LEVEL II
FEASIBILITY STUDY
DATA COMPILATION

WATER TRANSMISSION
AND
DISTRIBUTION SYSTEM

PREPARED FOR
INDIAN SPRINGS
IMPROVEMENT & SERVICE DISTRICT
NATRONA COUNTY, WYOMING

OCTOBER 1991

HIBSMAN & ASSOCIATES
CIVIL/MUNICIPAL ENGINEERS
135 N. ASH, SUITE 100
CASPER, WYOMING 82601
307-235-8184

PROJECT NO. 417-91
Michael Purcell, P.E.
Wyoming Water Development Commission
Herschler Building, 4W
Cheyenne, WY  82002

Dear Mr. Purcell:

On behalf of the Indian Springs Improvement and Service District, we are enclosing three copies of a Level II Feasibility Study Data Compilation for a Water Transmission and Distribution System. This study is in support of Indian Springs Level III application for a grant and loan.

Although this data compilation is not a complete WWDC Level II study, it should provide adequate data for approval of Level III funding. Please note that an hydraulic analysis is required by the City of Casper as part of the design of the improvements.

The improvements presented in the study are relatively simple improvements and should not require extensive analysis. Indian Springs hopes to complete a water system for their District by this time next year.

If you require additional information for approval of Level III funding this month, please feel free to contact us.

Very truly yours,

JOHN H. HIBSMAN, P.E. & L.S.
JHH/br

pc:  Indian Springs Improvement & Service District
     Casper Public Utilities
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JN: 417-91
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DISTRIBUTION SYSTEM

INDIAN SPRINGS
IMPROVEMENT AND SERVICE DISTRICT

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APPENDIX A - Draft Agreement for water service
APPENDIX B - Letter from Casper Public Utilities on Casper Improvements
APPENDIX C - City of Casper resolution
SECTION 1
INTRODUCTION AND SUMMARY

The Indian Springs Improvement and Service District, located in Natrona County, Wyoming, is a rural subdivision of approximately 188 acres. The subdivision is part of the Natrona County Regional Water System planning area. And, according to the Wyoming Water Development Commission's Level I Study, the area should be served by the City of Casper. The District developed a well in the late 1970's. That well produces only about 10 gallons per minute of non-potable water and it has been established, by the State Engineer, that pumping the well interferes with a private well in the Webb Creek area. In 1980, a distribution system, storage tank and treatment plant were designed to serve the District but, were never permitted or constructed. Residents of the Indian Springs Subdivision, individually, purchase and haul water for domestic use.

STATEMENT OF PURPOSE

The Indian Springs Improvement and Service District has participated in the Natrona County Regional Water System Study Committee since its inception. Their purpose is to insure that Indian Springs was included in the regional water system planning area in order to obtain municipal water service for the area. The purpose of this study is to provide limited data to the Water Development Commission Staff so that a Level III grant and loan can be approved for design and construction of a water transmission main to the serve the area.

BACKGROUND AND AUTHORIZATION

The costs of constructing a water transmission main from the City of Casper's system at Westland Park to Indian Springs was beyond
the District's capabilities. In 1991, the Webb Creek Ranches Service and Improvements District obtained emergency funds from the State to construct a water transmission main to serve their area. Webb Creek adjoins Indian Springs. In September of 1991, The Indian Springs Improvement and Service District made application to the Wyoming Water Development Commission (WWDC) for a Level III grant and loan to extend the City of Casper's transmission main from Webb Creek and to construct a water storage tank. In October of 1991, they also made application to the Wyoming Farm Loan Board (FLB) for a Mineral Royalty grant and Joint Powers Board loan to design and construct a water distribution system.

The WWDC Staff recommended to the Commission that Indian Springs application be reduced to Level II status until basic design data is provided. In October of 1991, the Indian Springs Improvement and Service District authorized Hibsman & Associates to prepare this study offering basic design data.

STUDY OBJECTIVES

This project is a very simple, straight forward design and construction problem. The project consists of two parts. The first part, the water transmission and distribution system, will be administered by the Indian Springs Improvement and Service District. The second part, the water storage tank, transmission main, and booster station modifications, will be administered by the City of Casper. The objectives of this study are as follows:

- Document existing and future water demands
- Identify a site and size for the storage tank
- Identify modifications to the booster station
- Establish a conceptual design for the distribution system
- Present cost estimates of the proposed improvements
FINDINGS AND CONCLUSIONS

The findings and conclusions of this data compilation are as follows:

- The residents of Indian Springs do not have a potable water system.
- Residents of Indian Springs spend in excess of $100 per month purchasing and hauling water.
- The residents of Indian Springs will pay $30 to $35 per lot per month for debt service for a potable water system.
- Extending Casper's water system to serve Indian Springs is identified in the Natrona County Regional Water System - Level I study as an objective of forming a regional system.
- A water storage tank is required to serve the area in order to provide adequate pressure and water for fire demands.
- A water transmission and distribution system to serve Indian Springs must meet the design standards of the Casper Public Utilities.
- The City of Casper has agreed to administer design and construction of the water storage tank and booster station modifications.
- Indian Springs has agreed to administer design and construction of a transmission main and distribution system.
- Water demands, for design purposes, are given in the City of Casper's design standards and the WWDC Level I study.
- The total project costs requested from the WWDC are $139,500 for Indian Springs and $988,500 for the City of Casper.
- The total project costs requested from the Farm Loan Board are $360,000 for Indian Springs.
- Assuming that funding is available as requested, the total project can be completed by November of 1992.
The existing City of Casper water transmission and distribution system extends from the Westland Park/Skyline Ranches area to the Webb Creek area. The Webb Creek distribution system serves the Webb Creek Ranches Service and Improvement District and is owned, operated and maintained by the City of Casper. This area abuts the Indian Springs Improvement and Service District area.

Casper's water system, in this area, is served by the booster station at Coates Road. The areas served by the booster station includes Skyline Ranches, Hidden Valley, Jade Hills, Westland Park and Webb Creek. Figure 1 shows the general locations of the areas and the booster station. In addition, a large area between Westland Park and Webb Creek, that is owned by the H. M. Pursel Trust, can be served by a 16 inch diameter transmission main that serves Webb Creek. The area is served by pumps rather than a storage tank. As a result, the system is being operated at reduced pressure. Fire demands for the area are addressed by a 750 gallon per minute pump in the booster station.

INDIAN SPRINGS WATER SYSTEM

Indian Springs does not have a water distribution system or a potable water supply. The District developed a well in the late 1970's, however, the water produced is non-potable. In addition, the well produces only about 10 gallons per minute.
WATER DEMANDS

Water demands placed on an Indian Springs Improvement and Service District distribution system will be very similar to the demands in Webb Creek and the other rural subdivisions in the area. From the Wyoming Water Development Commission's Natrona County Regional Water System Project ---Level I study dated May 1990, water demands for the area were estimated as follows:

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<th>Demand Type</th>
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<tr>
<td>Average Day Demand</td>
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<tr>
<td>Maximum Day Demand</td>
<td>409</td>
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<tr>
<td>Peak Hour Demand</td>
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</table>

The Indian Springs Subdivision consists of 70 lots. Presently, 35 lots are occupied. Based on the Regional Study and estimating 3 people per lot, the present maximum daily demand of Indian Springs will be 43,000 gallons per day and the ultimate demand will be 86,000 gallons per day.

Form the Casper Public Utilities Water Distribution Facilities Design Standards, an extension of the water distribution system must provide a minimum residual pressure of 20 psi under maximum day demand with a fire flow of 1,000 gpm at any one hydrant and a total fire flow of 1,500 gpm at any combination of two hydrants.
SECTION 3

PROPOSED IMPROVEMENTS

The water system improvements proposed to serve the Indian Springs Improvement and Service District area include a 12 inch diameter transmission main from Webb Creek Road and Highway 220 to Indian Springs, 8 inch diameter distribution mains and appurtenances in the roads of Indian Springs, and 8 inch diameter loop connections to the distribution system in Webb Creek at O'Keepa and Moki Roads. These improvements are shown on Figure 2 found in the pocket bound in the back of this study.

Based on the water demands given in Section 2, a 12 inch diameter transmission main should be more than adequate to serve the Indian Springs area. If the Indian Springs distribution system is looped with Webb Creek's distribution system, an hydraulic analysis may show that a smaller transmission main will be adequate. The water service agreement between the City of Casper and Indian Springs Improvements and Service District requires that an hydraulic analysis be performed as part of the design of these improvements. An hydraulic analysis is not presented as part of this data compilation. A copy a draft of that agreement is presented in Appendix A. Although an hydraulic analysis may show that 6 inch diameter distribution mains can serve the area, the Casper Public Utilities Standard Specifications require a minimum size of 8 inch diameter for distribution mains.

In addition to the Indian Springs Improvements, the City of Casper has proposed to make improvements to it's existing system serving the area. The improvements include a 1 million gallon storage tank that will serve pressure zone 2, a 16 inch diameter transmission main to the storage tank, and modifications to the booster station. The location of these improvements are shown on Figure 3 and, are described in more detail in a letter from the Casper Public Utilities presented in Appendix B.
SECTION 4

ESTIMATED IMPROVEMENTS COSTS

As shown in Section 3, this project is presented in two parts. They are the Indian Springs transmission and distribution system and the City of Casper storage tank and booster station. The costs have been estimated according to funding sources and project sponsor. The estimated costs of improvements are as follows:

WYOMING WATER DEVELOPMENT COMMISSION FUNDING

Transmission Main to Indian Springs

1. 12 inch Diameter Main (3,200 feet) $80,000
2. 12 inch Gate Valves (4ea) 4,800
3. Miscellaneous Fittings (4ea) 4,800
4. Gravel Restoration 400
5. Asphalt Restoration 9,000
6. Re-seed 3,000

Transmission Main Subtotal $102,000

Water Storage Tank *

1. Site Preparation $ 20,000
2. Foundation & Valve Vault 50,000
3. Standpipe 450,000
4. Land Acquisition 15,000

Storage Tank Subtotal $535,000

Transmission Main to Storage Tank *

1. 16 inch Diameter Main (1,800 feet) $117,000
2. 16 inch Valves (2ea) 5,000
3. Easement Acquisition (1,800 feet) 7,200

Transmission Main Subtotal $129,200

Booster Station Modifications *

1. Pump (750 gpm) $ 15,000
2. Control Valves (3ea) 9,000
3. Electrical Surge Controls 20,000
4. Instrumentation & Controls 10,000

Booster Station Subtotal $ 54,000

CONSTRUCTION COSTS SUBTOTAL $820,200
CONSTRUCTION ENGINEERING (15%) 82,000

TOTAL $902,200
The water service between Indian Springs and the City of Casper identifies Casper as being responsible for design and construction of the storage tank and the booster station modifications. For administrative purposes, the Wyoming Water Development Commission funding is presented in two parts as follows:

**INDIAN SPRINGS**

| Construction Cost | $102,000 |
| Construction Engineering (10%) | 10,200 |
| **TOTAL** | **$112,200** |
| Contingency (15%) | $16,830 |
| Design Engineering | 10,470 |
| **TOTAL PROJECT COST** | **$139,500** |

| TOTAL GRANT REQUESTED (67%) | $93,465 |
| TOTAL LOAN REQUESTED (33%) | $46,035 |

**CITY OF CASPER**

| Construction Cost | $718,200 |
| Construction Engineering (10%) | 71,820 |
| **TOTAL** | **$790,020** |
| Contingency (15%) | $118,503 |
| Design Engineering | 79,977 |
| **TOTAL PROJECT COSTS** | **$988,500** |

| TOTAL GRANT REQUESTED (67%) | $662,295 |
| TOTAL LOAN REQUESTED (33%) | $326,205 |
The balance of the improvements, the distribution system to serve Indian Springs, will be the responsibility of the Indian Springs Improvement and Service District. The District made application to the Wyoming Farm Loan Board in October of 1991, for a Mineral Royalty Grant and Joint Powers Board Loan to fund design and construction of the distribution system. The estimated costs of the distribution system are as follows:

**WYOMING FARM LOAN BOARD FUNDING**

**Water Distribution System**

1. 8 inch Diameter Main (9,000 feet) $153,000
2. 8 inch Gate Valves (12ea) 9,600
3. Miscellaneous Fittings (3ea) 1,500
4. 8 inch Tee (3ea) 1,500
5. Fire Hydrant Assemblies (16ea) 40,000
6. Water Service Lines (36ea) 16,200
7. Water Meter Pits (36ea) 18,000
8. Gravel Surface Restoration (27,000sq) 40,500
9. Re-seeding (2Ac) 2,000

Subtotal $282,300
Contingency 28,200

Subtotal $310,500
Design Engineering 25,000
Construction Engineering 25,000

**TOTAL PROJECT COST** $360,000

**FARM LOAN BOARD GRANT (50 %)** $180,000

**FARM LOAN BOARD LOAN (50 %)** $180,000
SECTION 5

SUMMARY

Extending water service to the Indian Springs Improvement and Service District is a logical extension of Casper's water system and is identified as an objective in the Natrona County Regional Water System Project - Level I. Extending the transmission main from Webb Creek to Indian Springs is a straightforward design problem. In addition, the water storage tank is identified in the regional study as a one million gallon tank.

IMPROVEMENTS FUNDING

It is estimated that the residents of Indian Springs spend in excess of $100 per month purchasing and hauling water. The District has applied for Water Development Commission and Farm Loan Board grants and loans to fund design and construction of a water transmission and distribution system. Repayment of a loan from the WWDC at 4% for 20 years plus a loan from the Farm Loan Board at 8 1/2% for 20 years would cost each lot owner $30 to $35 dollars per month.

With respect to the water storage tank and booster station modifications, the City of Casper passed a resolution on December 3, 1991 that commits City monies to repayment of a WWDC loan for their portion of the improvements and accepts responsibility for design and construction of the improvements. A copy of that resolution is included in Appendix C.
PROJECT SCHEDULE

All of the improvements identified herein can be complete in 1992. Tentative project schedules for the improvements are as follows:

INDIAN SPRINGS SCHEDULE

- Receive FLB Grant Award 1 FEB 92
- Receive WWDC Grant Award 1 MAY 92
- Complete Distribution System Design 1 JUN 92
- Complete Transmission Main Design 15 JUN 92
- Receive Construction Bids 15 JUL 92
- Complete Construction 15 NOV 92

CITY OF CASPER SCHEDULE

- Receive WWDC Grant Award 1 MAY 92
- Complete Tank & Booster Station Design 15 JUL 92
- Receive Construction Bids 15 AUG 92
- Complete Construction 15 NOV 92

5-2
STATEMENT OF POLICY

CITY OF CASPER
PUBLIC UTILITIES

OUTSIDE-CITY WATER SERVICE

This policy is developed to inform all applicants currently outside of the Casper city limits of the requirements to receive City of Casper water. These policies are intended to provide for the present and future needs of the City of Casper and the new proposed Regional Water System in a mutually supportive and cooperative fashion with other jurisdictions.

I.

The City will insure adequate service to inside-city customers and existing outside-city contracts for service prior to entering into agreements for proposed outside-city water service. Once this assurance is provided, the City will assess growth and the expansion of its system based upon projected impact of the proposed growth upon the existing water supplies and capacities of its water system.

In order to assess the impact of growth and expansion before entering into outside-city contracts, the City will obtain the following information from the applicant of the proposed service area, in addition to the normal engineering requirements, and such information will be incorporated as part of the contract for service that may be entered into by the City.

A. A land use plan consistent with the City of Casper’s or the Regional System's Master Plan indicating the densities and related anticipated demands upon the water system.

B. A projected schedule for development of the subject properties.

Information may not be required by City staff for existing improvement districts, existing subdivisions, or for very small additions to the system.

The boundaries of the City’s existing water Master Plan may be extended if it can be determined that the proposed extensions will not adversely impact the City’s existing system and to be consistent with the City of Casper water Master Plan, and the future Regional Water System plan. Extraterritorial applicants requesting service may be required to pay all costs associated with updating water master plans if necessary to incorporate the development.
II.

At the current time, the City of Casper discourages the creation, existence and expansion of wholesale water service contracts. It is believed that the City can provide the most cost-effective long-term service via retail outside-city water service agreements. As a general policy, outside-city property owners and their respective mortgagees shall execute a commitment to annex their property to the City of Casper at such time as the Casper City Council desires to do so. The applicant shall be responsible for obtaining all easements, rights-of-way, licenses, etc. needed to extend water service. The applicant shall provide at its cost environmental assessments demonstrating conditions satisfactory to the City with respect to all real property interests, including, but not limited to, right-of-ways and easements to be granted to the City, prior to receiving water service.

III.

All facilities required of developments will be sized and constructed in accordance to the City of Casper's and/or the Regional Water System's then-current Master Plan at locations and elevations which best serve future growth. All water line extensions shall be constructed up, to, and through the area to be serviced. The City will reimburse the applicant the water line materials cost in excess of the materials cost for an 8-inch system (or a larger size if required by the development for its internal water service).

IV.

The City will make available design criteria and standard specifications for all new facilities. For existing developments the City staff shall make an assessment of the existing water distribution system and determine what improvements shall be made to bring the facilities up to a standard acceptable to the City of Casper. These recommendations will take into account both present and future operation and maintenance costs as well as future capital replacement costs.

V.

No recapture or reimbursement will be due to the applicant for future connections into the extended water lines, transmission mains, and distribution systems. Applicant agrees to obtain a minimum one-year warranty from their contractor for all water main construction and all improvements to existing distribution systems that will be accepted for ownership by the City.
VI.

The applicant agrees to abide by the rules and regulations of the City of Casper regarding the use of its water facilities. This includes the "General Rules and Regulations for Water and Sewer Service, Rules and Regulations for the Control of Backflow and Cross Connections, Rules and Regulations for Water Meter, Pressure Reducing Valves and Backflow Prevention Device Installation, Water Distribution Facilities Design Standards, Water Distribution Facilities Standard Specifications, and all other ordinances and/or rules and regulations of the City of Casper.

VII.

The applicant shall agree before the receiving of water service to indemnify the City of Casper of any financial obligation or related costs pertaining to new construction or improvements to the applicant's water system.

VIII.

As a general rule, the maximum use of water shall be limited to 43,200 gallons per month per 3/4-inch connection or 72,300 gallons per month per 1-inch connection. Until such time as the property is annexed, water service shall be provided only to the extent that water service is available and above that which is necessary to satisfy the needs of the incorporated area of Casper.

IX.

The applicant shall agree that it shall make necessary provisions so that each building to be served shall have pressure reducing valves limiting pressure to a maximum of 60 psi, toilets with a maximum flush of 3½ gallons, aerators which provide for maximum flow of 1 gpm on all bathroom sinks, and water saving shower heads to limit flow to a maximum of 3 gallons per minute.

X.

In the event a development requires such facilities as to be financially infeasible in the opinion of the City, the developer or applicant may be required to provide such additional contribution as the City may require. This will apply to storage tanks, booster stations, transmission lines, etc. The City shall administer the design and construction of all required publicly owned booster stations and water storage tanks.

XI.

The City of Casper will accept for ownership all retail service water distribution facilities including water mains, booster stations, storage tanks, etc., when all water distribution facility
work is completed, and "as built" plans and certification of construction are received from the applicant's engineer. All easements, right-of-ways, licenses, etc. shall be transferred to the City of Casper before ownership. In the meanwhile, the applicant shall maintain the system according to the standards the system was required to meet at the time of initial water delivery by the City.

XII.

The following City of Casper charges may be applicable (Also see Summary of Charges):

A. Preliminary inquiry as to possibility of water service - no charge.

B. If applicant wishes to pursue application, a non-refundable advance payment of $250 shall be required for preparation of outside-city contract, etc.

C. A standard system investment charge will be paid for all new customers connecting to the water system. System investment charges shall be dependent upon the meter size and whether it is a retail outside-city water service agreement or a wholesale outside-city water service agreement. Separate system investment charges shall be required for each building making such connection.

D. The standard charge for connection to an existing water main when the connecting property has not previously helped pay for the water main shall be made in accordance to the then-current street lateral charge for an 8-inch main.

E. Water service line charges shall be invoked if the connecting property connects to an existing City of Casper water line. The charge varies on the size of service required and includes the connection and a service line to and through a curb stop to be generally located on the applicant's property line. Additional charges may be necessary for long service lines. All excavation and street repairs shall be made by the applicant.

F. Water meter charges shall be invoked for furnishing and installing water meters. This charge shall be dependent upon the size of the service to be installed.

G. Other physical connection charges such as water main pressure taps (i.e., 4-inch, 6-inch, 8-inch and 12-inch pressure taps) may be invoked.
H. At the current time there are no system investment charges, or water service charges for fire-extinguishing systems connected to the City of Casper water system.

I. Expenses associated with Environmental Assessments.

J. In accordance with City of Casper ordinances and rules and regulations, the normal retail or wholesale outside-city water service charges as appropriate shall be invoked on a bimonthly basis.
OUTSIDE-CITY WATER SERVICE
SUMMARY OF CHARGES

Name of Applicant: Indian Springs Improvement and Service District

Name of Addition: Indian Springs

Location of Applicant: Sec. 33     T. 33 N.
R. 80 W.    Co. Natrona

Mailing Address: 441 North Vanwed
                Casper, WY 82601

Business Phone: __________________________
Home Phone: _____________________________

___ Wholesale   X Retail   Outside-City Water Service

A) APPLICATION FEE

B) WATER SYSTEM INVESTMENT CHARGE

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Total: 53025

C) STREET LATERAL CHARGES

Frontage Footage

X $12.60/lineal foot

D) WATER SERVICE LINE CHARGES

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Total: 0
### E) WATER METER CHARGES

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Total Charges: $5075

### F) OTHER PHYSICAL CONNECTION CHARGES

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Total Charges by City of Casper for Water Service: $58,350

*This summary of cost checklist does not include items such as participation in storage tanks, booster stations, and major transmission lines, etc.*
SECTION 1. That on and after date of January 1, 1990, the following water rates shall be in full force and effect.

SECTION 2. For water used within the City limits of the City of Casper a minimum charge of $7.65 shall be made and collected for the first four thousand gallons of water used during each two month period of the year and on which there shall be no discount; and $0.96 per thousand gallons for each and every thousand gallons consumed thereafter for such two month period of the year.

SECTION 3. For water used outside the City limits of the City of Casper a minimum charge of $11.50 shall be made and collected for the first four thousand gallons of water used during each two month period of the year and on which there shall be no discount; and $1.44 per thousand gallons for each and every thousand gallons consumed thereafter for such two month period of the year.

SECTION 4. For water used by other water districts or water companies having a wholesale water contract with the Board of Public Utilities, the basic rate shall be $0.96 per 1,000 gallons, subject to minimum charges, load factor charges, or other conditions as specified in the contract.
November 18, 1991

John Hibsman
Hibsman and Associates
135 North Ash, Suite 100
Casper, WY 82601

Re: Water Service To Indian Springs Improvement and Service District - City of Casper Takeover of Administration of Design and Construction of Water Storage Tank, Waterline From Distribution System To Water Storage Tank, and Upgrade Of Southwest Booster Station

Dear John,

As you are aware, there is no water storage tank currently serving the pressure zone within which Indian Springs Improvement and Service District is located. As you are also aware, the City staff feels that it is essential that a water storage tank now be provided for backup and redundancy before any further service can be provided for the southwest environs of the Casper metropolitan area.

Indian Springs has made an application to the Wyoming Water Development Commission (WWDC) for level III funding for design and construction of a water transmission main from Webb Creek to Indian Springs and for a water storage tank and the waterline from the distribution system to the tank.

The Casper City Council at a work session on November 12, 1991 approved the concept of the City of Casper takeover of the administration of the design, construction, and financing of the water storage tank and the associated improvements to serve the southwest environs of the Casper metropolitan area.

The draft "Contract For Outside-City Water Service" is now being reviewed by Indian Springs and the City. It is expected that the City Council will consider the outside city water service contract with Indian Springs at its regular council meeting December 3, 1991. The Council will also formally consider the takeover of the administration of the design and construction of the water storage tank and the associated improvements on that date as well.

The proposed contract with Indian Springs calls for them to perform the preliminary design study required by the WWDC in
order to obtain Level III funding. The following information is provided to help you prepare the preliminary study.

**Water Storage Tank**

The overflow from the tank will be 5500 feet, that being the overflow elevation of all of the Casper Public Utilities pressure zone II tanks. Eventually as the Casper metropolitan area develops, the isolated area served by this tank will be connected into the main Casper pressure zone II system.

The "Wyoming Water Development Commission Natrona County Regional Water System Project - Level I, dated May 1990" called for a one million gallon storage tank to be constructed south of the Westland Park Addition. Other locations at which the tank could be located are 1) on Squaw Creek between Wolf Creek and Coates Road and 2) close to the Indian Springs Improvement and Service District system. These locations were rejected by the City of Casper staff because of the excessive cost to install waterlines to the tank sites and possible problems with land acquisition.

The area south of Westland Park offers several good sites. One alternative would be to construct 3) a standpipe 80-85 feet high with about a 1800 feet waterline to the existing distribution system in Westland Park. A second alternative would be to construct 4) a conventional water storage tank further south about 40 feet high with approximately 3800 feet of waterline.

Both of these sites are owned by the H.M. Pursel Trust of which Margaret L. Pursel is the sole surviving trustee. I would expect no problems in the acquisition of a water tank site or the waterline easement from the tank to the existing distribution system.

The standpipe would be more expensive to construct but may be less than the cost of the additional waterline to serve the conventional tank located at a higher elevation. Water stagnation would also be much less of a concern with a shorter tank waterline. It is our recommendation to use the most cost effective alternative through your analysis.

Previous construction of standpipes and tanks in the Casper area have not revealed any serious foundation design problems in the area. I would not expect any for this project especially since the standpipe or tank will be constructed on a ridge. Geotechnical investigations can be made during the detailed design.

**Waterline From Distribution System to Tank**

The existing waterline from the Southwest Booster Station to Westland Park and from Westland Park to Webb Creek is 16 inch in
size. In order to accommodate future growth and insure that there is proper fire flow from the tank, the tank waterline should also be 16 inch is size. This sizing is also in accordance to the "Wyoming Water Development Commission Natrona County Regional Water System Project - Level I, dated May 1990."

The criteria expressed in the Water Storage Tank analysis above will suffice for the tank waterline analysis. The use of the first alternative (standpipe) south of Westland Park will result in a much shorter tank waterline than the second alternative.

**Southwest Booster Station Upgrade**

This booster station was constructed in 1982 using 1% monies. The booster station has no emergency power and was built without a water storage tank in the pressure zone. It currently serves about 170 residents in Westland Park, Skyline Ranches, Hidden Valley Improvement and Service District, Webb Creek Improvement and Service District, and residences in unplatted areas.

The booster station has two 750 GPM pumps and a Weil constant pressure package booster system with three small pumps. The two large pumps were originally supplied with electric control valves, but they were oversized for the application and did not work well. They were replaced in 1986 with regular pressure reducing valves which made operation of the station considerably easier. It is still a difficult station to operate properly however.

Improvements needed at the booster station include the removal of the Weil constant pressure package system and the installation of an additional 750 GPM pump in its place. Also needed are three Cla-Val or equivalent booster pump control valves to replace the pressure reducing valves which will not work with a tank and which do not have sufficient surge control during pump startup and shutdown.

Surge control during power failure is also needed at the station. A surge anticipator valve system was installed in 1982, but it never worked correctly as it opened but never closed during surges. Public Utilities has had very good luck with a system originally designed by Black and Veach for several of our other booster stations. It utilizes a check valve on the common discharge header with a bypass solenoid valve which opens and then slowly closes during power failures. The pumps are allowed to run backwards during the event. This is recommended for the Southwest Booster Station upgrade.

At this time, we are not considering asking the WWDC to help finance emergency power for this station. The station is small and with a tank should have sufficient backup and redundancy. Your thoughts are welcome, however.
Also, please find enclosed a preliminary cost estimate for the water standpipe, the waterline from the distribution system to the tank, and the upgrading of the Southwest Booster Station.

Please contact me if you have any questions.

Sincerely,

[Signature]

David W. Hill
Utility Director
SOUTHWEST WATER STORAGE TANK, WATER LINE FROM DISTRIBUTION SYSTEM TO TANK, AND UPGRADE OF SOUTHWEST BOOSTER STATION

PRELIMINARY COST ESTIMATE

WATER STORAGE TANK

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Site Preparation</td>
<td>$20,000</td>
</tr>
<tr>
<td>b) Foundation (including altitude control valve vault)</td>
<td>$50,000</td>
</tr>
<tr>
<td>c) Standpipe (80 ft. high x 46 ft. diameter)</td>
<td>$450,000</td>
</tr>
<tr>
<td>d) Site Acquisition (1 acre @ 15,000)</td>
<td>$15,000  $535,000</td>
</tr>
</tbody>
</table>

WATER LINE FROM DISTRIBUTION SYSTEM TO TANK

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>e) 16&quot; Water Line (1800 ft. @ $65/ft.)</td>
<td>$117,000</td>
</tr>
<tr>
<td>f) 16&quot; Valves (2 @ $2500 ea.)</td>
<td>$5,000</td>
</tr>
<tr>
<td>g) Easement Acquisition (1800 ft. @ $4/ft.)</td>
<td>$7,200  $129,200</td>
</tr>
</tbody>
</table>

SOUTHWEST BOOSTER STATION UPGRADE

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>h) Install 750 GPM Pump</td>
<td>$15,000</td>
</tr>
<tr>
<td>i) Install Pump Control Valves</td>
<td>$9,000</td>
</tr>
<tr>
<td>(3 @ $3000 ea.)</td>
<td></td>
</tr>
<tr>
<td>j) Install Surge Control System for Power Outages</td>
<td>$20,000</td>
</tr>
<tr>
<td>k) Instrumentation and Control</td>
<td>$10,000  $54,000</td>
</tr>
</tbody>
</table>

$718,200

5% Contingency 35,910 $754,110

20% Engineering 150,820 $904,932

SAY $905,000
November 20, 1991

Mr. Michael K. Purcell, Administrator
Wyoming Water Development Commission
Herschler Building
122 West 25th Street
Cheyenne, Wyoming 82002

Re: Indian Springs/Casper Water Supply Project

Dear Mike:

For your information, the Casper City Council at a work session, Tuesday, November 12, 1991, conceptually approved the extension of retail outside-city water service to Indian Springs Improvement and Service District. The City Council, at the work session, also gave the authorization to proceed with the planned takeover by the City of Casper for the administration of the design and construction of the water storage tank, the water line from distribution system to the water storage tank, and the upgrade of the Southwest Booster Station for the southwest Casper metropolitan environs.

The formalized outside-city retail water service agreement between the City of Casper and Indian Springs Improvement and Service District is expected to be considered by the City Council at its regular December 3, 1991 meeting. At that same meeting it is expected that the Council will consider a resolution to take over the administration of the design and construction of the water storage tank and associated improvements.

Please contact me if you have any questions at this time.

Sincerely,

David W. Hill, P.E.
Utility Director

DWH:1b

CC: John Hibsman
Mr. Michael Purcell, Administrator  
Wyoming Water Development Commission  
Herschler Building, 4 West  
122 West 25th Street  
Cheyenne, Wyoming 82002

Re: City of Casper Administration of the Design, Construction, and Financing of the Water Storage Tank, the Water Line from Distribution System to the Water Storage Tank, and the Upgrade of the Southwest Booster Station for the Southwest Casper Metropolitan Environs

Dear Mr. Purcell:

You have previously received an application for Level III funding from the Indian Springs Improvement and Service District for design and construction of a water transmission main, steel storage tank, and associated improvements.

Please find enclosed a resolution passed by the City Council at its regular December 3, 1991 meeting, providing for the City of Casper administration of the design, construction, and financing of the water storage tank, the water line from the distribution system to the water storage tank, and the upgrade of the Southwest Booster Station for the southwest Casper metropolitan environs.

This resolution also provides for the submittal of an application to the State of Wyoming Water Development Commission for the amount of $905,000 for the above project. Please accept this letter as our formal application for funding. It is our understanding that this will be a 2/3 grant, 1/3 loan funding package.

In accordance to the proposed agreement between the City of Casper and the Indian Springs Improvement and Service District, the District shall perform a preliminary design study for their transmission line and the City of Casper water storage tank, water line to the tank, and an upgrade of the Southwest Booster Station. The study should have been submitted to you already.
Mr. Michael Purcell  
Wyoming Water Development Commission  
December 9, 1991  
Page 2  

The proposed outside-city retail water service agreement between the City of Casper and the Indian Springs Improvement and Service District was pulled from the December 3, 1991 Council Agenda, due to some changes requested by the Attorney General's Office, in order for the agreement to be in conformance with the proposed 1992 Omnibus Water Bill. It is expected the language can be resolved and the agreement considered at the December 17, 1991 Council meeting.

Please contact David Hill, Utility Director of my staff, if you have any questions.

Sincerely,

Thomas O. Forslund  
City Manager  

TOF:DWH:1b  
ENC.
RESOLUTION NO. ______

A RESOLUTION PROVIDING FOR THE CITY OF CASPER ADMINISTRATION OF THE DESIGN, CONSTRUCTION, AND FINANCING OF THE WATER STORAGE TANK, THE WATERLINE FROM THE DISTRIBUTION SYSTEM TO THE WATER STORAGE TANK, AND THE UPGRADE OF THE SOUTHWEST BOOSTER STATION, FOR THE SOUTHWEST CASPER METROPOLITAN ENVIRONS, AND AUTHORIZING THE SUBMITTAL OF A GRANT APPLICATION TO THE STATE OF WYOMING WATER DEVELOPMENT COMMISSION FOR THE AMOUNT OF NINE HUNDRED FIVE THOUSAND DOLLARS ($905,000.00), FOR THE ABOVE PROJECT.

WHEREAS, Indian Springs Improvement and Service District has made an application to the Wyoming Water Development Commission for Level III funding for the construction of a water transmission main from Webb Creek to Indian Springs, a water storage tank, a water line from the distribution system to the water storage tank, and an upgrade of the existing southwest booster station; and,

WHEREAS, Indian Springs Improvement and Service District will complete a preliminary design study for the transmission main, the water storage tank, the water line from distribution system to the water storage tank and an upgrade of the existing southwest booster station; and,

WHEREAS, the City of Casper is desirous of administering the design, construction, and financing of the water storage tank, the water line from the distribution system to the water storage tank, and the upgrade of the southwest booster station; and,

WHEREAS, the Wyoming Water Development Commission has made available grants for the purpose of assisting communities such as Casper on similar projects.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF CASPER, WYOMING: That the governing body hereby gives its approval to the City of Casper administration of the design, construction, and financing of the water storage tank, the waterline from the distribution system to the water storage tank, and the upgrade of the southwest booster station for the southwest Casper metropolitan environs.

BE IT FURTHER RESOLVED: That the staff of the City of Casper is authorized to submit a grant application to the State of Wyoming Water Development Commission for the amount of Nine Hundred Five Thousand Dollars ($905,000.00), for the purpose of designing and constructing the water storage tank, the water line from the distribution system to the water storage tank, and the upgrade of the southwest booster station for the southwest Casper metropolitan environs.

PASSED, APPROVED, AND ADOPTED this ______ day of ____________, 1991.
APPROVED AS TO FORM:
(DESIGN, CONSTRUCTION, AND FINANCING OF WATER STORAGE TANK)

CITY OF CASPER, WYOMING
A Municipal Corporation

Calvin L. Chadsey
City Clerk

Michael E. Reid
Mayor