

RESOLUTION NO. 856

A RESOLUTION AUTHORIZING THE FINAL GEOTECHNICAL INVESTIGATION FOR THE CITY'S WATER RESERVOIR SITE.

WHEREAS, on April 10, 1991, the City executed a release and settlement agreement for 1.73 acres of undeveloped property on which the city intends to place a 3MG water reservoir; and

WHEREAS, the City desires to move forward with the design and construction of a 3MG water reservoir; and

WHEREAS, the engineering design phase of the reservoir must be preceded by a geotechnical investigation of soil stability at the proposed site.

NOW, THEREFORE, IT IS HEREBY RESOLVED by the City Council of the City of Wilsonville that:

1. The Community Development Department shall be authorized to enter a professional services agreement for a geotechnical investigation at the city's proposed reservoir site as outlined in attached Exhibit "A".

2. The cost of the investigation shall not exceed \$6,400 without the approval of the City Council.

3. The expenditure of funds for the geotechnical investigation shall be obtained from:

<u>ACCOUNT NO.</u>	<u>AMOUNT</u>	<u>ADOPTED BUDGED</u>
330-1-7136000	\$6,400	\$2,050,000

ADOPTED by the City Council of the City of Wilsonville at a regular meeting thereof the 15th day of July, 1991 and filed with the Wilsonville City Recorder this same day.


GERALD A. KRUMMEL, Mayor

ATTEST:

Vera A. Rojas

VERA A. ROJAS, CMC, City Recorder

SUMMARY of Votes:

Mayor Krummel	<u>AYE</u>
Councilor Chandler	<u>AYE</u>
Councilor Carter	<u>AYE</u>
Councilor Van Eck	<u>ABSENT</u>
Councilor Lehan	<u>AYE</u>

EXHIBIT "A"



City of
WILSONVILLE
in OREGON

30000 SW Town Center Loop E • PO Box 220
Wilsonville, OR 97070
(503) 682-1011

COMMUNITY DEVELOPMENT DEPARTMENT
MEMORANDUM

DATE: JULY 9, 1991
TO: HONORABLE MAYOR & CITY COUNCILORS
FROM: STEVE STARNER
COMMUNITY DEVELOPMENT DIRECTOR
RE: FINAL GEOTECHNICAL INVESTIGATION - 3 MG RESERVOIR SITE

The purpose of the geotechnical investigation for the proposed water reservoir site is to gather information about the characteristics of the soil at the site and begin to form an opinion of the settling characteristics that may occur upon the addition of fill material used to support a 3 MG concrete water container. The geotechnical investigation provides information which is basic and essential to a successful engineering design of the structure.

The City has received two proposals in response to requests for a geotechnical investigation. Each consultant was asked to provide a minimum of six backhoe excavated test pits to be distributed over a quadrant grid of the reservoir site. Additionally, due to information gained through individual test pit explorations, a cost provision for follow-up test boring should also be included in the proposal.

Proposal 1 - Golder Associates, Inc. (\$8,484)

This proposal includes an allowance for two test bores (up to 100 feet deep) and an unspecified number of backhoe excavated test pits at unspecified depths. Although the geotechnical information gained from drilling test bores is obviously more extensive than the information gained from an excavated test pit in the same area, the likelihood of missing a small area of potentially unstable soil increases due to the reduced area covered by the investigation. The final geotechnical report would be anticipated within seven to eight weeks of notice to proceed.

Proposal 2 - Dames and Moore (\$4,500 with drilling; \$6,400 with drilling)

This proposal specifies that six excavated test pits, dug to a depth of 10 to 11 feet, be used to provide the basis for further geotechnical study and recommendations. In the event bedrock is not encountered in the test pits, a drill rig and exploratory borings would be utilized to provide additional subsurface information. The proposal assumes the use of the city's rubber tired backhoe during test pit excavation. The final geotechnical report would be anticipated within four weeks of notice to proceed.

Recommendation: Proposal 2 - Dames and Moore

ss:md
Attach:
pc: IOC - CD



Golder Associates Inc.
CONSULTING ENGINEERS

June 11, 1991

Our ref: 993-1239.415

City of Wilsonville
8445 SW Elligsen Road
Wilsonville, Oregon 97070

ATTENTION: Richard L. Drinkwater, P.E., P.L.S.

3RE: PROPOSAL
GEOTECHNICAL ENGINEERING INVESTIGATION
3 MILLION GALLON, CONCRETE WATER TANK
WILSONVILLE, OREGON

Dear Dick:

Golder Associates Inc. is pleased to present our proposal to provide a geotechnical engineering study for the City of Wilsonville's proposed 3 million gallon, concrete water tank. The proposed new tank will be located in an area immediately east of the existing 2 million gallon metal tank on Stafford Road. We present this proposal on the basis of your May 23, 1991 verbal request.

In preparing this proposal, we have reviewed geologic and topographic maps from our library and obtained the log of the existing water well on the site, from the Oregon Water Resources Department, in Salem. In addition we have discussed the project with you and contacted the proposed tank manufacturer, DYK Inc., to discuss the tank's general engineering design parameters. We also visited the site on May 23, 1991, to examine existing conditions. The proposed scope of services includes the site investigation, and the development of geotechnical design parameters in accordance to the designers requirements. Our proposed scope of services is outlined in detail below for your review and approval.

SITE & PROJECT DESCRIPTION

The proposed new water tank will be located on the south side of Stafford Road approximately 1/2 mile east of the Interstate 5 - Stafford Road interchange. The new tank is to be located approximately 180 feet east of the existing 2 million gallon metal tank. The property is an undeveloped, gentle slope (25 horizontal to 1 vertical), with maple trees and brush.

We understand the proposed water tank will be a prestressed, reinforced concrete designed by DYK Inc. The tank will have a diameter of 120 feet, a height of 40 feet and a capacity of 3 million gallons. The tank, as planned, will be founded on a shallow, conventional, continuous foundation. We understand this type of tank has interior columns approximately 20 feet on center. Typical column loads are on the order of 80 kips. Maximum tolerable, differential settlements according to DYK Inc. are very restrictive at 1/2 inch across the 120 foot diameter tank.

An engineered, structural fill embankment is proposed to raise the tank site approximately 15 feet and provide a level base for the tank foundation. Due to site boundary limitations, the slope of the embankment is planned to be approximately 1/2H to 1H:1V. The relatively steep slope face may require that soil reinforcing grids such as "Tensor" be built in to the embankment. The steep slope may also be faced with "Keystone" blocks to control erosion.

SCOPE OF SERVICES

The primary geotechnical concern of this project is to provide a stable fill embankment and water tank foundation. We propose to address this concern by conducting a geotechnical engineering investigation consisting of a subsurface exploration, an engineering analysis of geotechnical design parameters and the preparation of a written report of our findings. A detailed description of our proposed scope of services is presented below.

Task 100: Field Exploration

Based on the conditions described in the boring log of the adjacent water well on the site we expect the subsurface conditions to consist of Willamette Silt over Columbia River Basalt. To explore the subsurface exploration at the site of the new tank we propose drilling a series of two borings to examine the soils, the soil/rock contact and the rock quality. The borings will be advanced by drilling with mud rotary equipment turned by a CME 55 drill rig. We expect borings will reach a maximum depth of about 90 feet. Borings will generally include approximately 60 to 80 feet of drilling through soil and approximately 10 to 20 feet of HQ coring in rock.

Samples of the soil will be retrieved by performing the Standard Penetration Test (SPT). Soils will be logged in the field and then reexamined in our laboratory in accordance with ASTM D-1586.

The borings will be drilled by a Portland based drilling contractor under subcontract to our firm. The drilling will be completed under the full time observation and supervision of a representative of our firm who will log the soils and rock and collect representative samples. A standpipe, groundwater level observation well, will be installed in one of the borings. Upon completion of drilling we propose to backfill one boring with bentonite and install a standpipe well with fitted, locking monument covers and as required by Oregon department of Environmental Quality (ODEQ) three guard posts will be installed around the well.

A D-4 or equivalent sized bulldozer will be required to clear the site and a path for the drill rig. The dozer may be required to aid the drill rig in moving between holes.

In the areas outside the new tank, in the steeper areas of the site not accessible to the drill rig we propose to evaluate the site soil conditions exposed in a series of backhoe excavated test pits. The backhoe will be able to explore these areas where the fill embankment will be in the order of 40 feet in height. The test pits will be logged in the field and bulk samples of the soils encountered will be retrieve for latter examination and testing in our laboratory.

We expect the total field exploration will require approximately three days to complete.

Task 200: Laboratory Testing Program

Our laboratory testing program will consist of a short series of moisture content determinations, Atterberg Limits tests, and sieve/hydrometer analysis. We have selected these tests to provide us with information on the plasticity, and grain size variation within the material. This information will be evaluated in our determination of the soil strength and seismic parameters.

Task 300: Seismic Criteria Review

Seismic criteria used in the design and construction of structures in Oregon are currently receiving considerable discussion. This discussion primarily revolves around the level of detail required of seismic studies and the possible inclusion of new and controversial geologic information. To better understand the requirements of the tank manufacturer and the City of Wilsonville we contacted and discussed the seismic requirements with you and with Mr. Brad Harris of DYK Inc., the tank manufacturer. Based on those conversations we understand the City of Wilsonville and DYK Inc. typically rely on the current Unified Building Code (UBC 1986) seismic design criteria in their design of tanks, unless local conditions dictate stricter requirements be used. We understand our role regarding seismic design is therefore to identify local conditions if any, that require a design criteria be used that is stricter than those of UBC 1986.

To fulfill this role we will review and analyze the site soil and groundwater conditions. We will also review the literature and local seismic records and provide recommendations for seismic design parameters.

Task 400: Geotechnical Report

After completing the field exploration, the laboratory testing and the engineering analysis we will prepare a geotechnical engineering report presenting our conclusions and recommendations. The report will address the following items:

- o Description of the subsurface soils and groundwater conditions, including summary logs of the borings, plots of the laboratory test results and a site plan showing their approximate locations.
- o Geotechnical engineering recommendations for foundation design and construction, including maximum allowable bearing capacity and estimates of total and differential settlements.
- o Geotechnical recommendations for compacted fill slope stability, soil-grid reinforcement spacing, slope face erosion protection and tank-slope set back requirements.
- o Geotechnical recommendations for site preparation and grading, fill placement and compaction, including the suitability of on site materials for use in compacted fills.
- o Recommendations for seismic design parameters based on the results of our review of the seismic literature and UBC.

SCHEDULE

The location and marking of utilities at the site is the responsibility of the City of Wilsonville. We expect to begin the field exploration within approximately three weeks of receiving your verbal authorization depending on the availability of the drilling subcontractor. The field exploration is expected to require approximately 3 days. The geotechnical report will be available about 15 working days after we complete the field work. We will be able to provide verbal conclusions within about one week of the completion of the field work.

BUDGET ESTIMATE

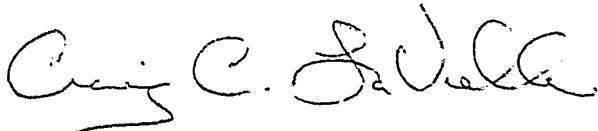
We will carry out the scope of services described above within an estimated budget of \$8,484. The approximate cost breakdown is presented in the attached Table 1. The cost estimate is proprietary and cannot be released to others without the authorization of Golder Associates Inc.

We will not exceed this estimate without your prior authorization. However, if during our field exploration we find unanticipated site conditions beyond the scope of our study, we will contact you to discuss any necessary changes to our scope of services or budget estimate. We will base our invoices on actual time and expenses charged to the project. We will perform the work in accordance with the attached General Terms and Conditions.

Golder Associates Inc. is pleased to present this proposal and we look forward to your favorable response. If you have any questions or require additional information, please contact us.

Sincerely,

GOLDER ASSOCIATES INC.



Craig C. LaVielle, P.E.
Senior Geotechnical Engineer
Associate

Attachments

**GOLDER ASSOCIATES PROJECT TEAM
EXPERIENCE WITH WATER STORAGE TANKS**

**Two Million Gallon, Concrete Water Storage Tank
City of Tumwater, Washington**

Golder Associates completed a geotechnical investigation and the preparation the foundation design recommendations for a 2 million gallon concrete water tank. The geotechnical investigation involved excavating a series of backhoe test pits, laboratory testing and foundation bearing and settlement analysis. Foundations recommendations were provided for a ring wall bearing partially on a weathered basalt and partially on a glacial-fluvial sand.

**Three Million Gallon Water Storage Tank
Water District No. 82, King County, Washington**

Golder Associates completed the geotechnical engineering for a three million gallon, metal panel, water storage tank founded on glacial till. This tank was founded on a reinforced concrete ring wall. The geotechnical investigation involved excavating a series of backhoe test pits, laboratory testing and foundation bearing and settlement analysis.

**Three Million Gallon Water Storage Tank and Landslide Stabilization
City of Issaquah, Washington**

A new three million gallon water storage tank was built on a hillside site on the west side of the City of Issaquah. The geotechnical investigation identified the site as having a potential for landsliding. Golder Associates provided geotechnical foundation design recommendations. Our firm also provided a detailed design for a series of horizontal drains intended to dewater and stabilize the slope above the tank site. The drains proved to be a very cost effective technique of stabilization when compared to the cost and space requirement of the alternative retaining wall.

**7 - Three Million Gallon Water Storage Tanks
North Slope Borough, Alaska**

The permafrost foundation conditions were investigated at seven villages in the North Slope Borough, Alaska. The investigations were for a series of three million gallon water storage tanks. The water tanks were part of the first municipal water system for the villages of Pt. Hope, Pt. Lay, Wainwright, Nuiqsut, Kaktovik, Atkasuk and Prudhoe Bay. The foundation designs called for supporting the tanks on-grade, over a passive refrigeration system of heat syphons. The tank built at Pt. Lay won an Honorable Mention Award for engineering excellence from the Consulting Engineers Council.

Project Name: City of Wilsonville Water Storage Tank

Project Number: 993-1239

Date Prepared: June 11, 1991

TASK	Assoc \$75	Proj \$50	Technicl \$30	Draft \$35	Cler \$35	Subtotal Labor	GAI Subcontract	Subtask Total
Task 100 - Field Exploration								
Subtask 110 - Field Reconnaissance	2					\$150		\$150
Subtask 120 - Drilling & Sampling	1	10		2		\$645	\$4,200	\$4,845
Subtask 130 - Backhoe Test Pits	1	5		2		\$395	\$250	\$645
Task Manhours	4	15	0	4	0	\$1,190	\$4,450	\$5,640
Task 200 - Laboratory Testing								
Task Manhours	1		4	2	1	\$300	\$0	\$300
Task 300 - Seismic Criteria Review								
Task Manhours	10				1	\$785	\$0	\$785
Task 400 - Geotechnical Report								
Subtask 410 - Bearing Analysis	1	1	0			\$125	\$0	\$125
Subtask 420 - Settlement Analysis	1	2				\$175		\$175
Subtask 430 - Embankment Reinforcement Design	1	4	0			\$275		\$275
Subtask 440 - Written Report Preparation	2	10	0			\$650		\$650
Task Manhours	5	17	0	0	0	\$1,225	\$0	\$1,225
TOTAL TASK COSTS	\$1,500	\$1,600	\$120	\$210	\$70	\$3,500	\$4,450	\$7,950
TOTAL LABOR						\$3,500		
TOTAL EXPENSES						\$4,450		
Handling - (Expenses * 12%)						\$534		
GRAND TOTAL						\$8,484		

GOLDER ASSOCIATES INC. ("GAI")
GENERAL TERMS AND CONDITIONS

Page 1 of 4

1. CLIENT DEFINITION

CLIENT/OWNER (the "CLIENT") as used herein shall include and apply to all parties equally, be they individuals, corporations, partnerships, associations, government agencies, or other entities, whether acting alone or collectively as a group where the services of this Agreement are being provided to, or on behalf of, the group.

2. STANDARD OF CARE

Services performed by GAI will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession currently practicing under similar conditions. No other warranty, express or implied is made.

3. SUBSURFACE RISKS

Special risks occur whenever engineering or related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing program implemented in accordance with a professional standard of care may fail to detect certain conditions, because they are hidden and therefore cannot be considered in development of a subsurface exploration program. The environmental, geologic, geotechnical, geochemical and hydrogeologic conditions that GAI interprets to exist between sampling points may differ from those that actually exist. The passage of time also must be considered, and CLIENT recognizes that, due to natural occurrences or direct or indirect human intervention at the site or distant from it, conditions discovered may quickly change. CLIENT realizes that nothing can be done to eliminate these changes altogether. GAI is available to explain these risks, changes, and risk reduction methods to CLIENT but, in any event, the scope of services included with this Agreement is that which CLIENT agreed to or selected and CLIENT recognizes that the data, interpretations and recommendations of GAI are based solely on the information available to them.

4. DATA AND INFORMATION

GAI shall indicate to CLIENT the information needed for rendering of services hereunder and shall be entitled to rely upon any such information and/or documents provided by CLIENT or others in performing the services required under this Agreement. GAI shall review information provided by CLIENT or others and shall give CLIENT an opinion of the risk associated with reliance on such information; however, GAI assumes no responsibility or liability for its accuracy or completeness. CLIENT understands that it is impossible to eliminate all risk, because of inherent limitations of the techniques available to develop the information, and/or because of errors, omissions or inaccuracies which may exist in the information. The extent of risk CLIENT wishes to accept is something which CLIENT must determine and, accordingly, CLIENT waives any claim against GAI, and agrees to defend, indemnify and hold GAI harmless from any claim or liability for injury or loss allegedly arising from errors, omissions, or inaccuracies in documents or other information provided to GAI by CLIENT. GAI shall be responsible only for the accuracy of the data, interpretations and recommendations it generates or makes. GAI will not be responsible for any interpretations or recommendations generated or made by others, which are based, whole or in part, on GAI's data, interpretations or recommendations.

5. PUBLIC RESPONSIBILITY

GAI, through its professional registrations, owes a duty of care to the public. It is recognized that CLIENT also owes a duty of care to the public that requires it to conform to applicable codes, standards, regulations and ordinances, principally to protect public health and safety. GAI will at all times endeavor to alert CLIENT to any matter of which GAI becomes aware and believes requires CLIENT's immediate attention to help protect public health and safety, or which GAI believes requires CLIENT to issue a notice or report to certain public officials, or to otherwise conform with applicable codes, standards, regulations or ordinances. If CLIENT decides to disregard GAI's recommendations in these respects, GAI shall employ its best judgement in deciding whether or not it should notify

public officials. Accordingly, CLIENT waives any claim against GAI, and agrees to defend, indemnify and hold GAI harmless from any claim or liability for injury or loss allegedly arising from GAI's notifying or not notifying public officials about conditions existing at the project site. Further, CLIENT agrees to compensate GAI for any time spent or expenses incurred by GAI in defense of any such claim, with such compensation to be based upon GAI's prevailing fee schedule and expense reimbursement policy.

6. INSURANCE AND INDEMNITY

GAI carries worker's compensation insurance and such coverage under public liability and property damage insurance policies that GAI deems to be adequate. GAI currently carries professional liability insurance, on a claims made basis, with limits that GAI deems to be adequate. Certificates for all such policies of insurance shall be provided to the CLIENT upon written request. If CLIENT desires higher insurance limits, GAI will endeavor to obtain the required insurance; the cost of providing this additional insurance shall be paid for by CLIENT.

Within the limits and conditions of such insurance, GAI agrees to indemnify and save CLIENT harmless from and against any loss, damage (excluding consequential damages), claim or action, including all expenses incidental to such claim and action, arising from any negligent acts or omissions by GAI, its agents, staff, consultants and contractors employed by it, in performance of the services under this Agreement. GAI shall not be responsible for any loss, damage, or liability arising from acts by CLIENT, its agents, staff, and other consultants employed by it. CLIENT agrees to indemnify and save GAI harmless from and against any loss, damage, claim or action, including all expenses incidental to such claim or action arising from the negligent acts or omissions by CLIENT, its agents, staff, consultants and contractors employed by it.

7. LIMITATION OF LIABILITY

CLIENT agrees to limit GAI's liability to CLIENT, its agents, staff, consultants and contractors, on the project arising from GAI's acts, errors or omissions, such that the total aggregate liability of GAI to all those named shall not exceed \$50,000 or GAI's total fee for the services rendered under this agreement, whichever is greater.

8. INVOICES

GAI will submit monthly invoices to CLIENT and a final bill upon completion of services. A more detailed listing of charges and back-up data will be provided at CLIENT's request. Payment is due upon presentation of invoice and is past due thirty (30) days from the date the invoice is received. CLIENT agrees to pay a finance charge of one and one-half percent (1-1/2%) per month, or the maximum rate allowed by law, on past due accounts. If payment remains past due forty-five (45) days from the date the invoice is sent, then GAI shall have the right to suspend all work under this Agreement, without prejudice, and all reasonable demobilization and other suspension costs will be paid by CLIENT. CLIENT agrees to pay attorneys' fees, legal costs and all other collection costs incurred by GAI in pursuit of past due payments.

9. DELAYS

If site conditions prevent drilling or excavation at or near the designated exploration locations or if unrevealed hazardous waste materials or conditions are encountered, work under this Agreement may be delayed. Any such delays, and any delays caused by CLIENT, shall extend the contract completion date and GAI shall be paid for services performed to the delay commencement date plus delay charges. Delay charges shall include personnel and equipment rescheduling and/or reassignment adjustments and all other related costs incurred directly attributable to such delays. Delays within the scope of this article shall, at the option of either party, make the Agreement subject to renegotiation or to termination.

10. TERMINATION

This Agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, GAI shall be paid for services performed to the termination notice date plus reasonable termination expenses. GAI may complete such analyses and records as are necessary to complete their files and may also complete a report on the services performed to the date of notice of termination or suspension. The expenses of termination or suspension shall include all direct costs of GAI in completing such analyses, records and reports.

11. DISPUTES

In the event that one party makes a claim against the other, at law or otherwise, and then fails to prove such claim, then the prevailing party shall be entitled to all costs, including attorneys' fees incurred in defending against the claim.

12. OWNERSHIP OF INSTRUMENTS OF SERVICE

The service provided by GAI is intended for one time use only. All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates and other documents prepared by GAI are considered instruments of service and shall remain the property of GAI. Copies of such shall be provided to CLIENT upon written request. GAI shall retain these records for a period of three (3) years following submission of its report, during which period they will be made available to CLIENT at all reasonable times.

13. RIGHT OF ENTRY

CLIENT will provide for the right of entry for GAI, its subcontractors, and all necessary equipment in order to complete the work under this Agreement. While GAI will take all reasonable precautions to minimize any damage to the property, it is understood by CLIENT that in the normal course of work some damage may occur, the correction of which is not part of this Agreement.

In the prosecution of this work, GAI will take all reasonable precautions to avoid damage or injury to subterranean structures or utilities. CLIENT agrees to hold GAI harmless for any damage to subterranean structures or utilities and for any impact this damage may cause where the subterranean structures and utilities are not called to GAI's attention and correctly shown on the plans furnished.

14. SAMPLE DISPOSAL

Soil and rock samples or other specimens will be disposed of 60 days after submission of our report. Upon written request, GAI will store samples for longer periods of time or transmit the samples to CLIENT for a mutually acceptable charge.

15. DISPOSAL OF HAZARDOUS SAMPLES/MATERIALS AND CONTAMINATED EQUIPMENT

All samples and materials containing or potentially containing hazardous constituents are the property and responsibility of CLIENT and shall be returned to CLIENT for proper disposal. All laboratory and field equipment that cannot readily and adequately be cleansed of its hazardous contaminants shall become the property and responsibility of CLIENT. All such equipment shall be charged and turned over to CLIENT for proper disposal. Alternate arrangements to turn such equipment, materials and/or samples directly over to a licensed hazardous waste disposal facility may be made at CLIENT's direction and expense. It is understood and agreed that GAI is not, and has no responsibility as, a handler, generator, operator, treater, storer, transporter, or disposer of hazardous or toxic substances, waste or materials found or identified at the site. CLIENT agrees to indemnify and hold GAI harmless from and against all loss, damage, expense, and claims arising out of the disposal of all such samples, materials and equipment.

16. CONTROL OF WORK AND JOB-SITE SAFETY

GAI shall be responsible only for its activities and that of its employees on any site. GAI will not direct, supervise or control the work of other consultants and contractors or their subcontractors. Insofar as job site safety is concerned, GAI is responsible only for the health and safety of its employees. Nothing herein shall be construed to relieve CLIENT or any other consultants or contractors from their responsibilities for maintaining a safe job site. GAI shall not advise on, issue directions regarding, or assume control over safety conditions and programs for others at the job site. Neither the professional activities of GAI, nor the presence of GAI or its employees and subcontractors, shall be construed to imply that GAI controls the operations of others or has any responsibility for job site safety.

17. COMPLIANCE WITH CODES AND STANDARDS

GAI's professional services shall be consistent with sound engineering practices and shall incorporate those federal, state and local laws, regulations, codes and standards that are applicable at the time GAI rendered its services. In any event, CLIENT waives any claim against GAI, and agrees to defend, indemnify and hold GAI harmless from any claim or liability for injury or loss allegedly arising from GAI's failure to abide by federal, state or local laws, regulations, codes and standards that were not in effect or publicly announced at the time when GAI otherwise would have incorporated their intent into its work. CLIENT further agrees to compensate GAI for any time spent or expenses incurred by GAI in defense of any such claim, in accordance with GAI's prevailing fee schedule and expense reimbursement policy.

18. DISCOVERY OF HAZARDOUS MATERIALS

CLIENT recognizes that anticipated or unanticipated hazardous materials or suspected hazardous materials may be discovered on CLIENT's property or on property included as part of the site of the work but not owned by CLIENT. CLIENT recognizes that it is its responsibility to inform the Owner of any affected property not owned by CLIENT of such discovery. CLIENT also recognizes that any such discovery may result in a significant reduction of the property's value. CLIENT waives any claim against GAI and agrees to defend and hold harmless GAI from any claim or liability for injury or loss of any type arising from the discovery of anticipated or unanticipated hazardous materials or suspected hazardous materials on CLIENT's property or on property not owned by CLIENT. CLIENT also agrees to compensate GAI for any time spent and expenses incurred by GAI including legal costs, in defense of any such claim. Also CLIENT agrees that discovery of unanticipated hazardous materials shall constitute a changed condition for which GAI shall be fairly compensated.

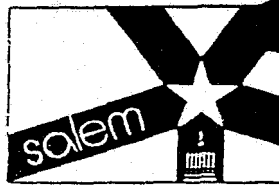
19. MISCELLANEOUS

These provisions shall be deemed severable and the invalidity or unenforceability of any provision shall not affect the validity and enforceability of the other provisions hereof. If any provision is found unenforceable for any reason whatsoever, such provision shall be appropriately limited and given effect to the extent that it may be enforceable.

No waiver of any right or remedy in respect of any occurrence or event on one occasion shall be deemed a waiver of such right or remedy in respect of such occurrence or event on any other occasion. The right of either party to require strict performance by the other hereunder shall not be affected by previous waiver, forbearance, or course of dealing whatever.

This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns provided that it may not be assigned by either party without consent of the other.

All questions concerning the validity and operation of this Agreement and the performance of the obligations imposed upon the parties hereunder shall be governed by the laws of Georgia.



CITY
OF SALEM,
OREGON

City Hall / 555 Liberty St. S.E.
Zip Code 97301-3503

Public Works Department

August 17, 1990

Mr. David Banton
Associate Hydrogeologist
Golder Associates, Inc.
4104 - 148th Ave., N.E.
Redmond, WA 98052

RECEIVED

AUG 22 1990

Golder Associates

Dear David:

SUBJECT: HYDROGEOLOGIC AND WELL FEASIBILITY STUDY - W.O.#870202

The Public Works Department staff involved with the recently completed Hydrogeologic and Well Feasibility Study would like to express our thanks for your excellent work on this project.

Your overall approach to the study, along with the excellent reports and presentations, met the City's overall objectives and will allow the City to make a final decision on well field development in an informed manner.

We look forward to working with your firm on future projects.

Sincerely,

Frank Mauldin
Director of Public Works

ph/Banton.cor6



**Washington State
Department of Transportation**

Transportation Building KF-01
Olympia, Washington 98504-5201
206 753-6005

**Duane Berentson
Secretary of Transportation**

May 5, 1988

Dr. D. R. McCreath, Principal
Golder Associates
4104-148th Avenue NE
Redmond, WA 98052

Re: SR-504 Geotechnical
Investigations

Dear Dr. McCreath:

This letter will confirm that Golder Associates is presently working under your direction as Project Manager on behalf of the Washington State Department of Transportation to undertake the geotechnical investigations for 17 miles of the new SR-504 highway leading into the Mt. St. Helens National Monument. Golder was selected in late 1986 to provide all services necessary for the planning and execution of the geotechnical investigations to support design and preparation of Plans, Specifications and Estimates (P. S. & E.). The project itself includes many miles of major soil and rock cuts and fills up to 100 feet in height, over 7,000 lineal feet of retaining walls and seven major bridge structures. Golder Associates is responsible for accomplishing all explorations and geotechnical work including over 400 boreholes, test pits, geophysical profiles, laboratory and field testing, groundwater assessment, engineering analyses of structures, cut slopes and embankment fills, erosion control measures and material source investigations.

This work has now been substantially completed. We are satisfied with the demonstrated competence and the highly professional performance of the Golder Associates staff in meeting the technical and schedule requirements of WSDOT.

Sincerely,

JOHN R. STRADA, P.E.
Materials Engineer

JRS:jr
SML



DAMES & MOORE

A PROFESSIONAL LIMITED PARTNERSHIP

1750 S.W. HARBOR WAY, SUITE 400, PORTLAND, OREGON 97201 (503) 228-7688
FAX NO. (503) 223-6083

June 4, 1991

City of Wilsonville
8445 S.W. Elligsen Road
Wilsonville, Oregon 97070

Attention: Mr. Richard L. Drinkwater

Proposal
Geotechnical Investigation
Proposed 3 Million Gallon Reservoir
Wilsonville, Oregon



Gentlemen:

Introduction

In accordance with your request, we are pleased to submit this proposal for a geotechnical investigation at the site of the proposed 3 million gallon reservoir in Wilsonville, Oregon. The site is located just south of Elligsen Road and east of the existing 2.2 million gallon reservoir.

We understand that present plans are to construct a new 3 million gallon reservoir for the City of Wilsonville. The new reservoir will be approximately 120 feet in diameter and have an overall height of approximately 35 feet. The reservoir will consist of a prestressed concrete structure with a base slab founded at about Elevation 363. The site of the proposed reservoir is currently unimproved and consists of a moderate to dense growth of trees and underbrush. The site is characterized as gently sloping terrain with topographic relief ranging between a high of about Elevation 361 in the south to a low of about Elevation 342 to the north.

The proposed reservoir is currently planned to be supported on fill materials established at or about Elevation 363. Additionally, the fill materials will extend well beyond the north perimeter of the reservoir in order to provide gravel access drives to both the proposed reservoir as well as the existing reservoir site. Due to the overall topographic relief and the northern site (property) constraints, it is presently planned to construct a Keystone retaining wall system to support the required embankment fill materials on a near vertical inclination. Based on the final selected location of the gravel access drives, the overall fill depth along the northern property line may range from 18 to 22 feet. Further, the planned retaining wall system may be constructed of one single wall or by terraced walls.

Fill materials for the project are reported to likely consist of a 4-inch minus reject rock product. However, other material types such as a 2-inch minus reject rock or locally available silt soils are also to be considered.

The Portland office of Dames & Moore has previously conducted investigations in the Wilsonville area and just recently completed work on the Sysco Continental site.



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Additionally, Mr. Daniel Redmond was previously involved with the geotechnical investigation and construction monitoring associated with the Parkway Avenue Loop L.I.D. project. Further, Dames & Moore has previously conducted geotechnical investigations with DYK Prestressed Tanks, Inc., and just recently completed a project for the No. 3 Aeration Basin at the Weyerhaeuser Plant in Longview, Washington. Because of our previous work in the immediate area as well as our project experience with DYK, we believe we are uniquely qualified for this project due to our thorough understanding of the structure and its sensitivity towards settlement. Based on our past experience in the immediate area, we anticipate that the site is underlain by bedrock materials at a depth ranging between 5 to 10 feet beneath existing site grades.

Scope

The purpose of our investigation is to provide appropriate recommendations regarding site preparation and foundation support of the proposed reservoir structure. Specifically, our study will include the scope items as follows:

1. Site exploration by means of six exploratory backhoe test pits. Four test pits will be excavated beneath the proposed tank while two test pits will be excavated outside of the proposed tank and within the area of the proposed embankment fills. The test pits will be excavated utilizing a rubber tired backhoe provided by the City of Wilsonville. Additionally, some clearing will be required to obtain access to all test pit locations. The test pit exploration program is based on the anticipation that competent bedrock materials will be encountered at depths no greater than about 10 to 11 feet beneath existing site grades. Should the excavations not encounter bedrock materials at these depths, the use of a drill rig and exploratory borings would be required to adequately explore the subsurface conditions.
2. A laboratory testing program to assess pertinent physical and engineering characteristics of the site soils. The laboratory testing program will include moisture content and dry density determinations, gradation (hydrometer) analysis, consolidation testing, and direct shear tests, as appropriate.
3. Recommendations regarding site preparation including any overexcavation of unsuitable soils that may be revealed by the explorations. Additionally, recommendations for placement and compaction of embankment fill soils, as well as criteria for import fill materials, will also be provided.
4. Recommendations regarding foundation support of the proposed reservoir structure including allowable bearing pressures, and estimates of total and differential foundation (tank) settlements. Our settlement analysis will be directed towards an evaluation of settlement potential of the native soils due to the placement of structural fills as well as differential settlement of the embankment fills if constructed of import rock materials or silt fills. However,

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our analysis for embankment fills constructed of silt soils would be limited to utilizing on site soils should a borrow source not be determined at that time.

5. Recommendations for seismic design criteria consisting of the site horizontal and vertical ground acceleration in percent of gravity as well as the 0.5 percent damped spectral velocity at the fundamental tank sloshing period. Based on conversations with Mr. Max Dykman of DYK Prestressed Tanks, Inc., we understand that values of these parameters are to be provided that have an average return period of approximately 500 years or a probability of 10 percent of being exceeded in 50 years.
6. Recommendations regarding foundation subgrade preparation and support of the proposed Keystone retaining wall. The recommendations will include maximum design bearing values and estimates of wall settlements as well as other backfill and compaction criteria necessary for wall design.

Our field exploration will be performed by an experienced field technician who will maintain a log of the subsurface conditions, measure any ground water levels encountered in the explorations, and take representative soil samples for subsequent observation and testing in our laboratory.

Schedules and Fees

Presently, we can begin our field exploration within three to five working days after receiving your authorization to proceed. We expect that the test pit exploration program should take approximately one-half day on the site. Should drilled boring be required for the project, we estimate that approximately one full additional day will be required at the site.

Within a week following the completion of our field work, we will be in a position to meet with you and furnish preliminary recommendations as they are developed. Our final written report would document recommendations provided verbally and by fax memoranda, and would be available approximately two to three weeks after completion of the field work.

We suggest that our services be provided on a time and materials basis in accordance with our Schedule of Charges and General Conditions, copies of which are attached and form a part of this proposal. For the scope of services outlined herein, we estimate our fees for a test pit exploration program will be in the range of \$4,300 to \$4,500. Should the use of a drilling rig be required, we estimate that our fees will increase by approximately \$1,700 to \$1,900.

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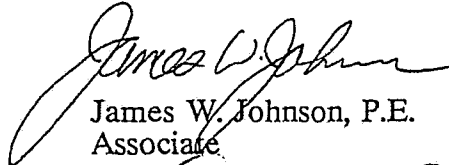
Authorization


Written authorization and acceptance of our liability provisions, as stated in the General Conditions, is necessary before we begin work. This can be accomplished by signing this proposal in the appropriate space provided and returning one copy to us. Alternatively, a purchase order explicitly referring to this proposal and attachment is acceptable. Authorization by fax is appreciated; our fax number is (503) 223-6083 (if you send by fax, please also return a signed original by mail).

We appreciate the opportunity to assist you on this project. Should you have any questions or require further information, please call.

Yours very truly,

DAMES & MOORE


James W. Johnson, P.E.
Associate


Daniel M. Redmond, P.E.
Project Engineer

Attachments: General Conditions-D
Schedule of Charges

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AUTHORIZATION CONFIRMATION

The scope of services and contractual conditions as described in this proposal are acceptable and Dames & Moore is authorized to proceed.

By *Gerald A. Krummel*
(Signature)*

Gerald A. Krummel
(Printed)

For City of Wilsonville
(Company)*

July 15, 1991
(Date)

* Individual with authority and company responsible for payment for Dames & Moore's services.



GENERAL CONDITIONS—FORM D

1.0 BILLING

1.1 Invoices will be issued every four weeks, payable upon receipt, unless otherwise agreed.

1.2 Interest of 1½% per month (but not exceeding the maximum rate allowable by law) will be payable on any amounts not paid within 30 days, payment thereafter to be applied first to accrued interest and then to the principal unpaid amount. Any attorney's fees or other costs incurred in collecting any delinquent amount shall be paid by the Client.

1.3 In the event that the Client requests termination of the work prior to completion of a report, Dames & Moore reserves the right to complete such analyses and records as are necessary to place its files in order and, where considered by it necessary to protect its professional reputation, to complete a report on the work performed to date. A termination charge to cover the cost thereof in an amount not to exceed 30% of all charges incurred up to the date of the stoppage of the work may, at the discretion of Dames & Moore, be made.

2.0 WARRANTY AND LIABILITY

2.1 Dames & Moore warrants that its services are performed, within the limits prescribed by its Clients, with the usual thoroughness and competence of the consulting profession, in accordance with the standard for professional services at the time those services are rendered. No other warranty or representation, either expressed or implied, is included or intended in its proposals, contracts, or reports.

2.2 Dames & Moore's liability shall be limited to injury or loss caused by the negligence of Dames & Moore, its subcontractors, and/or agents hereunder. Dames & Moore has neither created nor contributed to the creation or existence of any hazardous, radioactive, toxic, irritant, pollutant, or otherwise dangerous substance or condition at the site, and its compensation hereunder is in no way commensurate with the potential risk of injury or loss that may be caused by exposures to such substances or conditions.

2.3 Dames & Moore's liability for injury or loss arising from (1) professional errors or omissions and/or (2) radiation, nuclear reaction, or radioactive substances or conditions; and/or (3) any other toxic, irritant, pollutant, or waste gases, liquids, or solid materials shall not exceed \$5,000 or our fee, whichever is greater.

2.4 Dames & Moore's liability for injury or loss arising from comprehensive general and automobile exposures shall not exceed \$100,000.

2.5 Increased liability limits may be negotiated upon client's written request, prior to commencement of services, and agreement to pay an additional fee.

2.6 The Client agrees to defend, indemnify, and hold Dames & Moore harmless from any claim, liability, or defense cost in excess of the limits determined above for injury or loss sustained by any party from exposures allegedly caused by Dames & Moore's performance of services hereunder.

2.7 In the event the Client makes a claim against Dames & Moore, at law or otherwise, for any alleged error, omission or other act arising out of the performance of its professional services, and to the extent the Client fails to prove such claim, then the Client shall pay all costs, including attorney's fees, incurred by Dames & Moore in defending itself against the claim.

SCHEDULE OF CHARGES
UNITED STATES

The compensation to Dames & Moore for our professional services is based upon and measured by the following elements, which are computed as set forth below.

1.0 PERSONNEL CHARGES

1.1 Charges for employees are computed by multiplying the total direct salary cost of our personnel (expressed as an hourly rate) by a factor of 2.5. The total direct salary cost shall be a sum equal to the direct payroll cost (computed by dividing the annual payroll cost by 1,940 hours) plus 40 percent of same to cover payroll taxes, insurance incident to employment, sick leave and other employee benefits. The time of a partner or retained consultant devoted to the project is charged at an assigned billing rate.

1.2 The 40 percent employee benefit factor is used for work performed by personnel assigned to offices in the United States. For work performed by personnel in our offices in other countries, it will vary depending on the employee benefits paid in the particular location.

1.3 When outside the United States, employees' and partners' total direct salary cost will be increased by the premium customarily paid by other organizations for work at that location.

1.4 Time spent in either local or inter-city travel, when travel is in the interest of the work, will be charged for in accordance with the foregoing schedule; when traveling by public carrier, a maximum charge of eight hours per day will be made.

2.0 EQUIPMENT CHARGES

2.1 Computer control of project costs will be billed at a rate of \$1.25 per each \$50 of job charges or fraction thereof.

2.2 Other Dames & Moore equipment, if used, will be billed at the rates noted in the Appendix.

3.0 OTHER SERVICES AND SUPPLIES

3.1 Charges for services, equipment and facilities not furnished directly by Dames & Moore, and any unusual items of expense not customarily incurred in our normal operations, are computed as follows:

3.1.1 Cost plus 10 percent includes shipping charges, subsistence, transportation, printing and reproduction, long distance communication, miscellaneous supplies and rentals.

3.1.2 Cost plus 15 percent includes surveying services, land drilling equipment, construction equipment, testing laboratories, contract labor.

3.1.3 Cost plus 25 percent includes aircraft, watercraft, helicopter and marine drilling equipment and operation.

SCHEDULE OF CHARGES – APPENDIX

Dames & Moore

EQUIPMENT

AUTOMOTIVE

Vehicle, per hour (maximum of 8 hours per day)	\$ 4.00
Mileage, per mile	\$.25

SOIL

Soil sampling and compaction control equipment, per shift hour	\$ 5.00
Soil sample rings and containers, per sample	\$ 5.00

LABORATORY

Soil, water and biologic testing equipment – per employee, per hour	\$ 10.00
Dynamic Testing Equipment will be quoted as required	

DIVING

SCUBA diving, per diver, per day	\$100.00
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REPORT PREPARATION

Word Processing Equipment, per hour	\$ 10.00
In-House Reproduction, per sheet	\$.10

ENGINEERING COMPUTER SERVICES

The use of Dames & Moore's in-house computer facilities will be charged in accordance with the "Engineering Computer Applications Billing Schedule" (attached). Computer time and other services provided by outside vendors will be charged at cost plus 15%. Terminals, plotters, forms, and computer supplies will be charged at cost plus 15%.

FIELD

Because of the varied nature of equipment, location and use, these rates will be quoted as required.