures of funds and an "Expenditure to Budget" comparison;

4) A projection of the following six (6) month's work program as related to the (CPM), the Scope of Work and the Budget.

The Status Report shall be reviewed by the Commission to insure that the Project is meeting its Funding Objectives and no unnecessary work is being performed. After the review, the Commission shall recommend any necessary adjustments.
XVI.

WORK PRODUCT

The work product of the Necessary Activities conducted pursuant to this Agreement, including all information, reports, plans and specifications, data or other material, but excluding all permits, licenses, approvals, authorizations, filings, water rights and preliminary documents, applications and similar materials relating thereto, shall be the property of the Commission; however, the Water Group shall have the right to possession and complete use of the work product during the term of this Agreement, and thereafter the right to make, keep and use copies of the work product.

Subject to subsection 4 (k)(v) of Chapter 60, 1982 Wyoming Session Laws, all permits, licenses, approvals, authorization, filings, water rights and preliminary documents, applications and similar materials relating thereto resulting from Necessary Activities conducted pursuant to this Agreement shall be the property of the Water Group.

Upon request from the Administrator, during the term of this Agreement, the Water Group shall provide the Administrator with copies of any work product of Necessary Activities
pursuant to this Agreement, the cost of which shall be deemed to be Necessary Activity.

XVII.

AUDIT

The Commission, through the State Examiner or Auditor or independent auditors and upon the advice of the Attorney General, shall conduct fiscal audits of the books and records of the Water Group pertaining to expenditure of funds disbursed to the Water Group pursuant to this Agreement as often as determined appropriate by the Commission, upon the advice of the State Auditor and the Attorney General, to insure proper expenditure of state funds in accordance with this Agreement. The books and records of the Water Group pertaining to expenditure of funds disbursed to the Water Group pursuant to this Agreement shall be available for audit during regular business hours in the regular offices of the Water Group.

XVIII.

COST OF EQUITABLE APPORTIONMENT

Subsection 4(k)(v)(A) of Chapter 60, 1982 Wyoming Session Laws, provides as follows:
A) At such time as the Water Group secures permanent financing to proceed with construction of the Water Project, the Water Group shall purchase the work product developed under paragraph (k)(i) through paragraph (k)(ix) from the Commission for an amount equal to the amount expended therefore, excluding the costs incurred with respect to equitable apportionment of the Little Big Horn River.

The "costs incurred with respect to equitable apportionment of the Little Big Horn River" shall include the following:

1) Hydrological, geotechnical and engineering activity directly related to apportionment which would not otherwise be required for development of the Water Project;

2) Hydrological modeling directly related to apportionment which would not otherwise be required for development of the Water Project;

3) Project management and administration directly related to apportionment which would not otherwise be required for development of the Water Project.

Each request for payment shall identify, in the opinion of the Water Group, the costs contained therein with respect to equitable apportionment of the Little Big Horn River and the Water Group shall maintain a special accounting of these costs. Each month the Administrator shall review the accumulated costs identified as being with respect to the equitable apportionment
pursuant to this paragraph, and thereafter at its next regular meeting the Commission, on the advice of the Attorney General and the State Engineer, shall determine which costs shall be allocated to the equitable apportionment and not be subject to repayment by the Water Group.

XIX.

CONTINGENCY FUNDS

Section 4(k)(iii) of Chapter 60, 1982 Wyoming Session Laws authorizes Eight Million Dollars ($8,000,000) to the Commission; however, the Budget allocates only Six Million Nine Hundred Eighty-three Thousand One Hundred Forty Dollars ($6,983,140) to the Water Group under this Agreement. This Agreement allocates Six Hundred Sixteen Thousand Eight Hundred Sixty Dollars ($616,860) to the Attorney General. The balance of Four Hundred Thousand Dollars ($400,000) is unbudgeted to provide for contingencies and to make funds available to the Commission to conduct the financing study required by subparagraph 4(k)(viii) of Chapter 60, 1982, Wyoming Session Laws. The Commission may utilize these funds for that financing study or such other purposes directly related to accomplishing the Funding Objectives. It is further contemplated that upon agreement of the parties, a portion of these funds may be allocated to this Agreement and the budget
adjusted accordingly. The financing study to be funded pursuant to this paragraph and the cost of activities conducted by the Commission directly, funded pursuant to this paragraph not directly related to accomplishment of the Funding Objectives are not work product for purposes of subsection 4(k)(v)(A) and the Water Group shall not be obligated to purchase the product of those activities.

XX.

INSURANCE

The Water Group shall within ninety (90) days of the date of this Agreement obtain liability insurance, project insurance or other insurance, as determined by the Administrator on the advice of the Attorney General, sufficient to reasonably protect the interests of the Commission and the State of Wyoming. All costs associated with obtaining such insurance incurred by the Water Group, including insurance premiums shall be Necessary Activities for which payment shall be made pursuant to the terms of this Agreement.
XXI.

INDEMNIFICATION

The Water Group shall indemnify and hold harmless the State and the Water Development Commission and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to fees for attorney's retained by the Commission, arising out of or resulting from the performance of the Necessary Activities, caused in whole or in part by any act or omission of the Water Group, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

XXII.

RIGHT OF INSPECTION

Representatives of the Commission shall have the right of visitation and inspection at all work and study sites of the Water Group or its subcontractors or agents.

XXIII.

INDEPENDENT CONTRACTOR

The Water Group is not, and shall not be considered or deemed to be, an employee of or an official of the Commission,
and in performance under this Agreement the Water Group is acting only as an independent contractor.

XXIV.

ASSIGNMENT

The Water Group shall not assign this Agreement without the previous written consent of the Commission, which consent shall not be withheld if the proposed assignee is the successor in interest to the water rights and is qualified to and capable of carrying out the obligations of the Water Group pursuant to the terms of this Agreement.

The Water Group shall not assign monies due or to become due to the Water Group under the terms of this Agreement and any such assignment shall be void.

XXV.

CONFIDENTIALITY

The parties understand and acknowledge that from time to time, in order to protect the best interests of the State or the proprietary interests of the Water Group for commercial purposes, certain matters should be held in confidence. Either party may request in writing that the work product of the
Necessary Activities conducted pursuant to this Agreement be held in confidence in which event the other party shall hold such work product in confidence and shall not disclose or disseminate such work product to anyone not a party to this Agreement, subject however to the provisions of the Wyoming Public Records Act.

XXVI.

TRANSFER OF WATER RIGHTS

Subsection 4(k)(v)(B) of Chapter 60, 1982 Wyoming Session Laws provides as follows:

In the event and at such time as the Water Group determines not to proceed with construction of the Water Project, the Water Group shall transfer to the Commission, without charge, all permits, licenses, approvals and authorizations, state, federal and local, (except the water rights) and any preliminary documents, applications or similar materials relating thereto, which have been developed as a result of the funds expended under paragraph (k)(i) through paragraph (k)(ix).

In consideration of the mutual obligations contained in this Agreement, the Water Group agrees that in the event the Water Group determines, in its sole discretion, not to proceed with construction of the Water Project, the Water Group shall
transfer to the Commission, without charge, the water rights, in addition to those items required by subsection 4(k)(v)(B), pursuant to the following procedure.

Concurrently, with the execution of this Agreement, the Water Group shall execute and deliver to the Department of Economic Planning and Development, the escrow agent, an "Assignment and Deed", of all right, title and interest of the Water Group in and to the water rights, and an "Assignment" of all right, title and interest of the Water Group in and to the work product as set forth in Paragraph XVI of this Agreement, and in and to all permits, licenses, approvals, authorizations, state, federal and local and any preliminary documents, applications or similar materials relating thereto. At such time as the Water Group determines not to proceed with construction of the Water Project, it shall deliver notice thereof to the escrow agent and the escrow agent shall thereupon deliver the "Assignment and Deed" and the "Assignment" to the Commission.

Concurrently, upon execution of this Agreement, the Commission shall execute and deliver to the Department of Economic Planning and Development, the escrow agent, an
"Assignment and Quitclaim Deed" assigning and quitclaiming to the Water Group all of the Commission's right, title and interest in and to the water rights, in and to the work product as set forth in Paragraph XVI, and in and to all permits, licenses, approvals and authorizations, state, federal, and local, and any preliminary documents, applications or similar materials relating thereto, which have been developed as a result of the funds expended under this Agreement. At such time as the Water Group secures permanent financing to proceed with construction of the Water Project and pays the Commission for the work product pursuant to Subsection 4(k)(v)(A) of Chapter 60, 1982 Wyoming Session Laws, the escrow agent shall deliver to the Water Group the "Assignment and Quitclaim Deed".

XXVII.

TERM OF AGREEMENT

Pursuant to the Critical Path Method Chart (CPM) it is estimated by the parties that the Funding Objectives may be accomplished in approximately two (2) years. Accordingly, the term of this Agreement shall be for two (2) years from the effective date of this Agreement. Prior thereto, neither party may terminate this Agreement except pursuant to paragraphs XXVIII and XXIX. However, the parties
However, the parties understand and recognize that accomplishment of the Funding Objectives is dependent upon many factors beyond the control of either party to this Agreement. Accordingly, this Agreement shall be extended for one (1) year periods until the Funding Objectives are accomplished, unless terminated pursuant to paragraphs XXVIII and XXIX.

XXVIII.

TERMINATION OF AGREEMENT

The Commission may terminate this Agreement for any of the following reasons:

a) The Commission determines, on the advice of the Attorney General, that the Funding Objectives have been accomplished.

b) The legislature withdraws funding authorization or takes such action so that the continued existence of the Agreement as determined by the Commission, on the advice of the Attorney General, would be inconsistent with legislative enactment, or

c) The Commission determines, on the advice of the Attorney General, that obtaining an equitable apportionment of the Little Big Horn River is not reasonably feasible within a time frame consistent with development of the Water Project and therefore expenditure of the funds authorized by subsection 4(k)(iii) of Chapter 60, of the 1982 Wyoming Session Laws to assist in obtaining an equitable
apportionment would not be a useful and prudent expenditure of funds, or

d) The Commission determines, on the advice of the Attorney General, and based on the Necessary Activities that have theretofore been conducted, that the water project is not feasible for technical, environmental and regulatory reasons.

If the Commission proposes to terminate this Agreement in accordance with this paragraph, it shall give the Water Group written notice of its intent to terminate which shall contain a detailed explanation of the reasons it proposes to terminate and all of the related facts and circumstances. Within thirty (30) days, but not before fifteen (15) days, it shall give the Water Group the opportunity to appear before the Commission to address the facts and circumstances relating to termination. Thereafter, the Commission may terminate this Agreement, pursuant to this paragraph, for the reasons set forth in the Notice.

Upon notice of termination, at the sole election of the Commission, all Necessary Activity pursuant to this Agreement shall cease and the Water Group and all subcontractors shall immediately begin winding down activities. In the event of cessation of Necessary Activities, the Water Group shall be paid for all Necessary Activities conducted to the termination
date. In addition, the Commission shall pay all reasonable costs of terminating and winding down Necessary Activities contracted or subcontracted for pursuant to of this Agreement. No allowance shall be made for anticipated overhead or profit on Necessary Activities not completed.

XXIX.

DEFAULT

This Agreement may be terminated by either party because of the other's failure to substantially perform the Agreement according to its terms and conditions. The election to terminate hereunder shall be exercised by giving forty-five (45) days written notice specifying the default or defaults. The party in default may avoid such termination by correcting such default or defaults within the forty-five (45) day period. If the party in default intends to attempt to cure the default, that party shall immediately notify the other and commence curative action. If the party in default does not intend to attempt to cure the default, that party shall immediately notify the other and all Necessary Activity pursuant to this Agreement shall cease and the Water Group and all subcontractors shall immediately begin winding down activities.

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In the event of cessation of Necessary Activities, the Water Group shall be paid for all Necessary Activities conducted to the termination date. In addition, the Commission shall pay all reasonable costs of terminating and winding down Necessary Activities contracted or subcontracted pursuant to the terms of this Agreement. No allowance shall be made for anticipated overhead or profit on Necessary Activities not completed.

XXX.

NOTICE

Any notice required or permitted to be given shall be sent by registered mail and addressed to the respective address of the other party as follows:

If to the Commission: Water Development Commission
The State of Wyoming
Barrett Building
Cheyenne, Wyoming 82002

Copy to: Attorney General
State of Wyoming
123 Capitol Building
Cheyenne, Wyoming 82002

If to the Water Group: The Sheridan-Little Horn
Water Group
319 West Dow
Sheridan, Wyoming 82801

Copy to: David F. Palmerlee
Omohundro & Palmerlee
100 South Main Street
Buffalo, Wyoming 82834

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XXXI.

WAIVER OF GOVERNMENTAL IMMUNITY

The parties understand and agree that this Agreement provides no express or implied governmental immunity for the State and that any and all governmental or sovereign immunities in actions based upon or arising from this Agreement are waived.

XXXII.

EXTENT OF AGREEMENT

This Agreement together with all Agreement documents represents the entire and integrated Agreement between the Commission and the Water Group and supersedes all prior negotiations, representations, or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both parties.
XXXIII.

GOVERNING LAWS

This Agreement shall be governed by the laws of the State of Wyoming.

XXXIV.

SEVERABILITY

The provisions of this Agreement are severable, and if any provision of this Agreement shall be held to be invalid by any court of competent jurisdiction, the remainder of this Agreement shall remain valid and shall not be affected thereby.

XXXV.

REVIEW BY SELECT WATER COMMITTEE AND EFFECTIVE DATE

The parties understand and acknowledge that, pursuant to Chapter 60, 1982 Wyoming Session Laws, the Commission may not contract to spend the funds authorized under subsection 4(k)(iii), until this Agreement has been submitted to the Select Water Committee for its review and recommendation, and further, that this Agreement is not effective until completion of review and recommendation by the Select Water Committee. Therefore, it is agreed that upon

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completion of review and recommendation by the Select Water Committee, the terms of this Agreement shall be retroactive to the date of execution of this Agreement by the Water Group and the Commission.

THIS AGREEMENT, executed in triplicate originals, and entered into this ___ day of June, 1982, by the Water Group and the Commission to be effective upon completion of review of this Agreement by the Select Water Committee of the legislature.

THE WYOMING WATER DEVELOPMENT COMMISSION

by: __________________________________________
    Chairman

ATTEST:

by: __________________________________________
    Secretary
Executed by Larry D. Baccari, President of the Sheridan-Little Horn Water Group pursuant to the authority granted to him by unanimous partnership resolution passed the ____ of ____________, 1982.

SHERIDAN-LITTLE HORN WATER GROUP

by: ____________________________
    President

Approved by the Attorney General of the State of Wyoming as to form and execution this ____ day of June, 1982.

by: ____________________________
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PROJECT MANAGEMENT

SUMMARY OF ACTIVITY DESCRIPTIONS

I(a) PROJECT MANAGEMENT & WATERSHED MODELING

A. Public Communications
B. Market research and user contact, industrial and municipal
C. Permanent financing research and participation with State
D. Coordination with WWDC, progress reporting and budget review
E. Coordination with "Wild and Scenic River" study process
F. General agency contact at local, state, and federal levels
G. Preliminary R/W Acquisition and Landowner contact

II(a) WATERSHED MODEL & OPTIMUM DEVELOPMENT PLAN

A. Research and map existing irrigation and Wyoming surface water rights
B. Develop stream flow records
C. Develop irrigation return flow data
D. Set up computer modeling
E. Obtain data on Crow and Montana projects
F. Watershed modeling & operation studies
G. Determination of USFS reserved rights
H. Determination of instream flow requirements
I. Conduct public hearings
J. Define watershed development alternatives
K. Ongoing participation with State, Crow, and Montana

III(a) MANAGE STREAM GAGING AND SNOW COURSE WORK

A. Special use permit applications
B. Coordination of work with USGS, State, Montana, Crow and
C. Review of field and analytic work to assure quality contr
IV(a) MANAGE SUBCONTRACT FOR ENGINEERING

A. Procure proposals and develop subcontract
B. Direct work under contract
D. Administer payment process and certify completion of work
D. Minor subcontracts for surveying and mapping as desired

V(a) MANAGE SUBCONTRACT FOR GEOTECHNICAL WORK

A. Procure proposal(s) and develop subcontract
B. U.S. Forest Service special use permit
C. Direct work under contract
D. Administer payment process and certify completion of work
E. Monitor groundwater levels in observation holes

VI(a) MANAGE SUBCONTRACT FOR ENVIRONMENTAL WORK

A. Fatal flow assessment
B. Develop baseline research program
C. Procure proposals and develop subcontract
D. Direct work under contract
E. Administer payment process
F. Coordinate and certify completion of work
G. Conduct EIS

VII(a) MANAGE PERMITTING PROGRAM

A. Establish permit requirements with State & Federal agencies
B. Coordinate schedule for permit applications-CPM
C. Preliminary permit analysis preparation and application
D. Permit application and proceedings
PROJECT MANAGEMENT

SUMMARY OF LEGAL ACTIVITY DESCRIPTIONS

I(b) GENERAL MANAGEMENT

A. Public Communication
B. Market research and user contact, industrial and municipal
C. Permanent financing, research and participation with the State
D. Coordination with the WWDC, progress reporting, and budget review
E. Coordination with "Wild and Scenic River" study process
F. General agency contact, local, state, and federal
G. Right-of-way acquisition and landowner contact

II(b) WATERSHED MODEL AND OPTIMUM WATERSHED DEVELOPMENT PLAN

A. None
B. None
C. None
D. None
E. Coordinate information on Crow Tribe and State of Montana development alternatives
G. Determination of U.S. Forest Service reserved rights
H. Determination of in-stream flow requirements
I. Prepare materials for public hearings and conduct public hearings
J. Define development alternatives for final evaluation by engineer
K. Participate in optimum watershed development plan

III(b) MANAGE STREAM GAGING AND SNOW COURSE WORK

A. Special use permit application
B. Coordination of work with USGS, State, State of Wyoming, State of Montana, Crow Tribe and Soil Conservation Service

Exhibit B
Management & Modeling - 3
IV(b) MANAGE SUBCONTRACT FOR ENGINEERING

A. Procure proposals and develop subcontract for engineering-interim design

V(b) MANAGE SUBCONTRACT FOR GEOTECHNICAL WORK

A. Procure proposals and develop subcontract for geotechnical work
B. Special use permit application

VI(b) MANAGE SUBCONTRACT FOR ENVIRONMENTAL WORK

A. Develop coordinated baseline research program with the State of Wyoming, State of Montana, U.S. Forest Service, U.S. Fish and Wildlife Service, Crow Tribe and local agencies

VII(b) MANAGE PERMITTING PROGRAM

A. Permitting program
B. Permitting program
C. Permitting program
D. Permitting program

Exhibit B
Management & Modeling - 4
SCOPE OF WORK

PROJECT MANAGEMENT & WATERSHED MODELING

Project management is responsible for planning, organizing, directing and controlling resources to complete the water project. This activity will be conducted by the Managing Engineer and general counsel for the Water Group. The activities of watershed modeling and stream apportionment are highly integrated with the project management function and are therefore included with the description of management activities. These activities are grouped in the seven categories shown on the summary outline. Three categories, general management; watershed modeling & optimum development plan; and stream gaging indicate the work to be conducted by the Managing Engineer.

Further description of the work activities follow. There are two subsections of activity descriptions. Subsection (a) describes the Managing Engineer's activity. Subsection (b) describes the General Counsel's activity.

I(a) A through G  GENERAL MANAGEMENT - Managing Engineer

General management includes those activities listed as items A through G in the summary. These activities shall be carried out to the extent reasonably necessary in the judgment of the Management Engineer to keep the project on schedule. These activities are necessary to avoid delays and to avoid an ineffective use of funds.

Included in this activity are permanent financing research, market research and user contact. These activities are inter-related and shall include participation by the Commission. The legislation authorizing project funding, Enrolled Act 35, section 4 (k) (viii), requires that the Water Development Commission submit recommendations to the Governor and the 1983 session of legislature with respect to the nature and structure of financing arrangements for state/private water development projects. State participation in funding can have a substantial effect on water
costs to the user. Final determination as to whether municipal and possibly industrial users will purchase water from the project may be dependent upon the Commission's determinations and recommendations for State participation. Therefore, the Water Group's activity in research of market and permanent financing alternatives shall incorporate State participation. The objective of this work will be to establish a set of parameters for project financing, upon which water cost values may be established for marketing purposes. Water cost calculations shall be provided to show the resultant water cost which would result from the financing recommendations developed by the Commission.
II(a) WATERSHED MODEL & OPTIMUM DEVELOPMENT PLAN

This category incorporates all of the activity to be conducted by the Managing Engineer specifically related to development of the watershed model; use of the model; determination of in-stream flow requirements; determination of USFS rights; conduct of public hearings; definition of project alternatives; participation in the final determination of the optimum watershed development plan; and settlement with the Crow tribe and Montana. All of this work is outlined in the summary and further described in the following paragraphs II(a) A through II(a) K.

II(a) A RESEARCH AND MAP MONTANA IRRIGATION AND WYOMING SURFACE WATER RIGHTS

One of the major requirements needed to model the entire watershed is information on irrigated acreages and water rights within the basin. For the area within Wyoming, the surface water rights will be mapped using information available from the Wyoming State Engineer's Office. To be shown will be the priority dates and amount of appropriation. Actual irrigated acreages will also be mapped using information from previous studies conducted for the Wyoming State Water Planning Program and using various SCS or U.S. Geological Survey Maps. For the area within the Crow Reservation, maps will be prepared showing the existing irrigated acreages. Information sources will include previous studies by the Bureau of Reclamation, Bureau of Indian Affairs, and Montana Department of Natural Resources and Conservation. Additional information to be mapped will be potentially irrigable lands within the Crow Reservation. Field mapping of irrigation has not been included in these cost estimates.

Various analyses will be performed with the above information using the computer modeling program. The watershed will be evaluated by looking at several combinations of adjudicated, existing and potential irrigation in conjunction with the many development alternatives.
II(a) B DEVELOP STREAMFLOW RECORDS FOR MAJOR TRIBUTARIES IN MONTANA AND WYOMING

Before any reservoir operation studies or watershed modeling can be conducted, information must be available on streamflows throughout the watershed. Extremely good record (approx. 40 years) is available on the mainstem of the Little Bighorn at the State Line. Several of the major tributaries entering the Little Bighorn in Montana have a much shorter period of record and some in Wyoming have no continuous record at all.

In determining firm annual yields from a water project, it is desirable to use the maximum length of record available. In addition, the streamflow record on all tributaries should be of the same time period. Developing this record where missing will require use of various correlation or regionalization techniques commonly used in hydrology studies.

Work under this activity does not include costs to establish any streamgaging stations since that has been covered in another activity. Some minor field work has been contemplated to familiarize the hydrologist with the physical features of the watershed to assist in his evaluations and streamflow projections. Where possible, ground travel will be used to survey the drainage basin. If access is not available, a survey by aircraft will be made.

This work will result in development of mean monthly streamflows at various locations within the drainage basin, as needed for the watershed modeling study. Specific locations identified at this time include, Dry Fork Little Bighorn at the Dry Fork Reservoir; Little Bighorn at the Half Ounce Reservoir; West Fork Little Bighorn; East Twin Creek at the Parkman Reservoir; East Pass Creek at point of diversion for supply to Parkman Reservoir; and on Pass Creek, Lodgegrass Creek and Owl Creek, each at the confluence with Little Bighorn.
II(a) C DEVELOP IRRIGATION RETURN FLOW DATA

Another critical element required as input into the watershed modeling program is information on irrigation return flows. When evaluating the entire streamflow system, the amount of water returning to a stream as a result of irrigation can be significant. Many downstream irrigators depend on this return flow as part of their supply. In modeling a watershed, it is therefore, important to predict what percentage of a certain diversion will return to the stream. It is also important to predict the physical location where the return flows enter the stream and then becomes available for use by a downstream diversion.

To accurately predict return flows will require evaluating each major diversion separately since each irrigated area may have a different return flow characteristic. This being due to topography, soil type and location of the irrigated area with respect to the stream. It will also be necessary to predict the time distribution of the return flows since there is a lag between start of irrigation and the time when water begins returning to the stream. The peak return flow may also not coincide with the peak diversion rate due to the lag effect.

Estimating return flows on the stream will first involve a literature search to obtain data generated by agencies such as the SCS, Bureau of Reclamation and others. Return flow characteristics for each major diversion will then be estimated with the aid of available maps, in conjunction with some possible field trips.

II(a) D SET UP COMPUTER MODELING

The most important key in settlement of the water right issue with the State of Montana and the Crow Tribe will be an analysis of the entire watershed to assess various water development schemes within the basin. Due to the lengthy computations involved, and expected high number of scenarios that will need to be investigated, the watershed analysis will be conducted with the aid of a computer. Using a computer program to
simulate the operation of reservoirs and irrigation systems, one can
determine the annual yield from the stream for each development
alternative.

Costs for this activity are based on obtaining an existing computer
program to model the system. Since many programs of this type are
developed for specific projects and applications, it is expected that some
minor modifications would be necessary to tailor it to this project. The
Project Manager would conduct the work directly and would be responsible for
investigating various alternatives identified by the BIA, State of Montana,
Crow Tribe, State of Wyoming or the SLHWG.

The major concern regarding the modeling program is that all agencies
involved in the stream allocation process accept the modeling program.
If all parties agree that the method of analysis is correct, then they
are expected to accept the results. Considerable effort is planned to
achieve concurrence by these agencies. It is expected that the model
ultimately developed for the project will be available to all parties
for their independent evaluations.

The computer program ultimately selected for use shall have the
following capability:

1) Operate on a monthly basis using mean monthly streamflow
records as input.

2) Handle up to 50 years of record from each major tributary
and each reservoir site.

3) Operate reservoirs in parallel or series and handle up to
8 or 10 reservoirs within the watershed at one time.

4) Allow diversions to occur between parallel reservoirs.
5) Allow return flows to be specified as a function of diversion rates separately for each diversion point, and to handle the time distribution of those return flows.

6) Allow different operating criteria to be established for each reservoir.

7) Have ability to only pass the natural flow through a reservoir at certain times of the year if so specified, regardless of the downstream demand.

8) Consider instream flow requirements in making reservoir releases and at each diversion point. (Only divert the available streamflow above instream flow requirements).

9) The entire model will operate based on the priority of appropriation doctrine. Water rights will only be satisfied based on their respective priority dates and available streamflow.

10) Output a monthly accounting of reservoir storages, streamflows of selected points, and amount of water diverted at each diversion point.

II(a) E  **OBTAIN DATA ON CROW/MONTANA PROJECTS**

The watershed modeling is intended to evaluate all potential projects within the watershed. This includes those proposed by the SLHWG, the Crow Tribe, and others. Information required as input to the computer model will include, physical locations for the proposed facilities; diversion capacities for new irrigation or industrial projects; reservoir details such as storage capacities, minimum and maximum outlet works capacities, operating criteria, and possible diversion rates from the reservoirs; and alternative development schemes.
To obtain this necessary information, the Managing Engineer will work with the BIA, the technical consultant for the Crow Tribe, and the State of Montana DNRC.

II(a) F WATERSHED MODELING & OPERATION STUDIES

Commencement of this activity will begin after completion of previous work on mapping of Montana irrigation and Wyoming surface water rights; development of streamflow records and irrigation return flow data; obtaining data on Crow/Montana projects; and the computer modeling program has been set up for this project. The primary objective is to evaluate the entire watershed in conjunction with the proposed SLHWG project in order to determine what might be the best plans for ultimate development of the watershed. Using a computer program, the annual yield from various water development schemes will be determined.

Input to the computer program will include information on projects such as direct flow diversion rates for irrigation or industrial projects; reservoir details such as storage and outlet works capacities; reservoir operating criteria; and physical locations for the facilities within the watershed. Output will be a monthly accounting of reservoir storage; streamflows at selected points, and amount of water diverted at each diversion point based on the priority of appropriation and the available streamflow.

The various combinations of development alternatives to be analyzed will be selected by all parties involved in settlement of claims to the river. This will include the Montana DNRC, BIA, Crow Tribe, Wyoming WWCD and State Engineer, and the SLHWG. Additional input from the U.S. Forest Service, U.S. Fish and Wildlife and Wyoming Game and Fish Department will be necessary as it relates to instream flows and federal reserved rights within Wyoming.
It is intended for the Managing Engineer to take the active lead in conducting the watershed modeling effort and coordinating with all interested parties. This activity primarily covers the labor and computer costs to analyze the various development schemes and for agency coordination. Results of this study will be used to define the watershed development alternatives which would be feasible from a hydrological standpoint.

II(a) G DETERMINATION OF USFS RESERVED RIGHTS

This work is necessary to determine water quantities, if any, which must be reserved for forest service use. These determinations will serve as input to the watershed model. The result of these reserved rights will be reflected in watershed operation studies. This activity is scheduled for two levels of examination as shown on the CPM schematic. Preliminary determinations will be made early in the watershed modeling process. Final determinations, including documentation and placing to record, will occur as a latter part of the process.

II(a) H DETERMINATION OF INSTREAM FLOW REQUIREMENTS

This work is necessary to determine instream flow requirements and the resultant effect on project water yield. Instream flow requirements will be input to the watershed model and their effects will be included in the watershed operation studies. Two levels of examination are scheduled on the CPM schematic, similar to the determination of Forest Service reserve rights. The final stage of determination is planned to include formal documentation of instream flow requirements.

Assessment of instream flow requirements shall include projections of minimum pool levels for the reservoirs in the system. This information will be input to the watershed model and the effect of various minimum pool requirements will be included in the watershed operations studies. This work will be coordinated with the Wyoming Game and Fish Department.
II(a) I **CONDUCT PUBLIC HEARINGS**

This activity will follow the watershed modeling of all the conceptual development alternatives. A public review process will be conducted as a part of the process of defining the watershed development alternatives for further study. The public review process will be conducted in coordination with the Commission, to assure that the requirements of the enabling legislation are satisfied. The objective of this activity is to provide input to the process of selecting the most feasible development alternatives for the entire watershed. The alternatives selected will then be further evaluated in the next stage of interim designs and cost estimating.

The Managing Engineer will coordinate with the Commission and the general counsel to the Water Group to establish an appropriate schedule, advertisement program, and materials preparation to fully satisfy the legal requirements for the public hearing in a manner that is sensitive to the public's interest. The location and schedule of hearings, together with the preparation of materials, shall be coordinated by the Managing Engineer with the Commission, other Wyoming agencies, the State of Montana, the Crow Tribe, and federal agencies with the objective of making this activity as efficient and effective as possible for all parties.

II(a) J **DEFINE WATERSHED DEVELOPMENT ALTERNATIVES**

This activity follows directly behind the watershed modeling work and involves selecting the most feasible development alternatives for the entire watershed. The alternatives selected will then proceed into the next stage of interim designs and cost estimating. Additional input into this decision making step will be available from other preliminary work on the SLHWG project. This will include information on permitting requirements, preliminary engineering evaluations and field investigations, an environmental fatal flaw analysis, and interim information on instream flow requirements and U.S. Forest Service reserved rights claims.
This selection process will involve review and input by the Wyoming Water Development Commission and State Engineer, the Montana DNRC, the Bureau of Indian Affairs and the technical representative for the Crow Tribe. Assuming that a SLHWG project alternative remains as one of the watershed development alternatives, then the next activity will be to proceed with interim designs and cost estimates. Similar work will also be conducted by Montana or the Crow Tribe for any of their projects identified in the watershed development alternatives.

II(a) K  ONGOING PARTICIPATION WITH THE STATE, CROW, AND MONTANA

The process for developing an optimum watershed development plan has been in progress since May of 1981. This process was initiated by the Water Group and the Water Group shall continue acting through the Managing Engineer, to participate with the State of Wyoming, State of Montana, and Crow Tribe in determining an optimum watershed development plan for the entire drainage within Wyoming and the State of Montana. The authorizing legislation provides that all negotiations shall be conducted by representatives appointed pursuant to State law. Therefore, the Water Group's activity shall be limited to a supportive role and the actual objective, "Equitable Apportionment" shall be the responsibility of the State of Wyoming. The Water Group, through the Managing Engineer, shall establish and distribute technical base information developed under the project work plan to expedite the equitable apportionment procedure. The Water Group shall participate in the review, negotiation and settlement meetings as a part of this activity.
III(a) MANAGE STREAM GAGING AND SNOW COURSE WORK

III(a) A SPECIAL USE PERMIT APPLICATIONS

This work includes the preparation and submittal of special use permit applications to the U.S. Forest Service for the installation of stream gaging stations and snow course sites. The work includes preparation of the information to complete the application forms, together with drawings of the completed installation and narrative description of the installation procedure. Due to the difficult access of some of the proposed sites, the Forest Service has indicated that they will require extensive detail regarding the methods for installation, to describe the equipment used, and the space that will be disturbed in the process. Also required will be details describing how the disturbed area will be treated to mitigate the adverse effects of access and installation of the sites.

III(a) B COORDINATION OF WORK WITH USGS, STATE OF MONTANA, CROW, AND SCS

During the conduct of the stream gaging and record keeping of the gaging operations, the Managing Engineer will coordinate with the USGS, State, Montana, Crow and Soil Conservation Service to ascertain that this technical information is accurately and timely provided to these parties for their use in the ongoing project evaluation. Another objective of this management activity is to ascertain that the field methods, equipment types, and record keeping are consistent with the requirements of all parties. Subject to the confidential information conditions of the master contract, the Managing Engineer will be responsible for providing access to this information to all interested parties.
III(a) C REVIEW OF FIELD AND ANALYTIC WORK TO ASSURE QUALITY CONTROL

It shall be the responsibility of the Managing Engineer to provide the highest reasonable level of assurance that the stream gaging, snow course and groundwater monitoring data are accurate and consistent with the State of the Art. This responsibility is specifically underscored to emphasize the importance of this data in the equitable apportionment process, design of the ultimate system, and future operation of the system. Fulfillment of this objective may incorporate reviews of the field and analytic work by third parties with recognized expertise.
IV(a) MANAGE SUBCONTRACT FOR ENGINEERING

IV(a) A, B, C  PROCUR PROPOSALS AND DEVELOP SUBCONTRACT
DIRECT WORK UNDER CONTRACT
ADMINISTER PAYMENT PROCESS AND CERTIFY COMPLETION OF WORK

This activity of the managing engineer includes procuring proposals, developing a subcontract, directing the work, administering payment and certifying completion of work for an engineering contract(s) to complete all of the work listed under Section Three ENGINEERING, of the Scope of Work. The engineering to be performed by the subcontractor is defined in Section Three. The managing engineer shall direct all work under the subcontract to maintain quality, budget and schedule control.

Subcontracts for engineering work shall be submitted to the administrator of the WWDC for review and approval, together with copies of the request for proposals and proposals received pursuant to said subcontracts.

IV(a) D  MINOR SUBCONTRACTS FOR SURVEYING AND MAPPING

Work of the managing engineer shall include procurement of subcontracts for minor work such as surveying and mapping in support of the engineering, geotechnical, environmental and permitting work requirements. This work is further defined in Section Three, ENGINEERING in the subsections on photo control, mapping and surveying.
V(a) MANAGE SUBCONTRACT FOR GEOTECHNICAL WORK

V(a) A, C, D
PROCUR PROPOSAL(S) AND DEVELOP SUBCONTRACT
DIRECT WORK UNDER CONTRACT
ADMINISTER PAYMENT PROCESS AND CERTIFY COMPLETION OF WORK

The managing engineer shall procure proposals, develop subcontracts, direct work under contracts, administer payment and certify completion of work for the geotechnical activity described in Section Four, GEOTECHNICAL, of the Scope of Work. The managing engineer shall also complete all work necessary to obtain Special Use Permits from the U.S. Forest Service for the geotechnical exploration program, and shall monitor activity of the geotechnical subcontractor to assure conditions of the special use permit are complied with.

V(a) B
U.S. FOREST SERVICE SPECIAL USE PERMIT TO CONDUCT
GEOTECHNICAL INVESTIGATION AND FIELD SURVEYING

Before any geotechnical work can commence on any U.S. Forest Service lands, a special use permit must be obtained. This is also true for any field surveying connected with the photo control work. It is extremely critical that this permit be obtained before mid June of 1982 so geotechnical work can commence no later than July, 1982. Any lengthy delay in approval of the permit could delay the first season's geotechnical work at least one year.

This activity covers the cost to prepare and submit the application, and attend necessary meetings or public hearings. Initial discussions with the U.S. Forest Service indicate that extremely detailed information will be necessary at least for the geotechnical part of the permit. This will include detailed descriptions of the exploration activity, such as location and size of exploration holes; type of equipment and number of people to be used; size of pads needed for equipment and how they will be prepared; location of staging areas and camp facilities; time expected in the field at each site; reclamation of holes and pits; and supervision of field work.
Details of the permit requirements for the photo control work have not been determined yet, however, it is not expected to be as critical as the geotechnical portion.

Costs can be expected to vary due to the unknown amount of time needed to attend hearings or preparation of additional submittal information.

This activity will be under the responsibility of the Managing Engineer. He will pull together the technical assistance needed to prepare details for the application.

V(a) E MONITOR GROUNDWATER LEVELS IN OBSERVATION HOLES

As a part of the geotechnical exploration program, the subcontractor will install approximately seventy groundwater monitoring wells in the proposed reservoir basins. The managing engineer shall be responsible for monitoring groundwater levels in the observation holes on a regular basis. Records of the observed groundwater levels will be maintained and distributed to the geotechnical subcontractor and engineering subcontractor for their use in ongoing project design. This monitoring work is included in Section Two, STREAM GAGING, of the Scope of Work.
VI(a) MANAGE SUBCONTRACT FOR ENVIRONMENTAL WORK

VI(a) A FATAL FLAW ASSESSMENT

Immediately after execution of this agreement, the managing engineer shall procure a subcontractor to conduct a fatal flaw environmental assessment of all of the project alternatives presently identified by the water rights. If any significant fatal flaw possibility is indicated, the managing engineer shall report same to the administrator of WWDC together with a report on the implications to the CPM and scope of work as contained herein, together with any recommendations regarding adjustments thereto.

VI(a) B, C, D, E, F DEVELOP BASELINE RESEARCH PROGRAM

PROCUR PROPOSALS AND DEVELOP SUBCONTRACTS

DIRECT WORK UNDER CONTRACT

ADMINISTER PAYMENT PROCESS

COORDINATE AND CERTIFY COMPLETION OF WORK

The managing engineer shall develop a coordinated baseline research program to meet the requirements of state, Forest Service, Fish and Wildlife Service, State of Montana and Crow Tribe. A research program will be defined, documented and submitted to the aforementioned agencies for their approval prior to proceeding with procurement of proposals to conduct the environmental research. After the baseline program has been defined and approved, the Managing Engineer shall procure proposals and develop a subcontract(s) to conduct the baseline research. Managing engineer shall direct work under the subcontract to maintain quality, budget and schedule control. Also included in this activity is coordination of the various research activity and the periodic certification of completion of work.
VI (a) & CONDUCT EIS

After completion of the baseline research program and completion of the engineering work to adequately define project alternatives, the Managing Engineer shall procure proposals to prepare an EIS. This activity shall be coordinated with the U.S. Forest Service as the lead federal agency and with the State of Wyoming to assure that the contractor and scope of work for the EIS meets the requirement of these agencies. The present project schedule indicates that work on the EIS may be initiated but not completed within the two year budget period. On the condition that proposals for the EIS are received within the budgeted funds available for this work, the Water Group may commit this work even though it may not be completed within the two year work plan.
Numerous permits will be required to proceed through construction of the project. To insure that adequate data will be collected for eventual preparation of the applications, it is important that all applicable agencies be contacted regarding the various permit processes. Those that are critical to the project can be identified at an early date. It is also valuable to know the permit requirements associated with the different development alternatives when assessing their feasibility.

This activity covers the work necessary to contact all agencies that will be involved in the permitting process to review their requirements. Various agencies within the State of Wyoming could include the State Engineer's Office, the State Board of Control, the Department of Environmental Quality (Air, Water and Land Quality Divisions), Bureau of Land Management, the Corps of Engineers, the Environmental Protection Agency, the U.S. Forest Service, and the Federal Energy Regulatory Commission. Additional permitting may be required in Montana through the Department of Natural Resources and Conservation, or others.

Due to the complexity of the overall permitting process, the Managing Engineer shall utilize the Critical Path Method (CPM) to manage activities under the permitting process. This technique is required to assure the efficient completion of the various permitting steps at the proper time. Development of the CPM is in itself a significant work item. The Managing Engineer will require significant input from legal and environmental disciplines to complete this work.
VII(a) C  PRELIMINARY PERMIT ANALYSIS, PREPARATION AND APPLICATION

This activity covers the cost of maintaining contact with various government agencies concerning permit requirements to insure that work being performed will result in the correct information needed for permit applications. Any permits needed for continuation of the work would be prepared under this activity. Monitoring of field work being performed will also be part of this activity to insure compliance with existing permits.

The Managing Engineer will be responsible for this and other permit activities. He will put together the necessary technical assistance as needed for actual preparation of the permit applications. Only those permits which are needed to expedite the project will be prepared.

VII(a) D  PERMIT APPLICATION AND PROCEEDINGS

This activity comprises the final formulation of permit applications, submittal of the applications and the participation in the following proceedings. The objective of this part of the work program is to have complete, defensible applications submitted to the appropriate agencies in accordance with the schedule called for by the CPM. The Managing Engineer will have the overall responsibility for this activity.
The Water Group will retain general counsel for the Water Project. The general counsel will work under the direction of the Managing Engineer. As an overview, general counsel will participate in all phases of the general management of the Water Project. That is because each phase of the general management activity includes legal considerations. The objective is to continue to develop the technical, financial and political components of the Water Project in close coordination with the legal component, so that they incorporate the legal constraints, as the Water Project is developed, and so that neither time nor money is wasted on objectives that cannot be implemented legally.

As required and authorized by the Managing Engineer, this activity will include participation in planning and coordination; participation in marketing and financing research and discussions; in public communication as required by the Water Development Act and other laws and regulations; subcontract negotiation, general agency communication; participation in interstate, state/federal and state/Indian matters; participation in development of the optimum watershed plan, and management of the legal activities to be conducted for development of the Water Project.

I(b) A. PUBLIC COMMUNICATION

Public involvement in state water development is mandated under the Water Development Act specifically and is also an integral part of each permitting procedure. There are two objectives of legal involvement in public communication. First, public communication will be reviewed and coordinated to insure that it meets the legal requirements of the overall regulatory scheme. Second, certain public communication must be carefully tailored to conform to the legal requirements of the particular proceeding involved. Counsel for the Water Group will assist in review and preparation for public communication. In addition, the public communication may be conducted by legal counsel for the Water Group.
depending upon the particular meeting, hearing, or proceeding. General counsel will attend most public meetings or hearings and be available for advice and consultation as required by the Managing Engineer.

I(b) B MARKET RESEARCH AND USER CONTACT, INDUSTRIAL AND MUNICIPAL

and

I(b) C PERMANENT FINANCING, RESEARCH AND PARTICIPATION WITH THE STATE

The objective of these activities is to involve legal counsel in activity related to marketing and financing research, to obtain legal input wherever the marketing and financing work is influenced by legal factors. This includes the various types of agreements for delivery of water, the range of financing and payment provisions, security provisions, common carrier and public utility implications and other facets.

General counsel will participate in evaluating with the Attorney General, and the Water Development Commission, the various alternatives for state participation in the Water Project with the Water Group pursuant to the authorizing legislation. Legal participation in this instance will be included in the research and formative activity by the Water Group. To the extent that marketing, financing or joint venture agreements are actually developed, co-counsel may be retained with the approval of the Managing Engineer to specialize in the relevant legal areas.

I(b) D COORDINATION WITH THE WyOMING WATER DEVELOPMENT COMMISSION, PROGRESS REPORTING, AND BUDGET REVIEW

The master contract between the Wyoming Water Development Commission and the Water Group sets forth numerous obligations required of the Water Group. The master contract also requires extensive cooperation and
communication with the Water Development Commission, monthly reports, semiannual reports and semiannual revision of the CPM, Scope of Work and Budget. General counsel will be responsible for interpreting the contract provisions and assuring that the activities of the Water Group are in compliance with the terms of the master contract. Participation by counsel for the Water Group will also be required with regard to the legal aspects of revisions of the CPM and the Scope of Work and other communications with the Commission. With approval of the Managing Engineer, these legal activities may be conducted using co-counsel, coordinated and directed the General Counsel, particularly as relates to presentation of these matters to the Water Development Commission and Administrator in Cheyenne.

I(b) E COORDINATION WITH "WILD AND SCENIC RIVER" STUDY PROCESS

Portions of the Little Big Horn River have been designated for study under the Federal Wild and Scenic Rivers Act. Since these designations override state law, it is critically important to participate in this study process, as it is conducted, to insure that it takes into consideration the Water Project, and does not foreclose all reasonable development options. The legal component will be analysis of the Wild and Scenic Rivers Act and regulations, monitoring of the study process, participation in the public hearing process and contact with the lead and related agencies.

I(b) F GENERAL AGENCY CONTACT, LOCAL, STATE AND FEDERAL

General management of the Water Project includes coordination and communication with a myriad of agencies, local, state and federal. Since there are agency legal constraints at various levels of development of a water project of this magnitude, there is a significant legal component associated with this contact and communication. The objective is to insure that agency contact and communication is coordinated with the legal

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constraints at every level and among levels. Accordingly, counsel for the Water Group will, to some extent, participate in this contact and advise and consult regarding agency coordination and contact.

I(b) G  **RIGHT-OF-WAY ACQUISITION AND LANDOWNER CONTACT**

The interim geotechnical investigation and interim design engineering will necessitate access over and across private lands. This access will primarily be preliminary access for surveying, geotechnical exploration and on-the-ground information for design engineering. The legal component may involve negotiation of access, together with preparation of preliminary access and right-of-way agreements for the private sector.
II(b) WATERSHED MODEL & OPTIMUM WATERSHED DEVELOPMENT PLAN
(A, B, C, D - None)

II(b) E COORDINATE INFORMATION ON CROW TRIBE AND STATE OF MONTANA DEVELOPMENT ALTERNATIVES

The initial phases of the evaluation of development alternatives is heavily dependent upon exchange and coordination of information among the parties. Because of the sensitivity of technical, financial and hydrological information with regard to water development, there will be a legal component in developing arrangements and agreements for exchange of information. This legal activity will principally be conducted by general counsel through participation in the various meetings and conferences regarding exchange of information, and development of the information and exchange agreements.

II(b) G DETERMINATION OF U.S. FOREST SERVICE RESERVED RIGHTS

Under the "Federal Reserved Rights" Doctrine, the U.S. Forest Service has claimed reserved water rights for the purposes of the National Forest. Since the Little Big Horn River arises in the National Forest, these reserved rights claims must be determined as part of the optimum watershed development plan.

First, there will be a preliminary determination of U.S.F.S. Reserved Rights Requirements for interim planning and design, followed by a final determination of U.S.F.S. Reserved Rights Requirements. The eventual requirements will; 1) be determined by a combination of state and federal agencies; 2) be included as a part of the optimum watershed development plan; and 3) be intimately involved with the permitting process. There will be a significant legal component in determination and documentation of the requirements.
II(b) H DETERMINATION OF IN-STREAM FLOW REQUIREMENTS

The optimum watershed development plan will likely provide instream flows for maintenance of aquatic habitat. Accordingly, there must be a preliminary determination of instream flow requirements for interim planning and design, followed by a final determination of instream flow requirements. The eventual instream flow requirements will: 1) be determined by a combination of state and federal agencies; 2) be included as a part of the optimum watershed development plan; and 3) be intimately involved with the permitting process. There will be a significant legal component in determination of instream flow requirements as they relate to state and federal law and documentation of the requirement.

II(b) I PREPARE MATERIALS FOR PUBLIC HEARINGS AND CONDUCT PUBLIC HEARINGS

As set forth in the general management activities description, counsel for the Water Group will participate in planning and preparation for public hearings and in presentation at public hearings.

II(b) J DEFINE DEVELOPMENT ALTERNATIVES FOR FINAL EVALUATION BY THE ENGINEER

The conceptualizing of alternatives for optimum watershed development will include consideration of the whole range of planning constraints for water development, including interstate, state, federal, and state-indian settlement constraints. Accordingly, there will be a legal component in defining legal constraints to these alternatives. This legal activity will be provided by general counsel at the direction of the Managing Engineer through participation in the meetings and conferences with the Managing Engineer and the other parties pertaining to development alternatives.
The key planning objective in the authorizing legislation is to accomplish an equitable apportionment of the Little Big Horn River, which will result in a set of legal documents which may range from private contracts to interstate and state/federal/Indian compacts. The equitable apportionment, and all the legal documentation, will involve five (5) key parties, those being the State of Wyoming, the State of Montana, the Crow Tribe, the Federal Government and the Water Group. Both states have at least four (4) or five (5) related agencies, together with the United States Congress. The process of coordination of developing technical information, exchanging technical information, identifying the development alternatives, resolving the optimum watershed development plan together with development of the overall legal structure for the entire equitable apportionment of the Little Big Horn River, will require continuous, legal participation at every level with all the parties, their agents and representatives. General counsel will participate in the planning, coordination and conduct of this legal activity for the Water Group, which may include extensive use of co-counsel in areas of specialty, with the approval of the Managing Engineer.
III(b) A SPECIAL USE PERMIT APPLICATION

Application to the U.S. Forest Service for installation of temporary and permanent stream gaging and snow course instruments will require Special Use Permits from the U.S. Forest Service. The legal component may include meetings with Forest Service personnel to determine the Forest Service requirements, preparation and/or review of applications and participation in disputes with regard to U.S. Forest Service Special Use Permit proceedings.

III(b) B COORDINATION OF WORK WITH U.S.G.S., STATE, STATE OF WYOMING, STATE OF MONTANA, CROW TRIBE AND SOIL CONSERVATION SERVICE

The stream gaging and snow course measurements will be the critical base data for ultimate determination of the optimum watershed development plan, so it must be carefully coordinated with all parties to the settlement of the Little Big Horn River. Accordingly, much of the process and procedure for these measurement activities will be negotiated with the parties and set forth in writing. The legal component will be to participate in establishment of the procedures as among the parties and to participate in drafting and implementing agreements to the procedures.
IV(b) A  PROCURE PROPOSALS AND DEVELOP SUBCONTRACT FOR ENGINEERING-
INTERIM DESIGN

and

V(b) A  PROCURE PROPOSALS AND DEVELOP SUBCONTRACT FOR
GEOTECHNICAL WORK

The master contract between the Water Development Commission and
the Water Group requires that subcontracts be developed under certain
guidelines. General counsel for the Water Group may participate in
the negotiation of subcontracts and will be principally responsible
for final legal review of the major subcontracts to assure compliance
with the master contract.

V(b) B  SPECIAL USE PERMIT APPLICATION

Geotechnical exploration on the National Forest will require a
Special Use Permit from the U.S. Forest Service. The legal component
will be to participate in meetings with the Forest Service to determine
application requirements, preparation and/or review of the U.S. Forest
Service Special Use Permit applications, and participation in resolu-
tion of difficulties in the application process, at the request and
direction of the Managing Engineer.
VI(b) A DEVELOP COORDINATED BASELINE RESEARCH PROGRAM WITH THE STATE OF WYOMING, STATE OF MONTANA, U.S. FOREST SERVICE, U.S. FISH & WILDLIFE SERVICE, CROW TRIBE AND LOCAL AGENCIES

The environmental baseline research program will be the informational base for much of the state and federal permitting process. Accordingly, first it must be designed, before it is implemented, to insure that the research product matches the legal requirements of the various environmental permitting procedures, state, federal and local, in which it will be use. Second, it must be developed and conducted in such a way that the research and the research product are adequate for public meetings and hearings, contested case proceedings and court proceedings. Legal review of the environmental program is critical and extensive and involves determination of the legal requirements of the various environmental permitting procedures, review of the research personnel qualifications and review of the research procedures and monitoring of the research activity to insure that it meets the permitting procedure requirements and that the research and research product are adequate for the various proceedings in which it will be used. The legal activity will be conducted by general counsel for the Water Group with the use of co-counsel as approved by the Managing Engineer.

VII(b) A, B, C, D PERMITTING PROGRAM

Development of the Water Project is dependent upon timely acquisition of the myriad of requisite state and federal permits and approvals. By way of example, these permits would include, but not be limited to, such key permits as all the water rights permits from the State Engineer, Department of Environmental Quality Mining Permits for Borrow Areas for Dam Construction, Department of Environmental Water Quality Permits, a Siting Permit if the project is developed specifically in conjunction with an industrial project, United States Forest Service Special Use Permits for Reservoir Sites, Diversion Sites, and Tunnels, U.S. Army Corps of Engineers' Dredge and Fill Permits for Diversion Points, and Federal Energy Regulatory Commission Permits for Hydropower Generation.
To coordinate this work, a CPM will be established, just for permitting, to insure that the application and permitting process for each permit is instituted and conducted so that the project is not delayed for want of a particular permit. This will involve a determination of the following:

1) What permits are required;
2) What the permit requirements are for each permit;
3) What research, information and data must be developed to meet the permit requirements for each permit;
4) Procedures and time frames for each permit.

These determinations will require a legal research, coupled with intensive communication and coordination with all the agencies involved. After the CPM is developed, the necessary support and research activities must be instituted and coordinated, followed by preparation of the various permit applications. After the applications are submitted, the various permitting procedures will be conducted, including agency contact and communication, public meetings and hearings, permit amendment, and the final contested case hearing processes. Legal participation in these activities will be coordinated and directed by general counsel for the Water Group and conducted by general counsel in cooperation with co-counsel as approved by the Managing Engineer.
CONTINUE PERIODIC STREAMGAGING
AT
MOUNTAIN RESERVOIR SITES

ACTIVITY DESCRIPTION

Until permanent streamflow recording stations are established, the best way to obtain information on the streamflow at each potential reservoir site is through periodic flow measurements. Information gathered by this work will be used to estimate the monthly streamflow at each reservoir site. This is basically the present method of monitoring and would continue until the permanent stations are installed. At that point, monitoring costs would be covered under the permanent monitoring program.

Costs for this activity include all necessary labor, transportation and equipment rental to obtain periodic streamflow measurements at each site. Depending on the weather and snow conditions, it may be necessary to use either snowmachines, helicopter, trailbikes or horses, in addition to some hiking to reach the gaging locations. It is expected that any one of the methods would result in the approximate same total cost.

For cost estimating purposes, this activity is expected to extend from April through June. It is estimated that two visits will be made to each site in April, four to each in May and four to each in June. The mode of transportation will be different to each site due to the restriction on use of motorized vehicles down Dry Fork from April 1 to June 15.

Additional work included is reduction of the streamflow measurement notes after each site visit.
ACTIVITY DESCRIPTION

This activity covers the cost of streamgaging equipment needed for three continuous recording stations for the project. Also included is the cost to design and supervise the construction of the portable shelters needed at each of the three locations. The cost to set up the stations in the field is included under another activity.

Two of these streamgage stations will be located in the mountains, at the site of the proposed high mountain reservoirs. One of these will be on Dry Fork below the confluence with Lick Creek, and the second will be on the headwaters of the Little Bighorn below the confluence with Dayton Gulch. Costs have also been estimated for a third station to be located on East Twin Creek at the Parkman Reservoir site.

Recording stations for the two mountain sites will be a system called a "bubble gage". This involves minimal disturbance to the streambank in that a conventional stilling well does not have to be excavated. Instead, this system records streamflow depth by measuring the back pressure inside a small tube when nitrogen is "bubbled" through the tube and out a small orifice place in the stream. The back pressure created is proportional to the depth of water over the orifice. Another advantage of this system is that the recording equipment can be located farther away from the stream to protect it from flooding or ice damage.

The recording station for the Parkman Reservoir site would most likely be a conventional stilling well system, since excavation would be easier in this area.

Portable shelters to house the recording equipment would be constructed in Sheridan and transported to the site later for installation.
The two for the mountain sites are expected to be approximately 4' x 6' x 8' high, which would be large enough for a person to completely enter the shelter to work on the equipment if needed. These would be constructed to allow transporting by a helicopter. The shelter for the Parkman Reservoir site can be smaller and may be constructed from a 36" or 48" CMP, installed vertically to make a one-piece stilling well and recorder shelter. This shelter would be transported with a truck.

Additional equipment will include 10 to 12 metal staff gages for installation at the recording stations, on tributaries, and at selected points along Dry Fork or Little Bighorn.
ESTABLISH STREAMGAGING STATIONS

ACTIVITY DESCRIPTION

This activity covers the cost to set-up the streamgaging stations at Dry Fork, Half Ounce and Parkman Reservoir sites. Transporting the shelter to Dry Fork will require use of a helicopter due to the inaccessibility of the site. The recorder and Manometer-Servo unit may be transported along with the shelter, or by pack horse. For cost estimating purposes, it was also assumed that a helicopter would be needed for placing the shelter at Half Ounce. This would possibly allow installing this station earlier in the year than waiting for roads to dry sufficiently for vehicular traffic. Transporting a shelter to the Parkman Reservoir site will be possible through use of a truck, with assistance from a backhoe or loader.

Preparation work at the two mountain sites will involve hand labor to level a site for the shelters; burying a small diameter plastic tube from the recorder unit to the stream channel; then setting and anchoring the shelters. The recording equipment will then need to be installed and checked for proper operation. Work at the Dry Fork site will be most difficult due to the site being 2 miles from the end of the 4wd access road. Access to the Half Ounce site by 4wd may be difficult before mid June due to muddy roads and may require using trailbikes or horses during this work.

Preparation work at the Parkman Reservoir site will involve excavating an area for the stilling well and inlet pipe. It is expected this work could be conducted with a backhoe, with some minor hand labor needed. After the stilling well is installed and the area backfilled, the recording equipment will then be installed and checked for proper operation.
U.S. FOREST SERVICE SPECIAL USE PERMIT
FOR
STREAMGAGING STATIONS

ACTIVITY DESCRIPTION

Before any permanent structures can be installed for streamflow monitoring, a special use permit must be obtained from the U.S. Forest Service. It is critical that this permit be obtained as early as possible to allow installation of the facilities early in the summer of 1982. A delay in the approval of this permit until winter could cause a loss of up to one year of record.

This activity covers the cost to prepare and submit the application, and attend necessary meetings or public hearings. Costs cannot be estimated with any real degree of accuracy due to the unknown amount of time needed to attend hearings or preparation of additional submittal information.
ACTIVITY DESCRIPTION

Included in this activity is the labor and equipment needed to operate the streamgaging stations for the first year after installation. Purpose is to obtain continuous record of streamflow at each reservoir site to help verify the water supply estimates. Results will also be used to help formulate the optimum watershed development plan and be used in various permit applications. Although the first year of monitoring is the most critical from the standpoint of supplying needed information, these stations would continue to be operated at least up through final project designs. Prior to construction, a new station would probably be located below the reservoir areas for future use in regulating stream flows.

Assuming that all three stations are installed in July, 1982, the most intensive monitoring effort would be conducted from July through October. This involves numerous site visits to check equipment operation; install miscellaneous staff gages; develop rating curves for the gaging sites; and to assess the recharge or discharge characteristics of the stream within the reservoir areas.

Travel to Dry Fork is restricted to horseback from April 1 to June 15. After that time, and until snows become too deep (approx. Nov. 1), access by trailbike or 4wd vehicle will be possible to within 2 miles of the station. From the first of November to April 1, access will only be possible by snowmachine or helicopter. Again, to only within 2 miles of the station. The 4 mile round trip from the end of trail to the station and back will have to be made by hiking, snowshoe or cross country skiing. During June 15 to November 1, it is expected the U.S. Forest Service will allow use of trailbikes to possibly within 1 mile of the station.
The restriction on motorized travel does not apply to the Half Ounce site. However, due to the high snowfall in this area, access from the first of November to almost June 1 will only be possible by snowmachine or helicopter. From the first of June to first of November, it is expected that trailbikes or 4wd can be used for access. Some short hiking may still be necessary due to limits on off-road travel. A helicopter could land right at the recording station during any time of the year.

Travel to the Parkman site will be possible by 4wd during most of the year. During part of the winter, access to the last mile may have to be by snowmachine, skis, or snowshoe.

Additional work covered by this activity is the periodic reduction of streamflow records from the recorder charts. Preferably this work should be conducted monthly for each station if access can be made on this schedule.
OPERATE STREAMGAGING STATIONS
FOR
SECOND YEAR

ACTIVITY DESCRIPTION

The same basic work will be conducted during the second year of monitoring as was described for the first year. During July there will be a two week intensive monitoring effort to obtain additional information on tributary flows and recharge/discharge characteristics of the streams within the reservoir areas. From mid-July through March the intensity of the site visits would be reduced to once per month. This should be increased to two per month during the April-June runoff period.

The results of the monitoring will be a continuous record of streamflow at each reservoir site. This second year of information will be used as needed for permit applications and final design of the various facilities.
ESTABLISH SNOW COURSE SITES

ACTIVITY DESCRIPTION

Information regarding snow depth and water content of the snowpack within a watershed is useful in predicting spring runoff. To obtain this information, many snow survey sites have been established throughout the Bighorn Mountains by the Soil Conservation Service. However, no sites have ever been established within the Little Bighorn drainage. To begin obtaining this data, at least three snow survey sites would be established within the drainage basin. Data generated from these sites would eventually be used in predicting water supplies and aid in the future operation of the water project. It is hoped that after a couple years, correlations with other snow survey sites will be possible to allow developing a longer period of record for the basin.

This activity covers the cost of materials and labor to establish up to 3 snow survey sites within the Little Bighorn basin. Each site would include a snow shield with a combination rain/snow gage. Monitoring would be conducted manually in conjunction with the streamgaging stations.

Visits would be made to each site 4 times per year, these being during the first of February, March, April and May. This sampling corresponds to that currently being conducted by the SCS at other snow survey sites.

The snow survey sites will be established and monitored in accordance with SCS standards or guidelines. Any opportunity for a cooperative effort between the Sheridan Little Horn Water Group and the SCS will be pursued.

The cost of equipment to be installed at each site, and for the monitoring, is included in another activity.
SELECT SNOW COURSE SITES

ACTIVITY DESCRIPTION

Prior to filing for a special use permit with the U.S. Forest Service, and ordering needed equipment, the exact number and location of the snow course sites should be identified. This selection should involve experienced SCS personnel in a site visit so that locations of the snow course sites will be representative of as large an area as possible. At this time it is expected that at least 3 sites will be needed to accurately represent the snowpack above the reservoir sites.

Cost for this activity include labor and miscellaneous expenses necessary to meet with SCS personnel to review area topographic maps, discuss the project and locate the snow course sites in the field.
ACTIVITY DESCRIPTION

Before any permanent structures can be installed for snow course sites, a special use permit must be obtained from the U.S. Forest Service. It is critical that this permit be obtained as early as possible to allow installation of the facilities early in the summer of 1982. A delay in the approval of this permit until winter could cause a loss of up to one year of record.

This activity covers the cost to prepare and submit the application, and attend necessary meetings or public hearings. Costs cannot be estimated with any real degree of accuracy due to the unknown amount of time needed to attend hearings or prepare additional submittal information.
ORDER SNOW COURSE EQUIPMENT

ACTIVITY DESCRIPTION

This activity covers the cost of equipment needed for three snow course sites for the project. Costs to set up the equipment is included in another activity.

Equipment costs have been estimated based on a system where snow measurements would be obtained manually. Equipment such as automatic snow depth indicators, water equivalent sensors and radio communications equipment for transmission of data has not been included. Basically, the sites would only include a precipitation gage, temperature gage and wind shield. Cost estimates are sufficient to allow installing a continuous recording precipitation gage at each site, if considered necessary. Recording of snow depth and water content will be done manually at each site visit using snow sampling tubes.
OPERATE SNOW COURSE SITES FOR FIRST YEAR

ACTIVITY DESCRIPTION

This activity covers the cost of monitoring three snow course sites within the drainage basin during the first year. The beginning of this time period is taken at the point when the equipment is installed and operational.

Monitoring work will include taking snow depth and water content measurements at each site 4 times per year, plus periodic visits throughout the year to obtain rainfall measurements. The snow measurements will be taken on the first of February, March, April and May. This schedule may not coincide with the visits made to the stream gaging stations, so separate trips were planned.

During the winter, transportation to the site will have to be by snowmobile or helicopter. Site visits at other times of the year to obtain precipitation records may require trailbikes, depending on ability to locate the sites near well-traveled roads. For estimating purposes, a total of 7 visits per year to each site has been contemplated (5 requiring use of snowmachines).
OPERATE SNOW COURSE SITES
FOR
SECOND YEAR

ACTIVITY DESCRIPTION

Continued operation of the snow course sites beyond the first year will be essential if the program is to provide useful information. This is important in that a number of years of record may be necessary in developing good correlations with other sites. Monitoring through and after construction will also be valuable for the year to year operation of the water project.

This activity covers the cost of monitoring three snow course sites under the same program as outlined for the first year. Cost for long term operation beyond the second year have not been estimated. At some point, it is expected that an arrangement could be made with the SCS to pick up the monitoring of these sites.
ACTIVITY DESCRIPTION

It is expected that various applications will require information on the water quality at each potential reservoir site. Normally, a minimum of one year of data is required to establish the baseline conditions. At this time it is not known what sampling frequency will be required by the DEQ or EPA. For estimating purposes, we have assumed quarterly samples would be taken on all tributaries flowing directly into the reservoir area, plus one at the proposed dam site. This should be sufficient to assess the seasonal variation in water quality.

The water quality sampling is expected to begin when the stream-gaging stations are established in July of 1982. It is desirable to commence this work as early as possible to avoid delaying any of the permit processes.

To minimize the cost of this program, the quarterly sampling will be made to coincide with the streamflow monitoring. Travel costs to and from the site have therefore not been included. Only those costs associated with taking the samples, obtaining a chemical analysis, reporting of results and equipment costs have been estimated.
GROUNDWATER LEVEL MONITORING
FOR
FIRST YEAR

ACTIVITY DESCRIPTION

To monitor the groundwater level within the proposed reservoir and tunnel areas (SLHWG project only), slotted pipe will be installed for the full depth in all exploratory holes. Recording the depth to water provides valuable information needed to predict dewatering costs during construction, as well as the direction of groundwater flow for making seepage loss estimates. Available from this monitoring will be information on the seasonal, and in some cases, a monthly fluctuation of the water table.

Ideally, the groundwater level would be monitored on monthly intervals in all exploratory holes. However, due to access problems during the winter months at the mountain sites, only a quarterly schedule may be possible at those sites. Only at the Parkman Reservoir site would a monthly schedule be possible. At this time, the schedule for the mountain reservoir sites would be monitoring during March, June, July, August, September, October and December. The schedule for the tunnel site is expected to only be on a quarterly schedule due to its access problems.

Costs included in this activity only cover the labor, transportation and miscellaneous equipment costs to conduct the monitoring and reduce the measurements to water elevation data. Costs for the slotted plastic pipe and any vandalism protection devise has been included under the geotechnical investigation activity. Ground elevation data and horizontal coordinates will be obtained under the drill hole surveying activity.

Travel conditions to the various sites will be the same as outlined for operation of the streamgaging stations. It is not anticipated that

Exhibit B
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both streamgaging and groundwater level monitoring can be combined in the same trip since streamgaging itself consumes a complete day at each gaging site.

As groundwater level data becomes available it will be provided to the Design Engineer for use in the interim designs.
GROUNDWATER LEVEL MONITORING
FOR
SECOND YEAR

ACTIVITY DESCRIPTION

The same basic work will be conducted during the second year of monitoring as was outlined for the first year. Evaluation of the first year's data, may allow eliminating some of the exploratory holes from second year monitoring. However, for cost estimating purposes, this was not assumed.

Data from the second year monitoring will be used in various permit applications and in final design of the facilities.
ACTIVITY DESCRIPTION

This activity will be under the responsibility of the Design Engineer selected for the project. Basically, this covers the initial review and evaluation required by the Design Engineer to become familiar with the project so input can be provided to the Geotechnical Engineer regarding physical features of the outlets, spillways, and hydropower facilities. Additional input will also be made to the watershed modeling effort being conducted by others. Engineering evaluations will be limited to only that relating to the Sheridan Little Horn Water Group (SLHWG) project and those identified alternatives.

Initial work will involve review of the overall project scheme and alternative development plans identified by the SLHWG. This would be followed by a thorough review and evaluation of all data generated from previous studies. This includes maps, permit applications and water right permits; general pipeline corridors; hydrologic data; preliminary dam and reservoir designs; and preliminary geological information.

The second stage of this activity involves developing an inflow design flood for each reservoir based on using the Probable Maximum Precipitation or storm transposition methods. This would be based on available published information and would not include a field investigation of the basic soil and vegetation cover. During a later activity, the flood hydrology would be refined by including this field investigation. Using flood routing techniques, preliminary spillway and flood storage capacity would be determined. For planning purposes during the engineering field investigation, the preliminary spillway configuration would be selected.

The third stage of this activity involves establishing the general operating criteria for each of the SLHWG alternatives. Primarily, this
is information needed for the watershed modeling activity. This includes estimating the maximum and minimum outlet works capacities; minimum reservoir pool elevations based on sediment storage requirements; estimating maximum channel capacity below reservoirs; preliminary diversion rates between reservoirs; and identifying the reservoir storage levels with the operating criteria for each zone.

With the above information, some preliminary sizing of outlets, pumps, pipelines, hydropower structures, and penstocks will be made. This sizing will only be at the level necessary to assist the design engineer and geotechnical engineer during the initial field investigation. A fourth stage of this activity would be to review the existing and proposed monitoring program to determine need for additional data acquisition.
ACTIVITY DESCRIPTION

This activity will be performed by the Design Engineer in conjunction with the Geotechnical Engineer. The work activity relates to the site evaluations for Half Ounce, Dry Fork, and Parkman Dams. The site evaluations will not only address the embankments but will also include siting criteria related to structures, tunnels, pipelines, canals and hydroelectric generation sites.

The first stage of this activity involves site reconnaissance and inspections. These trips will be made for the purpose of evaluating site surficial geology, gathering geotechnical and visual information, and identifying potential construction material sources. Particular attention will be paid to the feasibility of various preliminary site layouts. Information obtained during site inspections will be documented and the embankment axis and preliminary structure locations will be addressed in field reconnaissance reports.

The second stage of activity will address the development of preliminary drilling and sampling programs. Information obtained during the site inspections must be utilized to insure that the drilling and sampling program will address the preliminary site layouts established in the field reconnaissance reports.

The third stage will involve utilization of information obtained during site inspections to establish mapping requirements for the dams, reservoirs, tunnels and pipelines.

With the above information formulated, work can proceed on the geotechnical drilling and sampling programs, photo control, and aerial mapping.
FINAL FLOOD STORAGE
SPILLWAY AND OUTLET EVALUATION

ACTIVITY DESCRIPTION

This activity will be performed by the Design Engineer. Purpose is to finalize the preliminary flood flows and required downstream releases, which will be used to develop final spillway, outlet works, and flood storage design criteria for the Half Ounce, Dry Fork and Parkman Reservoirs.

The flood established for designing the spillways is the main element in dam safety, structural costs and total project costs. It is therefore critical that some balance be reached between providing greater flood storage capacity within the reservoirs or more spillway capacity to handle the inflow design flood. The first step in this process is to refine the probable maximum flood hydrograph by obtaining more detailed information on soil and vegetation cover, permeabilities and infiltration characteristics within the watershed. Additional work should also be performed in evaluating alternative flood design criteria by using statistical methods to define flood frequencies and probabilities. This provides the engineer with valuable information about the watershed hydrologic characteristics, as well as giving him information needed to evaluate the affect on downstream flooding, should a lesser frequency design flood be used in the spillway designs.

Information available from the above flood evaluation work should be used in discussions with the Corps of Engineers and Wyoming State Engineer in establishing final flood design criteria.

The final stage will involve determining the actual required spillway and outlet works capacities utilizing the design floods. The final selection will be based on flood surcharge storage, operation studies and an economic analysis to determine the minimum cost for different dam embankment heights and spillway sizes. Preliminary structure configurations will be established based on available geotechnical data and other design constraints. This information will be utilized to develop the interim project designs.
ACTIVITY DESCRIPTION

The Design Engineer will perform the final hydropower evaluation for the facilities at Dry Fork and Half Ounce Reservoirs.

The initial work will include the formulation of system constraints and refining power output-flow duration relationships. Operations on a daily basis will be considered for average hydrologic conditions and for periods of prolonged low flows to determine the compatibility of power generation and water supply requirements. Preliminary operating schemes that would provide relatively constant and dependable power capacities will be developed.

The second stage will involve the investigation of various equipment such as reaction turbines, impulse turbines, and power recovery turbines to evaluate which configuration best serves the preliminary operating schemes.

The third stage will involve the modeling of the most feasible configurations. Penstock, surge tank, and plant layout criteria will be evaluated. Consideration will be given to extending the penstocks at various distances below the dam sites in order to increase power production.

The fourth stage will be the development of cost estimates. The estimates will consider construction costs, power use, potential markets, internal consumption, and operation and maintenance costs. These cost estimates will determine if the installation of hydropower facilities at the various sites is economically feasible.
INTERIM PROJECT DESIGNS
AND UPDATE DEVELOPMENT COSTS FOR
DRY FORK RESERVOIR, HALF OUNCE RESERVOIR
PIPES, HYDRO FACILITIES

ACTIVITY DESCRIPTION

This activity will be performed by the Design Engineer selected for the project. The activity involves interim design for Dry Fork and Half Ounce Reservoirs, including pipelines, hydroelectric facilities, access roads and powerline corridors. Before this work can proceed, it will be required that the Geotechnical Engineer provide a draft report of the geotechnical investigation. The interim design will be performed in the detail required to insure construction quantities can be estimated within 15% of the actual final bid quantities.

Initial work under this activity will involve the development of final design criteria through information available from hydrological studies and geotechnical investigations.

The next stage involves establishing final structure locations, layouts and configurations. Diversion capacities and reservoir water evaluations will also be finalized.

The third stage involves the detailed design required to insure the appropriate accuracy is available for quantity and cost estimates. The design will size structural members; establish piping configurations; and develop specific electric and mechanical operations for outlet works, spillways, pump systems and hydroelectric generators. Communication, control and instrumentation systems will be designed which will allow operation and monitoring of the various components of the water supply project from centralized locations on and off the site.

The final stage will involve developing sufficient plans and specifications from which to develop detailed quantities and cost estimates.

Exhibit B
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ACTIVITY DESCRIPTION

This activity will be performed by the Design Engineer selected for the project. The activity involves interim design for Parkman Reservoir. Before this work can proceed, it will be required that the Geotechnical Engineer provide a draft report of the geotechnical investigation. The interim design will be performed in the detail required to insure construction quantities can be estimated within 15% of the actual final bid quantities.

Initial work under this activity will involve the development of final design criteria through information available from hydrological studies and geotechnical investigations.

The next stage involves the comparison of preliminary structure layouts and configurations with the requirements of the final design criteria. Alterations that are necessary to meet the design criteria will be made. General structural configurations and final structure locations will be established. Diversion capacities and reservoir water elevations will be finalized.

The third stage involves the detailed design required to insure the appropriate accuracy is available for quantity and cost estimates. The design will size structural members; establish piping configurations; and develop specific electric and mechanical operations for outlet works, spillways and pump systems. Communication, control and instrumentation systems will be designed which will allow operation and monitoring of the various components of the water supply project from centralized locations on and off the site.

The final stage will involve developing sufficient plans and specifications from which to develop detailed quantities and cost estimates.
INTERIM PROJECT DESIGNS
AND UPDATE DEVELOPMENT COSTS
FOR TUNNEL DIVERSION

ACTIVITY DESCRIPTION

This activity will be performed by the Design Engineer selected for the project. The activity involves interim design for the tunnel. Before this work can proceed, it will be required that the Geotechnical Engineer provide a draft report of the geotechnical investigation. The interim design will be performed in the detail required to insure construction quantities can be estimated within 15% of the actual final bid quantities.

Initial work under this activity will involve the development of final design criteria through information available from hydrological studies and geotechnical investigations.

The second stage involves the detailed design required to insure the appropriate accuracy is available for quantity and cost estimates. The design will size the tunnels and related canals. The structural configuration of the tunnel will be established.

The final stage will involve developing sufficient plans and specifications from which to develop detailed quantities and cost estimates.
PHOTO CONTROL
AND
AERIAL MAPPING

ACTIVITY DESCRIPTION

To prepare interim designs and accurate cost estimates for the SLHWG project, it will be necessary to have higher quality topographic mapping than available with standard U.S.G.S. Quadrangle maps. These need to be at a scale and contour interval which will allow accurate quantity calculations to be made for excavations and embankments and to accurately estimate borrow area quantities. Presently, improved aerial topographic mapping is only available for the Parkman Reservoir area. Similar mapping needs to be performed for the other two mountain reservoir sites (Dry Fork and Half Ounce) and the Tunnel Diversion.

Map scales and contour intervals will be determined during the Preliminary System Evaluation and Engineering Field Investigations conducted by the Design Engineer. These must be determined prior to conducting any field photo control work since the density of photo control points required by the aerial mapping firm varies for different scale and contour intervals. Once the mapping requirements have been established, the aerial mapping firm will specify the number and approximate location for the photo control points. It is preferable to locate and panel these points prior to making the aerial photography flight. However, if time does not allow this prior field work to be conducted, the necessary ground control can be established using photo identification.

Previous contact with an aerial mapping firm indicates that the aerial photography needs to be taken in the Dry Fork area during exactly at the right time of day, sometime between mid June and mid July. This is needed in order to provide optimum light conditions in the extremely deep and heavily wooded canyon. High level mapping accuracy in the Dry Fork Canyon will be difficult due to the dense tree cover and steep
terrain. Any aerial mapping in this area will be supplemented with actual ground surveyed profiles within the embankment and spillway areas to improve on the accuracy. It is not expected that the Half Ounce Reservoir site will pose any problems for accuracy. However, similar conditions as the Dry Fork area may exist at the Tunnel Diversion site.

The present schedule calls for the aerial mapping to be finished at the same time as the geotechnical investigations on Dry Fork and Half Ounce. This is needed so that interim designs can be started soon after. This schedule dictates that photo control points be paneled starting in June with surveying commencing soon afterward. The aerial flight should be made no later than mid July. Horizontal and vertical control on the photo control points should be available by no later than mid or late August, 1982, to allow mapping to be completed by mid October, 1982.

No aerial mapping is being considered at this time for the pipeline corridors. It is expected that sufficient design information can be obtained with existing U.S.G.S. Quad maps, combined with reconnaissance level field investigations. These would be mapped prior to final design, once the final pipeline location has been identified.
DRILL HOLE SURVEYING
DRY FORK AND HALF OUNCE RESERVOIR SITES

ACTIVITY DESCRIPTION

To accurately evaluate the geological conditions, it is necessary to have horizontal coordinates and vertical elevations on all exploration holes and backhoe pits. The horizontal coordinates allow plotting the locations on the topographic mapping and the vertical elevations allow developing accurate geologic cross sections. The elevation data is also necessary in evaluating the groundwater table within the exploration area.

The above information is needed approximately at the same time as completion of the geotechnical investigations to avoid delaying progress on the interim designs. This may therefore require surveying to be conducted in pieces throughout the geotechnical investigations rather than performing all surveying at one time. This is also critical due to the weather, since geotechnical work at the mountain sites will most likely not be completed until early or mid October. At this time of the year, early snows could create problems in completing the surveying.

It will be required that a short piece of rebar be set in the ground along side each exploratory hole containing slotted pipe. This provides a convenient means to measure ground elevations which can be rechecked at later dates without the problem of interpreting mean ground level around the observation hole. This is preferable to elevations shot on top of the pipe, since this data can easily be lost should the pipe get broken off.
ACTIVITY DESCRIPTION

To accurately evaluate the geological conditions, it is necessary to have horizontal coordinates and vertical elevations on all exploration holes and backhoe pits. The horizontal coordinates allow plotting the locations on the topographic mapping and the vertical elevations allow developing accurate geologic cross sections. The elevation data is also necessary in evaluating the groundwater table within the exploration area.

The above information is needed approximately at the same time as completion of the geotechnical investigations to avoid delaying progress on the interim designs. This may therefore require surveying be conducted in pieces throughout the geotechnical investigations rather than performing all surveying at one time.

It will be required that a short piece of rebar be set in the ground along side each exploratory hole containing slotted pipe. This provides a convenient means to measure ground elevations which can be rechecked at later dates without the problem of interpreting mean ground level around the observation hole. This is preferable to elevations shot on top of the pipe, since this data can easily be lost should the pipe get broken off.
ACTIVITY DESCRIPTION

To accurately evaluate the geological conditions, it is necessary to have horizontal coordinates and vertical elevations on all exploration holes and backhoe pits. The horizontal coordinates allow plotting the locations on the topographic mapping and the vertical elevations allow developing accurate geologic cross sections. The elevation data is also necessary in evaluating the groundwater table within the exploration area.

The above information is needed approximately at the same time as completion of the geotechnical investigations to avoid delaying progress on the interim designs. This may therefore require surveying be conducted in pieces throughout the geotechnical investigations rather than performing all surveying at one time. This is also critical due to the weather, since geotechnical work at the mountain site may not be completed until early or mid October. At this time of year, early snows could create problems in completing the surveying.

It will be required that a short piece of rebar be set in the ground along side each exploratory hole containing slotted pipe. This provides a convenient means to measure ground elevations which can be rechecked at later dates without the problem of interpreting mean ground level around the observation hole. This is preferable to elevations shot on top of the pipe, since this data can easily be lost should the pipe get broken off.
Geologic maps will be prepared for the major components of the project: (1) the Half Ounce Dam and Reservoir site, (2) the Dry Fork Dam and Reservoir site, (3) the Parkman Dam and Reservoir site, and (4) the Trans-Mountain Diversion Tunnel alignment. This activity, as well as the Dam Axis Selection work, must be completed prior to commencing any geotechnical drilling activities. Therefore, these must be completed as early as possible to allow the geotechnical investigations to begin at the Half Ounce and Dry Fork sites by July 1, 1982.

Preliminary mapping will be based on existing regional maps and aerial photograph interpretations. The preliminary maps will be updated based on field observations made during site surveys after the snow melts.

The geologic maps will show the general distribution of surficial deposits, rock outcrops, and the geologic structures at the sites. The mapping will be designed to show geologic conditions which will impact project feasibility and which will have a bearing on early design concepts.
DAM AXIS SELECTION
DRY FORK, HALF OUNCE, AND PARKMAN RESERVOIR SITES

ACTIVITY DESCRIPTION

A preliminary dam centerline axis has been selected for the Dry Fork Dam and Reservoir site, the Half Ounce Dam and Reservoir site, and the Parkman Dam and Reservoir site. After reviewing the available engineering and geologic information, site inspections will be made by the Geotechnical Consultant, the Design Engineer and the Managing Engineer to analyze the dam axes in the field. The analyses of the sites will include the topographic and the surficial geologic conditions. It is expected that the present dam axes will be selected; however, the most suitable axis for each of the dams will be located in the field for the exploration work.

This activity will be conducted primarily at the same time as the Surficial Geology Mapping and should be completed prior to commencing any drilling activities.
ACTIVITY DESCRIPTION

A feasibility level investigation for the Dry Fork Dam and Reservoir site located in the narrow, steep-walled canyon of Dry Fork about 4.6 miles upstream from its confluence with the Little Big Horn River will be conducted to determine the suitability of the site for the construction of the proposed dam and reservoir. The investigation will be conducted to collect information required to prepare interim designs for an embankment dam, a concrete gravity dam, a concrete buttress dam, and a concrete arch dam.

The topographic and geologic conditions in the vicinity of the site will be determined using the surface details present, the subsurface information collected from the exploratory borings, and pertinent literature. The geologic investigation will consist of general geologic mapping of the dam site and reservoir area, a survey of rock discontinuity in core and out-crops, and seismic refraction surveys.

The subsurface configuration of the bedrock and the physical characteristics of the bedrock such as deformation modulus, strength and permeability will be determined. The amount of excavation necessary for a stable foundation for a concrete dam and to provide a positive cutoff for an embankment dam will be determined. The foundation conditions for the spillway and outlet works will be determined.

To accomplish this, a field investigation of the dam foundation, spillway foundation, and reservoir area will be conducted using exploratory borings and backhoe test pits. Thirty-one exploratory borings and 10 test pits are planned. Drilling equipment will be sited by helicopter. A laboratory testing program to determine the standard engineering index properties, strength characteristics, consolidation characteristics, and
permeability characteristics of the foundation materials and potential embankment materials will be conducted on representative samples of the soils and bedrock obtained in the field exploration program.

The results of the field and laboratory investigations will be analyzed to prepare recommendations for the design of the dam, spillway, and outlet works for the site which will fulfill the intended purpose of the dam. Recommendations will be made for the treatment of the dam foundation and the reservoir area to limit loss of water by seepage; selection of the section for the dam which makes best use of the materials available and fits the foundation conditions; and the instrumentation required to monitor performance. The information will be submitted in a draft report in sufficient detail to allow a cost estimate for the construction of the structures to be prepared.
A feasibility level investigation for the Half Ounce Dam and Reservoir site located in a broad, open valley near the upper reaches of the Little Big Horn River will be conducted to determine the suitability of the site for the construction of the proposed dam and reservoir. An embankment dam, either earth or rock filled, appears to be the most applicable dam for the site. The investigation will be conducted to collect the information required to prepare interim designs for an embankment dam, a concrete gravity dam, and a concrete buttress dam.

The topographic and geologic conditions in the vicinity of the site will be determined using the surface details present, the subsurface information collected from the exploratory borings, and pertinent literature. The geologic investigation will consist of general geologic mapping, a survey of rock discontinuity in core and outcrops, and seismic refraction surveys.

The subsurface configuration of the bedrock and the physical characteristics of the bedrock such as deformation modulus, strength and permeability will be determined. The amount of excavation necessary for a stable foundation for a concrete dam and to provide a positive cutoff for an embankment dam will be determined. The foundation conditions for the spillway and outlet works will be determined.

To accomplish this, a field investigation of the dam foundation, spillway foundation, and reservoir area will be conducted using exploratory borings and backhoe test pits. Thirty-two exploratory borings and 12 test pits are planned. A laboratory testing program to determine the standard engineering index properties, strength characteristics, consolidation characteristics, and permeability characteristics of the foundation
materials and potential embankment materials will be conducted on representative samples of the soils and bedrock obtained in the field exploration program.

The results of the field and laboratory investigations will be analyzed to prepare recommendations for the design of the dam, spillway, and outlet works for the site which will fulfill the intended purpose of the dam. Recommendations will be made for the treatment of the dam foundation and reservoir to limit loss of water by seepage; selection of the section for the dam which makes best use of materials available; and the instrumentation required to monitor performance. The information will be submitted in a draft report in sufficient detail to allow a cost estimate for the construction of the structures to be prepared.
ACTIVITY DESCRIPTION

A feasibility level investigation for the Parkman Dam and Reservoir site located north of the confluence of East Twin Creek and Dry Twin Creek will be conducted to determine the suitability of the site for the construction of the proposed dam and reservoir. The investigation will be conducted to collect the information required to prepare interim designs for an embankment dam, a concrete gravity dam, and a concrete buttress dam.

The topographic and geologic conditions of the site will be determined using the surface details present, the subsurface information collected from the exploratory borings, and pertinent literature. The geologic investigation will consist of general geologic mapping of the dam site and reservoir area, a survey of rock discontinuity in core and out-crops, and seismic refraction surveys.

The subsurface configuration and physical characteristics such as consolidation, strength and permeability of the underlying bedrock will be determined. The amount of excavation necessary for a positive cutoff for an embankment dam and for a stable foundation for a concrete dam will be determined. The foundation conditions for the spillway and outlet works will be determined.

To accomplish this, a field investigation of the dam foundation, spillway foundation, and reservoir area will be conducted using exploratory borings and backhoe test pits. Twenty-seven exploratory borings and 6 test pits are planned. A laboratory testing program to determine the standard engineering index properties, strength characteristics, consolidation characteristics, and permeability characteristics of the foundation materials and potential embankment materials will be conducted on repre-
sentative samples of the soils and bedrock obtained in the field exploration program.

The results of the field and laboratory investigations will be analyzed to prepare recommendations for the design of the dam, spillway, and outlet works for the site which will fulfill the intended purpose of the dam. Recommendations will be made for treatment of the dam foundation and reservoir to limit the loss of water by seepage; selection of a section for the dam which makes the best use of the materials and fits the foundation; and the instrumentation required to monitor performance. The information will be submitted in a draft report in sufficient detail to allow a cost estimate for the construction of the structures to be prepared.
FEASIBILITY GEOTECHNICAL INVESTIGATION AND DRAFT REPORT
DIVERSION TUNNEL

ACTIVITY DESCRIPTION

A feasibility level investigation for the Diversion Tunnel alternative through the Dry Fork Ridge, with an upstream portal near the Little Big Horn River and a downstream portal near Elk Horn Creek, will be conducted to determine the suitability of the site for the construction of the proposed tunnel.

The topographic and geologic conditions in the vicinity of the site will be determined using the surface details present, the subsurface information collected from the exploratory hole borings, and pertinent literature. The geologic investigation will consist of general geologic mapping of the diversion tunnel area, a survey of rock discontinuity in core and out-crops, and seismic refraction surveys.

The subsurface configuration of the bedrock and the physical characteristics of the bedrock such as deformation modulus, strength and permeability will be determined. The type and amount of rock to be excavated will be determined along with the ground conditions including groundwater inflows to be expected and types of support needed in tunneling.

To accomplish this, a field investigation of the tunnel alignment will be conducted. This field investigation will be conducted with exploratory borings along the tunnel alignment taken to a sufficient depth and using a sufficient number of investigate the conditions present. For estimating purposes, a total of four exploratory borings were planned. Drilling equipment will be sited by helicopter. A laboratory testing program to determine the engineering index properties, strength and deformation characteristics of the materials to be tunneled will be conducted on representative samples of the soils and bedrock obtained in the field exploration program.
The results of field and laboratory investigations will be analyzed to prepare recommendations for the design and construction of a tunnel which will fulfill the intended purpose. The ground conditions, including groundwater inflows to be expected during tunneling will be discussed. The need and design information for temporary and permanent supports will be presented. The need of lining the tunnel excavation will be discussed. The information will be submitted in a draft report in sufficient detail to allow a cost estimate for construction of the tunnel to be prepared.
FINAL FEASIBILITY GEOTECHNICAL REPORTS
DRY FORK AND HALF OUNCE RESERVOIR SITES

ACTIVITY DESCRIPTION

The draft feasibility geotechnical reports for the Dry Fork Dam and Reservoir site and the Half Ounce Dam and Reservoir site will be reviewed by the Design Engineer, the State of Wyoming, and the Managing Engineer. Comments will be received by the geotechnical consultant through the Managing Engineer. The geotechnical consultant will take those comments into consideration and finalize the feasibility geotechnical reports.

This final geotechnical report should be provided to the Managing Engineer before he commences with the final settlement activities with the Crow and Montana.
ACTIVITY DESCRIPTION

The draft geotechnical reports for the Parkman Dam and Reservoir site and the Diversion Tunnel site will be reviewed by the Design Engineer, the State of Wyoming, and the Managing Engineer. Comments will be received by the geotechnical consultant through the Managing Engineer. The geotechnical consultant will take those comments into consideration and finalize the feasibility geotechnical reports.

This final geotechnical report should be provided to the Managing Engineer before he commences with the final settlement activities with the Crow and Montana.
The environmental baseline research program will be the informational base for much of the state and federal permitting process. Accordingly, it must be designed before it is implemented, to insure that the research product matches the legal requirements of the various environmental permitting procedures, state, federal and local, in which it will be used. It must be developed in such a way that the Water Group and State will have high assurance that the research product are adequate for public meetings and hearings, contested case proceedings and court proceedings. Development of the environmental program is critical and involves determination of the legal requirements of the various environmental permitting procedures, determination of the required research personnel qualifications and determination of the research procedures and determination of a monitoring program for the research activity.

The Managing Engineer will contract with a firm(s) qualified in the entire spectrum of environmental expertise to develop the baseline program. This environmental contractor(s) will be required to coordinate his work with all the state and federal agencies, as well as the general counsel for the Water Group. The contractor(s) will be given the preliminary baseline reports and access to all existing information which have already been completed by the Water Group. This includes the preliminary environmental assessments of terrestrial, aquatic, and raptor wildlife in the project area.

The objective of this activity is to develop a well documented research program with acknowledgment of all the local,
state and federal agencies who will later be required to participate in the EIS process. This program will be used as the basis for a "Scope of Work" to procure proposals and contract work for the final environmental baseline study and report.

CONDUCT FATAL FLAW ASSESSMENT

ACTIVITY DESCRIPTION

Fatal flaw assessment work has been completed on most, but not all, of the project area. Existing work does not fully cover fatal flaw possibilities in the Half Ounce and Dry Fork reservoir basins. While the work completed to date does not indicate fatal flaw possibilities in this area, a more definite determination is justified before proceeding with geotechnical exploration.

The managing engineer shall procure a subcontractor to conduct a fatal flaw environmental assessment, including a report, for all of the project alternatives presently identified by the water rights. Existing work will be utilized to expedite the research and mining costs. If any significant fatal flaw possibility is indicated, the managing engineer shall report same to the administrator of WWDC together with a report on the implications to the CPM and scope of work as contained herein, together with any recommendations regarding adjustments thereto.

FINAL ENVIRONMENTAL BASELINE STUDY AND REPORT

ACTIVITY DESCRIPTION

This work includes the research program and preparation of a final baseline report on the project alternatives. This work will be conducted by subcontractors to the Water Group, in accordance with the scope of work determined by the pre-
ceeding "Develop Environmental Baseline Program" activity. The activity will include all of the biologic, atmospheric, land use, demographic, archeologic, historical, and socio-economic research required for the final report and preparation of an EIS.

The hydrologic research, (i.e. water quality, ground water levels, etc) requirements will be taken care of under the Hydrologic operations activity of the Managing Engineer. This research will be given to the subcontractor for incorporation of the complete final environmental baseline report.

The objective of this activity is a final environmental baseline report, which will be used to formulate the EIS for the finally determined project-

PREPARE EIS

ACTIVITY DESCRIPTION

After completion of the baseline research program and completion of the engineering work to adequately define project alternatives; then in conjunction with the final settlement process, the Water Group shall procure proposals to prepare an EIS. This activity shall be coordinated with the U.S. Forest Service as the lead federal agency and with the State of Wyoming to assure that the contractor and scope of work for the EIS meets the requirement of these agencies.

The present project schedule indicates that work on the EIS may be initiated but not completed within the two year budget period. On the condition that proposals for the EIS are received within the budgeted funds available for this work, the Water Group may commit this work even though it may not be completed within the two year work plan.
ESTABLISH PERMIT REQUIREMENTS WITH STATE AND FEDERAL AGENCIES

ACTIVITY DESCRIPTION

Development of the Water Project is dependent upon timely acquisition of a number of requisite state and federal permits. These permits would include, but not be limited to, such key permits as all the water rights permits from the State Engineer, Department of Environmental Quality Mining Permits for Borrow Areas for Dam Construction, Department of Environmental Water Quality Permits, a Siting Permit if the project is developed specifically in conjunction with an industrial project, United States Forest Service Special Use Permits for Reservoir Sites, Diversion Sites, and Tunnels, U.S. Army Corps of Engineers' Dredge and Fill Permits for Diversion Points, and Federal Energy Regulatory Commission Permits for Hydropower Generation. To insure that adequate data will be collected for eventual preparation of the permit applications, it is important that all applicable agencies be contacted regarding the various permit processes. Those that are critical to the project can be identified at an early date. It is also valuable to know the permit requirements associated with the different development alternatives when assessing their feasibility.

This activity covers the work necessary to contact all agencies that will be involved in the permitting process to review their requirements. Various agencies within the State of Wyoming will include the State Engineer's Office, the State Board of Control, the Department of Environmental Quality (Air, Water and Land Quality Divisions), Bureau of Land Management and the U.S. Forest Service. Federal agencies not located in Wyoming include the Corps of Engineers and the Federal Energy Regulatory Commission. Additional permitting may be required in Montana through the Department of Natural Resources and Conservation, or others.
Based upon the agency contact and applicable law, rules and regulations, a CPM will be established. The CPM for permitting will insure that the application and permitting process for each permit is instituted and conducted so that the project is not delayed for want of a particular permit. This will involve a determination of the following:

1) What permits are required;
2) What the permit requirements are for each permit;
3) What research, information and data must be developed to meet the permit requirements for each permit;
4) Procedures and time frames for each permit.

The objective of this work is a CPM or similar management program, including a report and schematic. This will be used as a management aid in the ongoing planning and directing of all work on the project. This work will be accomplished by the combined effort of the Managing Engineer, general counsel, and subcontractor(s).
ACTIVITY DESCRIPTION

This activity covers the cost of maintaining contact with various government agencies concerning permit requirements to insure that work being performed will result in the correct information needed for permit applications. Any permits needed for continuation of the work would be prepared under this activity. Monitoring of field work being performed will also be part of this activity to insure compliance with existing permits.

The Managing Engineer will be responsible for this and other permit activities. He will put together the necessary technical assistance as needed for actual preparation of the permit applications. Only those permits which are needed to expedite the project will be prepared.
PERMIT APPLICATIONS
AND PROCEEDINGS

ACTIVITY DESCRIPTION

This activity comprises the final formulation of permit applications, submittal of the applications and the participation in the following proceedings. The objective of this part of the work program is to have complete, defensible applications submitted to the appropriate agencies in accordance with the schedule called for by the CPM.

After the applications are submitted, the various permitting procedures will be conducted, including agency contact and communication, public meetings and hearings, permit amendment, and the final contested case hearing processes. Participation in these activities will be coordinated and directed by the Managing Engineer for the Water Group with cooperation of general counsel and other subcontractors.
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The first quarter above begins May 1, 1982, and the tenth quarter ends October 31, 1984, as shown on the CEM - Exhibit A
Exhibit "D"

FORM OF CERTIFICATION

CERTIFICATION

I, ____________________________, Managing Engineer of the Sheridan-Little Horn Water Group, to the best of my knowledge and belief, upon reasonable inquiry, do hereby certify that the activities for which payment is requested by the Water Group from the Water Development Commission by the Request for Payment dated the ___ day of ____________, 198_,

Were actually performed;

Are Necessary Activities;

Were performed pursuant to reasonable, professional standards in a good and workmanlike manner;

Are in general sequence of the CPM;

Are within the Scope of Work; and

Are within the Budget of Necessary Activities;

I further certify that payments received by the Water Group pursuant to previous Requests for Payment have been disbursed as set forth in each Request for Payment subject to retainage and subject to amounts withheld by the Water Group pending resolution of the contract disputes with subcontractors.
Dated this ____ day of ______________, 1982.

SHERIDAN-LITTLE HORN WATER GROUP

by: _________________________
    Managing Engineer

STATE OF WYOMING   )
    ) ss.
COUNTY OF  )

The foregoing instrument was acknowledged before me this
____ day of ______________, 198__, by _________________________,
the _________________________, for the Sheridan-Little Horn
Water Group.

Witness my hand and official seal.

__________________________
Notary Public

My Commission Expires: ______________
Exhibit "D"

FORM OF CERTIFICATION
BY SUBCONTRACTOR

CERTIFICATION

I, ______________ (name), ______________ (title), of
the ______________ (subcontractor), to the best of my
knowledge and belief, upon reasonable inquiry, do hereby
certify that the activities for which payment is requested by
______________ (subcontractor) from the
Sheridan-Little Horn Water Group by the Request for Payment
dated the ____ day of ____________, 198__, pursuant to the
Agreement between the Water Development Commission and the
Sheridan-Little Horn Water Group;

Were actually performed;

Were within the scope of the subcontract;

Were performed pursuant to reasonable,
professional standards in a good and workmanlike
manner.

I further certify that previous payments received from the
Water Group have been disbursed to all subcontractors,
suppliers and materialmen in the amount to which they are
entitled as of the date of this certification.
Dated this ____ day of ________________, 198__.

STATE OF WYOMING  
COUNTY OF ________________

The following instrument was acknowledged before me this ____ day of ________________, 198__, by ________________, the ________________, for ________________

Witness my hand and official seal.

Notary Public

My Commission Expires: ________________
AGREEMENT BETWEEN
OWNER AND ENGINEER FOR
PROFESSIONAL SERVICE

THIS IS AN AGREEMENT made as of the day of May, 1982, between the SHERIDAN-LITTLE HORN WATER GROUP, a Wyoming partnership, (OWNER) and LARRY D. BACCARI & ASSOCIATES, (ENGINEER).

OWNER intends to implement the terms of a certain agreement between OWNER and the Wyoming Water Development Commission dated May 3, 1982, (hereinafter called, "Master Agreement"), regarding development of the Little Big Horn Water Project (hereinafter called, "The Project").

OWNER and ENGINEER, in consideration of their mutual covenants herein, agree in respect of the performance of professional engineering services by ENGINEER and the payment for those services by OWNER as set forth below.

ENGINEER shall provide professional engineering and management services for OWNER in all phases of the project to which this Agreement applies, serve as OWNER'S professional engineering representative for the Project and shall give professional engineering consultation and advice to OWNER during the performance of services hereunder.
I. **DEFINITIONS**

The following definitions are set forth for purposes of this Agreement:

1. Commission shall mean the Wyoming Water Development Commission.

2. Administrator shall mean the Administrator of the Wyoming Water Development Commission.

II. **SERVICES**

Engineer shall perform the following professional services:

1. Managing Engineer

These professional services shall be those Necessary Activities outlined on Exhibit "A" (I) to this Agreement, and more fully set forth and described in pages 5 through 24 of the Management & Modelling section of Exhibit "B" to the Master Agreement.

2. Hydrologic Investigations
These professional services shall be those Necessary Activities outlined on Exhibit "A" (2) to this Agreement and more fully set forth and described on pages 1 through 18 of the Hydrologic section of Exhibit "B" to the Master Agreement.

3. Administration of Controls

These professional services shall be administration of subcontracts as set forth in paragraph VI of the Master Agreement.

III. REVISON OF SERVICES

Engineer acknowledges and understands that the Necessary Activities described in Exhibit "B" to the Master Agreement to be performed by OWNER in accordance with the Master Agreement will be revised from time to time in accordance with paragraph V of the Master Agreement. It is agreed that professional services to be performed by ENGINEER pursuant to this Agreement shall be limited to and controlled by Exhibit "B" to the Master Agreement, as it may be revised from time to time in accordance with the Master Agreement.
IV. **PAYMENT**

OWNER shall pay ENGINEER for professional services actually rendered in accordance with paragraph II of this Agreement, in the amounts set forth in the rate schedule which is Exhibit "B" to this Agreement, together with Reimbursable Expenses actually incurred by ENGINEER as defined in paragraph V of this Agreement.

V. **REIMBURSABLE EXPENSES**

"Reimbursable Expenses" means the actual expenses incurred directly or indirectly in connection with the Project for: transportation and subsistence; furnishing and maintaining field office facilities; toll telephone calls and telegrams; reproduction of reports, drawings, specifications, and similar Project-related items, expenses incurred for computer time and other highly specialized equipment, equipment rental and purchase of gaging and monitoring equipment. Reimbursable Expenses shall not include general overhead, office rental and clerical charges.
VI. LIMITATION OF PAYMENTS

The total amount to be paid to ENGINEER for professional services as Managing Engineer, including administration of subcontracts, shall not exceed $1,400,400.00 (including the cost of legal services). If the Budget (Exhibit "C" to the Master Agreement) for Management is revised pursuant to paragraph V of this Master Agreement, the amount to be paid to ENGINEER for professional services as Managing Engineer may be revised accordingly.

The total amount to be paid ENGINEER for Hydrologic Investigations shall not exceed $477,000.00. If the Budget (exhibit "C" to the Master Agreement) for Hydrologic Investigations is revised pursuant to paragraph V of the Master Agreement, the amount to be paid to ENGINEER for Hydrologic Investigations may be revised accordingly.

VII. PAYMENT PROCEDURE

On or before the 1st day of each month, the ENGINEER shall submit to the OWNER a Request for Payment for professional services rendered and for expenses paid for the previous month. The Request for Payment shall contain the following:
1. The **account code** for each Necessary Activity;
2. The **amount billed** for each Necessary Activity;
3. The **entity** which conducted each Necessary Activity;
4. **Certification** by the Engineer in the form set forth as Exhibit "C";
5. An accounting summary of all expenditures for conduct of Necessary Activities;
6. Such other documentation as may be required by the State Auditor and the Commission.

Within ten (10) working days of receipt of the Request of Payment, the OWNER shall review the monthly Request for Payment for compliance with this Agreement, approve it for payment if it conforms to this Agreement, and forward the Request for Payment to the Administrator for payment within the normal course of business.

Upon receipt of payment pursuant to a Request for Payment, the OWNER shall promptly pay ENGINEER the amounts identified in the Request for Payment for Engineer, subject to retainage by the Administrator and subject to amounts withheld by the OWNER or the Administrator pending resolution of subcontract disputes with ENGINEER.
VIII. RETAINAGE

OWNER shall deduct and withhold five percent (5%) of the amount submitted for payment on each Request for Payment, which shall hereinafter be referred to as "retainage". The retainage shall be withheld until thirty (30) days after the next semiannual status report is submitted to the Administrator in accordance with paragraph XII of the Master Agreement. Thereupon, all the retainage in excess of Five Thousand Dollars ($5,000) accumulated prior to that semiannual status report shall be paid to ENGINEER, unless the Administrator or OWNER determines that funds have been paid to ENGINEER pursuant to Request for Payment for activities that were not within the CPM, the Scope of Work, the Budget, the terms of the certification or otherwise not in conformity with the terms of this Agreement. In that event, retainage in that amount may be withheld by the Administrator or OWNER pending a determination of the matter.

IX. FINAL COMPLETION AND PAYMENT

Neither final payment nor the remaining retainage shall become due until the ENGINEER submits to the OWNER: (a) an affidavit stating that all payrolls, bills for materials and
equipment and other indebtedness connected with the Necessary Activities for which the OWNER or its property might in any way be responsible, have been paid or otherwise satisfied except for those to be paid with the proceeds from the final payment and retainage, and except for amounts withheld by the OWNER, pending resolution of subcontract disputes; (b) if required by the OWNER, other reasonable data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens to the extent and in such form as may be reasonably designated by the State; and (c) consent of surety, if any, to final payment.

The making of final payment by OWNER shall constitute a waiver of all claims by OWNER, except those arising from: (a) unsettled liens; (b) faulty or defective work appearing after substantial completion; (c) failure of the work to comply with the requirements of this Agreement; or (d) terms of any special warranties required by this Agreement.

The acceptance of final payment by the ENGINEER shall constitute a waiver of all claims by the ENGINEER, except those previously made in writing and identified by the ENGINEER as unsettled at the time of the payment.
X. OWNER'S RESPONSIBILITIES

OWNER shall provide all criteria and full information as to OWNER's requirements for the Project and assist ENGINEER by placing at his disposal all available information pertinent to the Project including previous reports and any other data relative to the Project.

XI. AUDIT

The Commission, through the State Examiner or Auditor or independent auditors and upon the advice of the Attorney General, may conduct fiscal audits of the books and records of the ENGINEER related to this Agreement, as often as determined appropriate by the Commission, upon the advice of the State Auditor and the Attorney General, to insure proper expenditure of state funds in accordance with this Agreement. The books and records of ENGINEER pertaining to expenditure of funds disbursed to the ENGINEER pursuant to this Agreement shall be available for audit during regular business hours in the regular offices of the Water Group.
XII. FUNDING OBJECTIVES,

STATUS REPORTS

Semiannually, the ENGINEER shall submit a Status Report to the OWNER. Each Status Report shall report on the following matters, with reference to the Master Agreement:

1. The progress toward accomplishment of each Funding Objective as related to ENGINEER'S duties under this Agreement;

2. A description of the Necessary Activities conducted by the ENGINEER and a comparison to the CPM and the Scope of Work;

3. A complete fiscal report detailing the receipt of funds by the ENGINEER and a comparison to Budget;

4. A projection of the following six (6) month's work program for the ENGINEER as related to the CPM, the Scope of Work, and the Budget.

XIII. WORK PRODUCT

The work product of the Necessary Activities conducted pursuant to this Agreement, including all information, reports, plans and specifications, data or other material, but excluding all permits, licenses, approvals, authorizations, filings, water rights and preliminary documents, applications and similar materials relating thereto, shall be the property of the Commission.
All permits, licenses, approvals, authorization, filings, water rights and preliminary documents, applications and similar materials relating thereto resulting from Necessary Activities conducted pursuant to this Agreement shall be the property of OWNER.

XIV. INSURANCE

OWNER shall require ENGINEER to obtain liability insurance, project insurance or other insurance, as determined by the OWNER and the Administrator on the advice of the Attorney General, sufficient to reasonably protect the interests of the OWNER, the Commission and the State of Wyoming. All costs associated with obtaining such insurance incurred by ENGINEER, including insurance premiums, shall be reimbursed to ENGINEER by OWNER.

XV. INDEMNIFICATION

To the extent of the Insurance obtained in accordance with paragraph XIV, the ENGINEER shall indemnify and hold harmless OWNER and its agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorney fees, arising out of or resulting from the performance of services by ENGINEER and caused in whole or in part by any...
act or omission of ENGINEER, any of ENGINEER's subcontractors, anyone directly or indirectly employed by the ENGINEER or anyone for whose acts ENGINEER may be liable.

XVI. RIGHT OF INSPECTION

Representatives of OWNER shall have the right of visitation and inspection at all work and study sites of ENGINEER or its subcontractors or agents.

XVII. INDEPENDENT CONTRACTOR

ENGINEER is not, and shall not be considered or deemed to be, an employee of OWNER in performance under this Agreement and ENGINEER is acting only as an independent contractor.

XVIII. CONFIDENTIALITY

ENGINEER understands and acknowledges that to protect the best interest of the State and the proprietary interests of OWNER for commercial purposes, all matters relating to this Agreement shall be held in confidence.

XIX. ASSIGNMENT

The ENGINEER shall not assign this Agreement without the previous written consent of the OWNER and any assignment without such consent shall be void.
XX. TERM OF AGREEMENT

The term of this Agreement shall be for two (2) years from the effective date of this Agreement. Prior thereto, neither party may terminate this Agreement except pursuant to paragraphs XXI, XXII, and XXIII. However, the parties understand and recognize that accomplishment of the Funding Objectives is dependent upon many factors beyond the control of either party to this Agreement. Accordingly, this Agreement may be extended for one (1) year periods, upon the written Agreement of the parties.

XXI. TERMINATION BY OWNER

In the event the Master Agreement is terminated, this Agreement may be terminated by OWNER by giving written notice actually delivered to ENGINEER. Upon receipt of the written notice of termination, all services to be rendered by ENGINEER pursuant to this Agreement shall cease and ENGINEER and all of ENGINEER's subcontractors shall immediately begin winding down activities. In the event of termination in accordance with this paragraph, ENGINEER shall be paid for all services conducted to the termination date. In addition, OWNER shall pay to ENGINEER all reasonable costs of terminating and winding
down services contracted or subcontracts for pursuant to this Agreement. No allowance shall be made for anticipated overhead or profit on services not completed.

XXII. PARTIAL TERMINATION

The parties understand and acknowledge that the services to be rendered by ENGINEER under the Managing Engineer portion of paragraph II are to a great extent, in the nature of personal services by Larry D. Baccari. Accordingly, either party may unilaterally terminate the duties and obligations of this Agreement arising out of the Managing Engineer portion of paragraph II, by giving the other party thirty (30) days' written notice of such termination. In the event of partial termination in accordance with this paragraph, the ENGINEER shall be paid for services rendered through termination and both parties shall fully cooperate, expedite and assist in turning over the Managing Engineer's duties to a substitute managing engineer.

XXIII. DEFAULT

This Agreement may be terminated by either party because of the other's failure to substantially perform the Agreement according to its terms and conditions. The right to terminate
hereunder shall be exercised by giving thirty (30) days written notice specifying the default or defaults. The party in default may avoid such termination by correcting such default or defaults within the thirty (30) day period. If the party in default intends to attempt to cure the default, the party shall immediately notify the other and commence curative action. If the party in default does not intend to attempt to cure the default, that party shall immediately notify the other and all services to be rendered by ENGINEER pursuant to this Agreement shall cease and the ENGINEER and all ENGINEER's subcontractors shall immediately begin winding down activities. In the event of default by OWNER and cessation of services, ENGINEER shall be paid for all services conducted to the termination date. In addition, OWNER shall pay to ENGINEER all reasonable costs of terminating and winding down services contracted or subcontracted pursuant to the terms of this Agreement. No allowance shall be made for anticipated overhead or profit on services not completed.

XXIV. NOTICE

Any notice required or permitted to be given shall be sent by registered mail and addressed to the respective address of the other party as follows:
XXV. EXTENT OF AGREEMENT

This Agreement together with all exhibits represents the entire and integrated Agreement between the OWNER and the ENGINEER and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instruments signed by both parties.

XXVI. GOVERNING LAWS

This Agreement shall be governed by the laws of the State of Wyoming.

Entered into this ____ day of May, 1982.

SHERIDAN-LITTLE HORN WATER GROUP

by:

Executive Committee Member

-16-
LARRY D. BACCARI & ASSOCIATES

by: ____________________________

Approved:

Wyoming Water Development Commission

by: ____________________________

Chairman

Attest:

by: ____________________________

Secretary
EXHIBIT "A" (1)
MANAGING ENGINEER

SUMMARY OF MANAGEMENT AND ENGINEERING MANAGEMENT

ACTIVITY DESCRIPTIONS

PROJECT MANAGEMENT & WATERSHED MODELING

A. Public Communications

B. Market research and user contact, industrial and municipal

C. Permanent financing research and participation with State

D. Coordination with WWDC, progress reporting and budget review

E. Coordination with "Wild and Scenic River" study process

F. General agency contact at local, state and federal levels

G. Preliminary R/W Acquisition and Landowner contact

WATERSHED MODEL & OPTIMUM DEVELOPMENT PLAN

A. Research and map existing irrigation and Wyoming surface water rights

B. Develop stream flow records

C. Develop irrigation return flow data

D. Set up computer modeling

E. Obtain data on Crow and Montana projects

F. Watershed modeling & operation studies

G. Determination of USFS reserved rights
E. Determination of instream flow requirements
I. Conduct public hearings
J. Define watershed development alternatives
K. Ongoing participation with State, Crow, and Montana

MANAGE STREAMGAGING AND SNOW COURSE WORK
A. Special use permit applications
B. Coordination of work with USGS, State, Montana, Crow and SCS
C. Review of field and analytic work to assure quality control

MANAGE SUBCONTRACT FOR ENGINEERING
A. Procure proposals and develop subcontract
B. Direct work under contract
C. Administer payment process and certify completion of work
D. Minor subcontracts for surveying and mapping as desired

MANAGEMENT SUBCONTRACT FOR GEOTECHNICAL WORK
A. Procure proposal(s) and develop subcontract
B. U.S. Forest Service special use permit
C. Direct work under contract
D. Administer payment process and certify completion of work
E. Monitor groundwater levels in observation holes
MANAGE SUBCONTRACT FOR ENVIRONMENTAL WORK

A. Fatal flaw assessment
B. Develop baseline research program
C. Procure proposals and develop subcontract
D. Direct work under contract
E. Administer payment process
F. Coordinate and certify completion of work
G. Conduct EIS

MANAGE PERMITTING PROGRAM

A. Establish permit requirements with State & Federal agencies
B. Coordinate schedule for permit applications-CPM
C. Preliminary permit analysis preparation and application
D. Permit application and proceedings
EXHIBIT "A" (2)

SUMMARY OF HYDROLOGIC PROGRAM

A. STREAMGAGING

1. Continue periodic streamgaging at Mountain Reservoir Sites
2. Order streamgage recorders and construct portable shelters
3. Establish streamgaging stations
4. U.S. Forest Service Special Use Permit for streamgaging stations
5. Operate streamgaging stations for first year
6. Operate streamgaging stations for second year

B. SNOW COURSE SITES

1. Select snow course sites
2. U.S. Forest Service Special Use Permit for snow course sites
3. Order snow course equipment
4. Establish snow course sites
5. Operate snow course sites for first year
6. Operate snow course sites for second year

C. BASELINE WATER QUALITY INFORMATION

D. GROUNDWATER LEVEL MONITORING
EXHIBIT "B"

RATE SCHEDULE

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EXHIBIT "C"

FORM OF CERTIFICATION BY ENGINEER

CERTIFICATION

I, Larry D. Baccari, of Larry D. Baccari & Associates, to the best of my knowledge and belief, upon reasonable inquiry, do hereby certify that the activities for which payment is requested by Larry D. Baccari & Associates from the Sheridan-Little Horn Water Group by the Request for Payment dated the ___ day of ____________, 198__, pursuant to the Agreement between the Water Development Commission and the Sheridan-Little Horn Water Group;

Were actually performed;

Were within the scope of the subcontract;

Were performed pursuant to reasonable, professional standards in a good and workmanlike manner.

I further certify that previous payments received from the Water Group have been disbursed to all subcontractors, suppliers and materialmen in the amount to which they are entitled as of the date of this certification.
Dated this ____ day of ____________, 198__.

______________________________________________

STATE OF WYOMING )
) ss.
COUNTY OF )

The following instrument was acknowledged before me this
____ day of ____________, 198__, by ________________,
the __________________________, for __________________________.

Witness my hand and official seal.

______________________________________________

Notary Public

My Commission Expires: ______________________