



Department of Ecology
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Shorelands & Environmental
Assistance Program

July 25, 2000

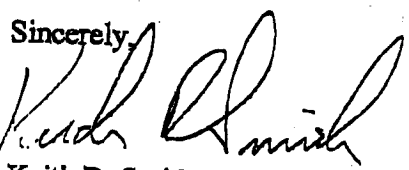
Mr. Tom Luster
Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Dear Mr. Luster:

RE: Implementation Plan for the Des Moines Creek Flow Augmentation Facility

Enclosed is an Implementation Plan for the Des Moines Creek Flow Augmentation Facility. The facility is proposed to address instream flow and temperature issues during summer low flow conditions. The plan shows the locations of the various facilities (well, pipelines, introduction point and monitoring station) associated with the flow augmentation proposal.

If you have any questions regarding the implementation plan, Please contact me at 206/988-5528 or smith.k@portseattle.org.

Sincerely,

Keith R. Smith
Water Resources Manager

Attachment

cc: Elizabeth Leavitt, POS
David Masters, King County

Seattle-Tacoma
International Airport
P.O. Box 68727
Seattle, WA 98168 U.S.A.
TELEX 703433
FAX (206) 431-5912

AR 023777



Des Moines Creek Flow Augmentation Implementation Plan

The Des Moines Creek Basin Planning Committee, comprised of the cities of SeaTac and Des Moines, King County, the Port of Seattle, and the Washington Department of Transportation, have proposed several projects to enhance the Des Moines Creek watershed. One of these proposals is a flow augmentation facility. There are two goals associated with the flow augmentation facility: increasing streamflow to one cubic foot per second during low flow periods, and decreasing instream temperatures to 16 degrees Celsius during summer low flow periods. By introducing cool water to the stream in mid- to late summer, both of these goals can be met and water quality and aquatic habitat should be improved.

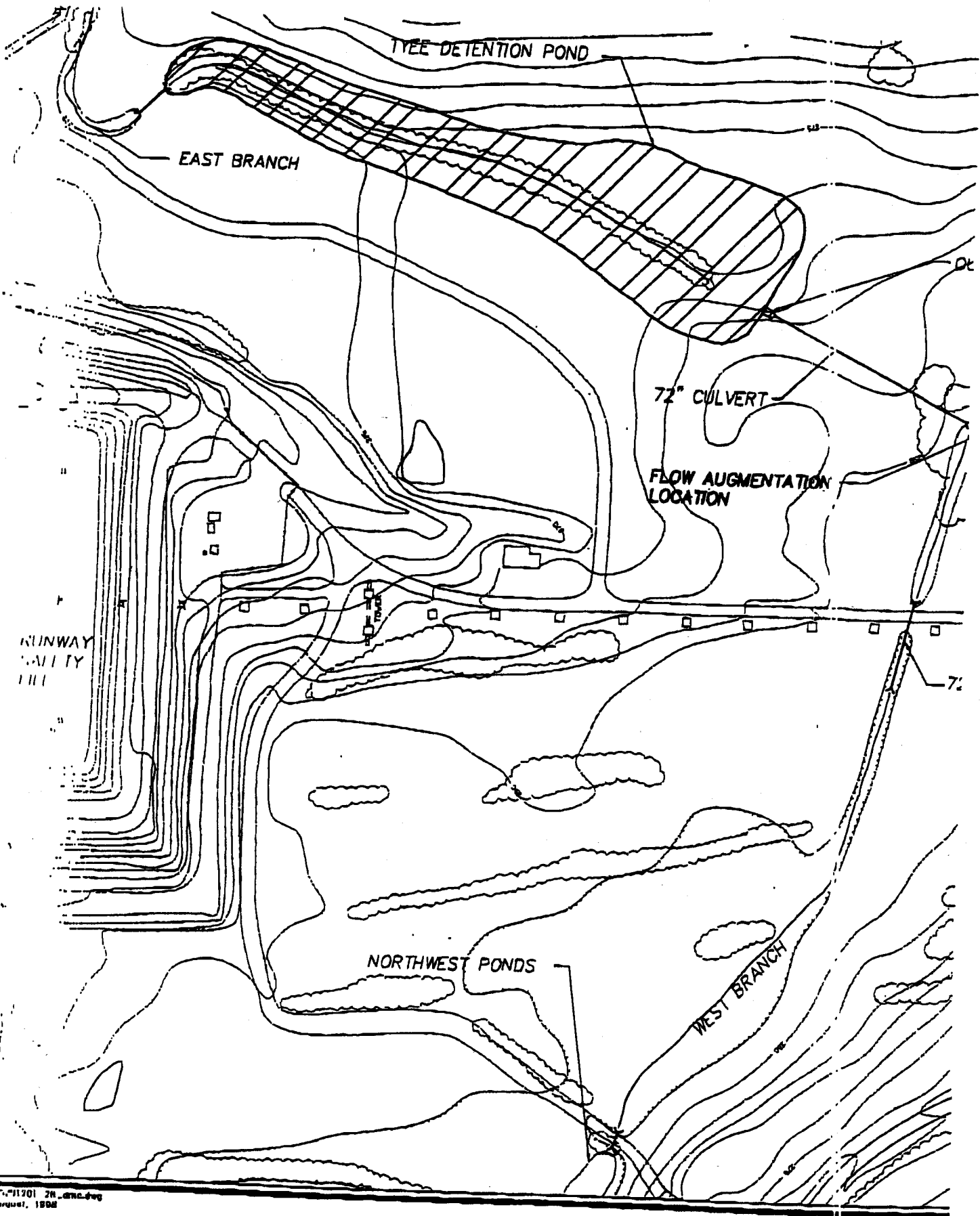
The preferred option is to use water from a Port-owned well to provide water for flow augmentation. The well is currently used to irrigate a tenant-operated golf course. The well has a water right certificate for 400 gallons per minute (0.88 cfs), which is sufficient to obtain the target streamflow of one cfs. An application to change the water right to allow the proposed use was filed with the Department of Ecology in June 2000 and is currently under review.

Figure 1, from the report "Des Moines Creek Flow Augmentation Plan", by Paramterix, Inc., dated August 1998, shows the layout of the various facilities associated with the flow augmentation project. The wellhead and pump, located near south 200th Street, will be reconfigured to discharge into an eight-inch PVC pipe. The pipe will convey water from the well approximately 800 feet north, to the point where it will be introduced to the creek just downstream of the confluence of the east and west branches. The pipe will discharge into a manhole-type structure, which will act as a stilling basin, followed by a 20-foot channel of small riprap quarry spalls leading to the stream. Water cascading down the rock channel would aerate the water before it enters the stream. The actual entry point to the stream would be designed to prevent erosion of the stream channel.

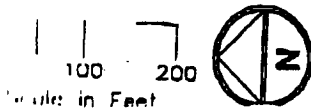
A station to monitor streamflow and temperature would be located approximately 375 feet downstream from the augmentation point, at an existing weir. The weir would be modified to achieve more accurate low-flow measurements, and a rating curve will be established. A stilling well would be installed to contain the flow and temperature sensors. At depths corresponding to flows of 1.0 cfs or less, or water temperatures of 16 degrees C or greater, a signal would be sent via a well control system to turn on the pump. A 4-20 ma signal will automatically adjust the variable speed-pumping rate to maintain 1.0 cfs or 16 degrees C in the creek. Additional monitoring after implementation will be conducted to determine if the temperature criteria needs adjusting based on the effect of the flow augmentation on downstream temperatures. A data logger will be installed at the monitoring station to record continuous (15-minute interval) readings of stage, temperature, pumping rate, and pumping time.

If water from the well is not available for flow augmentation, the Port intends to use water from its water distribution system. Although the majority of this water is purchased from Seattle Public Utilities, the Port also purchases water from Highline Water District and King County Water District 125 to serve properties owned by the Port. If this option is implemented, the basic design of the system will not change (i.e., point of introduction and monitoring station);

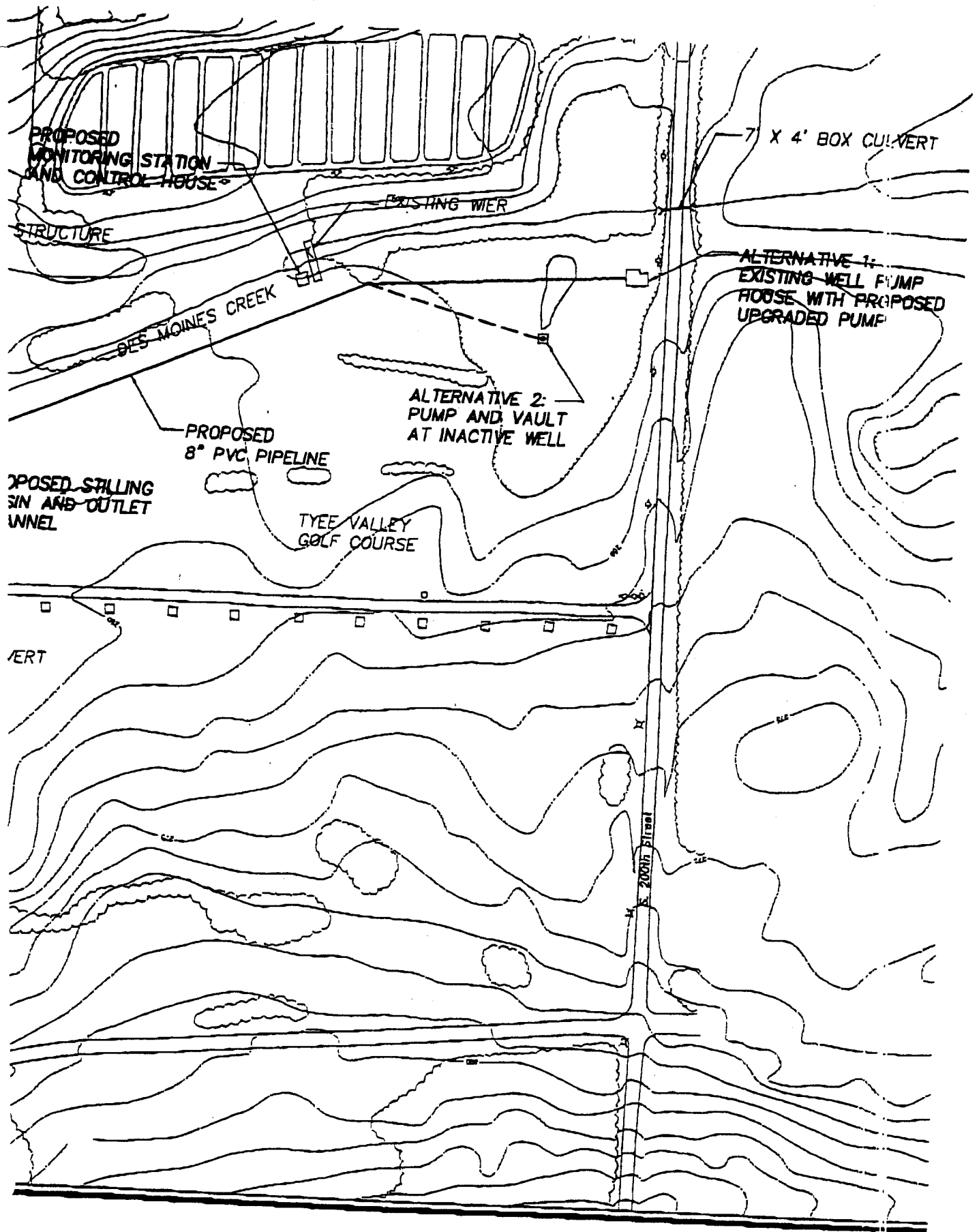
however, a different pipeline configuration will be constructed to get the water from the Port's distribution system to the point of introduction to the stream, and a facility to monitor and de-chlorinate the water prior to its introduction to the stream will be added to the design. In addition, since water from this source will have a different temperature than well water, the temperature/pumping criteria will also be revised. Discussions with the Port's utility manager and review of the agreements with the water suppliers revealed no language that would prevent the use of water from these sources for flow augmentation.



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August, 1998



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Figure 1
Conceptual design of
Des Moines Creek