MEMORANDUM

TO: Water Resources Commission and Environmental Quality Commission

FROM: Dick Pedersen, Department of Environmental Quality (DEQ), Watershed Management Section Manager; Tom Paul, Water Resources Department (WRD) Field Services Administrator; Don Butcher, DEQ Eastern Region TMDL Specialist; and Mike Ladd, WRD North Central Region Manager

SUBJECT: **TMDL Development and Implementation**
Joint Meeting of the WRC and EQC, June 6, 2002

I. Issue Statement

DEQ is responsible for maintaining and restoring water quality in Oregon. When DEQ determines that water quality standards are not being met in a particular body of water, it calculates pollution load limits, known as Total Maximum Daily Loads (TMDLs), for each pollutant entering the waterway. TMDLs describe the amount of each pollutant a waterway can receive and still not violate water quality standards. This process is described in detail in Attachment 1.

The TMDL developed for the Umatilla Basin demonstrates the clear link between water quantity, i.e. low streamflows, and water quality impacts. Low flows can affect water quality in a variety of ways. The well-known adage that "dilution is the solution to pollution" relates to the fact that pollutants can become more concentrated at lower flows. Another critical relationship, particularly to the cold-water loving salmon that inhabit many Oregon streams, is that water temperatures are likely to increase when flows are lowered.

Unlike the other pollutants addressed through TMDLs, there is no explicit standard for instream flows and DEQ does not develop TMDLs for instream flows even when low flows are known to be a contributor to water quality problems. In spite of this, the stakeholders involved in the Umatilla TMDL have a keen interest in restoring streamflow and have invested a considerable amount of effort toward this goal. This staff report describes the Umatilla Basin TMDL and highlights several streamflow restoration efforts currently underway that demonstrate the high level of collaboration and cooperation among numerous stakeholders in the basin.

II. Background

Umatilla Basin TMDL

On May 9, 2001, the U.S. Environmental Protection Agency approved the Umatilla Basin Total Maximum Daily Load (TMDL). This TMDL was developed by DEQ in partnership with the Water Resources Department (WRD) and other stakeholders in the basin. Of particular interest, the Umatilla Basin TMDL clearly demonstrates the close relationship between water quality and water quantity.

The Umatilla Basin is located in the northeastern part of Oregon, and occupies approximately 2,500 square miles. A map of the Umatilla Basin is provided as Attachment 2. Agricultural and rangelands cover more than 80% of the land area, and about 85% of the basin is in private ownership. There are five municipal wastewater treatment plants in the basin that discharge directly to surface waters under discharge permits issued by DEQ.

Water quality problems in the Umatilla Basin include temperature, pH, aquatic weeds and algae, sedimentation, turbidity, ammonia, nitrate, and bacteria. The Umatilla Basin TMDL was developed to address all of these pollutants. In addition, some of the waters in the basin were known to have problems related to habitat and flow. Even though a TMDL is not required for habitat and flow, these issues were addressed for completeness, with stakeholder encouragement.

Three land use workgroups were appointed through DEQ and with additional sponsorship from the Umatilla Basin Watershed Council and the Confederated Tribes of the Umatilla Indian Reservation. These workgroups identified water quality management practices in key sectors (forestry, urban/industrial and transportation). A related group prepared an Agricultural Water Quality Management Plan through Oregon's Senate Bill 1010 process. Another group, the Water Quantity Workgroup, was appointed to identify options for achieving streamflow restoration.

The TMDL process leads to an understanding of the causes of water quality problems. In the Umatilla Basin, the TMDL assessment indicated that the temperature goal of reducing stream warming will be difficult to achieve under the existing streamflow levels, even with restoration of a narrower channel and riparian vegetation. Since the Clean Water Act does not include express authority to allocate flow to meet water quality standards, an alternative approach was needed. The Water Quantity Workgroup developed a plan, recommended a minimum goal of working toward achieving existing Umatilla Basin instream water rights, and identified ways that streamflow could be restored. Additionally, DEQ model predictions of temperature for various flow levels helped establish priorities for instream water rights and flow augmentation projects.

DEQ and WRD consider the Umatilla Basin TMDL a model for collaboration and cooperation. Local stakeholders, with the support of DEQ and WRD, continue to be actively engaged in on-the-ground activities that are leading to the water quality

improvements that were determined necessary through the TMDL process. Several of these efforts are described below.

Water Management:

- WRD manages water in the Umatilla Basin using the McKay and Umatilla River Water Management Plan, developed by a task force of local water users and adopted by the Water Resources Commission in 1991. A key element of the Water Management Plan is the requirement for measuring devices. As a result, 82 of the diversions from the Umatilla River (excluding the river reach within the Confederated Tribes of the Umatilla Indian Reservation) and 29 from McKay Creek below McKay reservoir now have measuring devices. (McKay Creek is a tributary of the mid-Umatilla River, with a large irrigation/recreation reservoir 5 miles upstream of the Umatilla/McKay confluence.) These devices allow WRD to accurately manage the resource and allow water users to use their water right entitlements. Other management tools such as the 20 stream gaging stations operated by WRD are also critical to managing the exchange flows associated with the Umatilla Basin Project and other flow enhancement projects. As a result of the Umatilla Basin TMDL, an additional gaging station was installed on Wildhorse Creek.

Flow Augmentation

- The Umatilla Basin Project (UBP) was developed by the Bureau of Reclamation in cooperation with irrigation districts, WRD, Tribes and numerous other stakeholders to improve habitat conditions and streamflow on the Umatilla River. The Umatilla Basin Project includes a water exchange that delivers mainstem Columbia River water to participating irrigation districts in the Umatilla Basin. In exchange, the irrigation districts leave water in the Umatilla River for instream flow when it is needed for fish. In addition, a large portion of space in McKay Reservoir is set aside for instream flow augmentation. Phases I and II of the UBP were completed by 1995 and involved three of the four major irrigation districts in the Umatilla Basin. Phase III of the Project (currently undergoing feasibility analysis) would deliver Columbia River water to the one remaining large irrigation district.

- The Umatilla Basin TMDL has provided further impetus for securing federal funding for Phase III of the Project. With the completion of Phase III, more Umatilla River streamflow would remain in the Umatilla River, providing additional flows for salmonids and enhancing water quality. Also, more McKay Reservoir stored water would be available for flow augmentation. The cooperation and coordination among many state and federal agencies and local stakeholders has been a key ingredient to the success of the UBP.

- The Echo Meadows Project is a demonstration project designed to divert water from the Umatilla River during high winter flows in December through February and artificially flood lands in the Echo Meadows area near Echo, Oregon. This process was designed to recharge the shallow aquifers of the old flood plain and then discharge water back to the Umatilla River, providing cool mainstem recharge during summer low flow. The project was set up to monitor and collect field data to determine the timing of the cooler groundwater discharging back to the Umatilla River and to identify potential benefits to return flows. Due to limited funding, the project was restricted to two days of diverting water during February 2002. Results of this recharge effort, if any, will be discussed at an annual meeting to review the monitoring data collected and to discuss future project operations.

- The City of Pendleton is in the process of a multi-faceted project to move diversion points for their surface water rights to one common point on the mainstem of the Umatilla River. The city currently holds water rights and permits for 19.7 cubic feet per second of "spring" water and North Fork Umatilla River water as well as a legislative withdrawal[1] of all water from the North Fork of the Umatilla River. Their project would combine these multiple water rights and points of diversion to a single point of diversion on the mainstem Umatilla River as authorized by SB869 passed in the 2001 legislative session. In doing so, up to 33 river miles of the upper river will have enhanced flows, including cold "spring" water to improve water quality.

III. Conclusion

The implementation of the Umatilla TMDL will continue to rely on active participation of local stakeholders and state and federal agencies. A challenge in the Umatilla Basin and in areas statewide is to find ways to maintain and restore streamflows where water is fully allocated and water quality is dependent on flow restoration. Meeting this challenge will require creative approaches, cooperative partnerships, and a full array of tools to restore flows to improve the quality of Oregon's impaired waterways.

Attachments:
1. Fact Sheet Improving Water Quality: TMDLs in Oregon
2. Map of Umatilla Basin

[1] In 1941, the State Legislature gave the City of Pendleton, Umatilla County, and its water commission, the right to withdraw all of the water in the North Fork Umatilla River for public or municipal purposes (ORS 538.450) after other senior water rights are met.

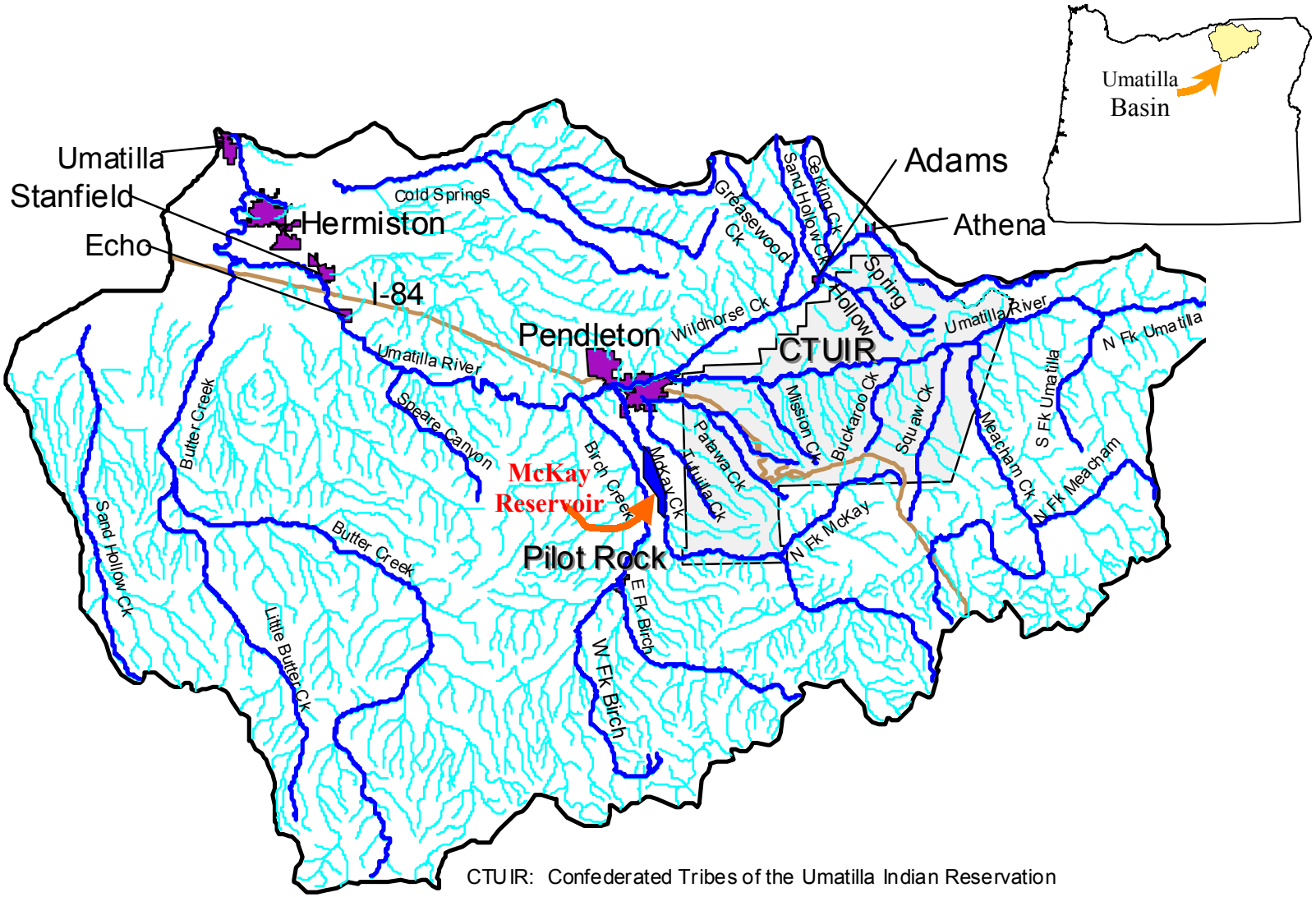
Don Butcher
Eastern Region TMDL Specialist
Department of Environmental Quality
(541) 278-4603

Mike Ladd, North Central Region Manager
Field Services Division
Water Resources Department
(541) 278-5456

Tom Paul, Administrator
Field Services Division
Water Resources Department
(503) 378- 8455 ext. 281

Dick Pedersen
Surface Water Section Manager
Department of Environmental Quality
503-229-6345

Umatilla Basin



CTUIR: Confederated Tribes of the Umatilla Indian Reservation

Attachment 2