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| Sid Morrison | Online at ybsa.org |
| Chairman | OVERVIEW 10.20.14 |
| Directors | Why was Normandeau commissioned? |
| Charlie de La Chapelle | Normandeau Associates, Inc., (Normandeau) one of the largest science-based environmental consulting firms in the United States, Mead & Hunt, Inc. and WestWater Research, LLC, were commissioned to provide an impartial, technical review of key elements of the Integrated Plan (IP), specifically to answer the following questions: |
| Max Benitz | |
| Tom Carpenter | |
| Warren Dickman | |
| Bob Hall | <i>1. Do the projects resulting from the IP provide sufficient water for instream and out-of-stream water needs, including the current climate conditions and future conditions under the three climate change models identified in the IP?</i> |
| Mike Hogue | |
| Chuck Klarich | <i>2. Is the capacity of the surface water storage options presented in the IP sufficient to meet instream and out-of-stream needs over the long-term?</i> |
| Mike Lettig | |
| Bill Lampson | <i>3. Will the timeline for constructing the water storage projects be achievable in a timely manner?</i> |
| Paul Larson | |
| Gary Lukehart | The report was based on a review of the IP and its supporting documentation, interviews with stakeholders and historical and current research of the region’s water supply and demand, climate change and the associated impact on water access. |
| Rocky Marshall | |
| Dan Martinez | |
| Natalie Martinkus | |
| Corky Mattingly | What are the conclusions of the Normandeau Technical Review? |
| Jim Milton | The Normandeau report concludes that the IP does not provide sufficient information to adequately answer these three fundamental questions. The level of doubt and uncertainty with the baseline data, resulting studies and conclusions reached in the Plan is significant. |
| Doug Picatti | |
| Ron Reiland | Highlights from the report: |
| Glenn Rice | |
| Hank Stamschror | <u>Water needs assessment for instream and out-of-stream use is insufficient</u> |
| Bob Tuck | The Instream Flow Needs Technical Memorandum (Anchor QEA and HDR Engineering 2011) does not provide sufficient information to assess the overall instream flow requirements for fish , nor whether the predicted flow |
| Duane Unland | |
| Mel Wagner | |
| Don Williams | |

changes will be enough to result in tangible beneficial effects on fish populations.

The snowmelt and winter precipitation on the east slopes of the Cascade Mountains are the primary source for water stored in the Yakima Basin reservoirs. These both dictate that **the Basin is largely reliant on seasonal storage** to satisfy municipal, aqua-cultural, and agricultural demands year round. This is particularly significant given the extent of business activity and economic impact reliant on the region's water supply. The IP sets a standard of meeting 70% of irrigation needs in drought years, without discussing how to compensate for potentially large shifts in the amount and timing of snowpack.

Tribal treaty flow rights for fish can influence the allocation of water available for irrigation in drought years

Under the current conditions highlighted in the IP, the junior water rights holders typically do not receive their full allocation - **there is simply not enough water remaining to satisfy all water right holders**. Based upon both federal and state laws recognizing the supremacy of tribal fishing rights, additional water to support instream flows would have prior rights, and would need to be satisfied before any irrigation withdrawals, further aggravating the situation for junior rights holders.

Water needs currently exceed supply and future scarcity is overlooked

The present approach neglects the impacts of climate change and receding groundwater levels, and does not account for the effects of multi-year droughts on instream flows, reservoir carry-over, and irrigation supplies. In addition, **the treatment of climate change impacts to future water supplies in the IP does not adequately quantify current and future effects on the Basin.**

According to the IP and its supporting Technical Memoranda, climate change impacts in the region will reduce snowpack, generate earlier snowmelt and runoff events and increase temperatures. In the past, lower snowpack has resulted in reduced river flows and water supply to the region, thus further depleting historic diversions, reducing water available in streams, aquifers, and existing reservoirs. The IP does not fully address these regional impacts.

Storage is insufficient to address future water needs vs water supplies

The IP's proposed storage **projects will not provide enough water volume, predictable water supply and the necessary water storage capacity for future needs.** In addition, the adequacy and reliability of the proposed water storage projects will not meet the IP stated objectives to sustain the region's population growth, municipal demands, agriculture economy and the anadromous fishery either under single or multi-year drought conditions for all users (including irrigators).

Increasing groundwater depletion is reducing aquifers at an alarming rate and may lead to loss of natural water sources

USGS groundwater studies in recent years provide an estimate of deep aquifer depletion on the order of 30,000 acre-feet (AF) annually, and the IP itself documents a reduction of 50,000 AF between low runoff and high runoff years (IP 2011). These studies have shown that **declining groundwater levels reduce the amount of inflow available for seasonal water storage, and declining groundwater levels translate into reduced in-stream flows available for fisheries and aquatic habitat.**

The IP economic model is inconsistent and limited

The IP Model is a **single-year model and is therefore not capable of providing an accurate assessment of the long-term results and effects of the IP,** such as: estimating the direct economic effect to irrigators, crop patterns, water conveyance efficiencies and fixed crop water requirements in the Basin. The economic analysis also requires additional fidelity (more consistent data sourcing) to support the values associated with water supply benefits to the ecosystem, fisheries (e.g., a new survey to assess fishery benefits), and agriculture.

What do the Normandeau report conclusions mean for the IP and the future of the Yakima Basin?

The margin of error in the IP could be significant given the lack of sufficient, consistent data and analysis to determine if the plan effectively addresses the future water needs of the region

In addition, the most **significant inconsistencies and omission include an incomplete accounting of total water need.** Further evaluation of the

baseline data, modeling analysis, and supporting information used to develop the IP is needed to provide guidance and development of the strategy and plan to create a solution for providing reliable, long-term water supplies to the Yakima Basin.

The economic value of agriculture to the region as a result of access to more water is understated

The IP model assumes that the crop patterns in the Yakima Basin do not change with improved water supply reliability. In reality, farms manage the planting of crops according to both the long-term and annual expected water supply conditions and the economic viability of the crop. **Maintaining fixed cropping patterns underestimates the economic benefits associated with improved water supply reliability to irrigators in the basin and, therefore, the benefit of additional storage.**

The value of water to the region's future productivity and prosperity must be more closely aligned with the predicted scarcity

The proposed water storage projects under the future use and climate change scenarios will not collectively provide enough water volume and predictable water supply for both a sustainable ecosystem and agricultural industry in the Yakima Basin.