

## WAC 197-11-960 Environmental checklist.

### ENVIRONMENTAL CHECKLIST

#### *Purpose of checklist:*

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

#### *Instructions for applicants:*

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

#### *Use of checklist for nonproject proposals:*

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

#### A. BACKGROUND

**1. Name of proposed project, if applicable:** Methow Valley Irrigation District Instream Flow Improvement Project

**2. Name of applicant:** Methow Valley Irrigation District and Office of Columbia River (OCR)

**3. Address and phone number of applicant and contact person:**

John Richardson, Methow Valley Irrigation District Board Member, 509-341-4584

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**4. Date checklist prepared:** March 18, 2014

**5. Agency requesting checklist:** Department of Ecology, Office of Columbia River

**6. Proposed timing or schedule (including phasing, if applicable):**

Construction is anticipated to begin in the spring of 2014 and the majority of construction is expected to end in 2015. Some continued construction and operational testing may continue through 2017.

**7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

Yes. Additional proposal elements may include ongoing maintenance and repair, and potential removal of the diversion infrastructure, conveyance infrastructure, and restoration of impacted areas.

**8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

The Methow Basin is the subject of extensive environmental study by federal, state, tribal, and private entities. This SEPA checklist assembled a body of references that help clarify the state of the existing environment for the project to meaningfully evaluate project benefits and impacts.

The MVID canal system was the subject of numerous previous studies, reports, and environmental documents. Central to these is the development of a Final Environmental Assessment (EA) to satisfy NEPA compliance for a previous incarnation of this project by the Bonneville Power Administration (BPA) in 1997. That project included many similar project elements, including canal-to-pipe conversions, canal-to-well conversions, lateral and diversion reconfigurations, and infrastructure abandonment. The EA addressed many of the same impacts being considered herein, such as groundwater and river flow effects on the environment, including fish life and loss of vegetation and wildlife habitat associated with canal abandonment, shifts in land use, potential for future growth and development, loss of canal seepage, valley aesthetics, wetland impacts, and cultural and historic impacts. Additionally, in 2004 BPA completed an EA for screening the West and East Canals. This SEPA checklist incorporates the 1997 EA and 2004 EA and its analyses by reference. Specific sections of the project setting and potential environmental impacts are incorporated into this checklist from the two BPA EA's.

The bibliography of documents in support of disclosure of environmental impacts of the project includes:

- Barksdale, J.D., 1975, Geology of the Methow Valley, Okanogan County, Washington. State of Washington Department of Natural Resources, Bulletin No. 68.
- Kauffman, K.G. and Bucknell, J.R. 1976, Water Resources Management Program Report of the Methow River Basin. Washington Department of Ecology River Basin Program Series Publication No. 4, December 1976.
- The Columbia Basin System Planning Salmon and Steelhead Production Plan, Methow and Okanogan Rivers Subbasin (WDW et al., 1990)
- Water Management Plan for Methow Valley Irrigation District (Klohn Leonoff, 1990).
- Report to Economic and Engineering Services, Inc. on Water Budget for the Methow Basin (Golder, 1991-3).
- Caldwell, B, Atterson, D., Washington Department of Ecology, 1992, Methow River Basin Fish Habitat analysis Using the Instream Flow Incremental Methodology, August 1992, online at <http://www.mvid.org/documents/92082.pdf> .
- Methow River Basin Fish Habitat Analysis Using the Instream Flow Incremental Methodology (WDOE, 1992).
- Draft Methow Basin Plan (Methow Valley Water Pilot Planning Project 1994).
- Parametrix, 1994, Wetland Assessment for the Methow Valley Irrigation District Water Conservation Plan, November 16, 1994.
- Montgomery Water Group, Inc., 1996, Methow Valley Irrigation District Water Supply Facility Plan, June 1996.
- Bonneville Power Administration, 1997, Methow Valley Irrigation District Project Final Environmental Assessment, online at [http://www.mvid.org/documents/1997\\_MVID\\_FONSI\\_DOE\\_EA-1181.reduced.pdf](http://www.mvid.org/documents/1997_MVID_FONSI_DOE_EA-1181.reduced.pdf)
- Andonaegui, C., 2000, Salmon, Steelhead, and Bull Trout Habitat Limiting Factors, Water Resource Inventory Area 48, Final report, Washington State Conservation Commission, July 18, 2000.
- Department of Ecology, Administrative Order DE02WRCCR-3950, April 29, 2002, online at [http://www.mvid.org/documents/2002\\_Admin\\_Order.pdf](http://www.mvid.org/documents/2002_Admin_Order.pdf)
- Northwest Power Planning Council, 2002, Methow Subbasin Summary, Draft Report, May 17, 2002.

- Haller, D., Department of Ecology, 2003 Re-examination of the Methow Valley Irrigation District Irrigation System, December 16, 2003, online at [http://www.mvid.org/documents/2003\\_DOE\\_engineering\\_analysis\\_text.pdf](http://www.mvid.org/documents/2003_DOE_engineering_analysis_text.pdf)
- Konrad, C.P., 2004, Simulated Water-management Alternatives using the Modular Modeling System for the Methow River Basin, Washington, United States Department of the Interior Geological Survey Water-Open File report 2004-1051.
- Bonneville Power Administration, 2004, Methow Valley Irrigation District Project Final Environmental Assessment East and West Diversion Screening Proposal, March 12, 2004, online at [http://www.mvid.org/documents/BPA\\_EA-1486-FEA-2004.pdf](http://www.mvid.org/documents/BPA_EA-1486-FEA-2004.pdf)
- Methow Basin Planning unit, 2005, Methow Basin (WRIA 48) Watershed Plan. June 20, 2005.
- Konrad C.P., Drost, B.W., and Wagner, R.J., 2005, Hydrogeology of the Unconsolidated Sediments, Water Quality, and Ground-Water/Surface-Water Exchanges in the Methow River Basin, Okanogan county, Washington, United States Department of the Interior Geological Survey Water-Resources Investigations Report 2003-4244, August 4, 2005.
- Flood Hydrology and Meteorology Group Technical Service Center, 2006, Memorandum: Methow River Drainage Basin, Hydrology Data and GIS for the Methow River, Instream Habitat Restoration Project, July 5, 2006, online at <http://www.usbr.gov/pn/programs/fcrps/thp/ucao/methow/hydrodata/methow.pdf>
- Upper Columbia Salmon Recovery Board, 2007, Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan, August 2007, online at <http://www.ucsrp.com/UCSRP%20Final%2009-13-2007.pdf>
- Anchor Environmental, L.L.C, and IRZ Consulting, 2007, Methow Valley Irrigation District Canal Management Plan, December 2007, online at [http://www.mvid.org/documents/MVID\\_Canal\\_Management\\_Plan.pdf](http://www.mvid.org/documents/MVID_Canal_Management_Plan.pdf)
- United States Bureau of Reclamation (USBR), 2008, Methow Subbasin Geomorphic Assessment, Okanogan County, Washington, February 2008, online at <http://www.usbr.gov/pn/programs/fcrps/thp/ucao/methow/hydrodata/methow.pdf>
- United States Bureau of Reclamation (USBR), 2008, Methow Subbasin Geomorphic Assessment, Okanogan County Technical Appendices, Department of the Interior Bureau of Reclamation, February 2008.
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- United States Bureau of Reclamation (USBR), 2010, Geomorphology and Hydraulic Modeling for the Middle Methow River from Winthrop to Twisp, January 2010, online at <http://www.usbr.gov/pn/programs/fcrps/thp/ucao/methow/hydrodata/methow.pdf>

- United States Bureau of Reclamation (USBR), 2010, Middle Methow Reach Assessment, United States Department of the Interior Bureau of Reclamation, August 2010.
- Washington Department of Fish and Wildlife and Ecology, 2011, Columbia River Instream Atlas Project Final Report, Ecology Publication Number 11-12-015.
- Natural Resources Conservation Service (NRCS), 2012, Web Soil Survey, 2012 online at <http://websoilsurvey.nrcs.usda.gov/app/>
- Washington Department of Fish and Wildlife, 2012, Priority Species Habitat on the Web, online at <http://wdfw.wa.gov/mapping/phs/>
- Kohr, Jonathan, WDFW, 2012, Draft Assessment of Twisp River weighted usable area (WUA) considering possible increased flows of 11 cfs, July 27, 2012.
- Washington Department of Natural Resources Division of Geology and Earth Resources, 2012, Washington Interactive Geologic Map, 2012, online at <http://wigm.dnr.wa.gov/>
- Washington Water Project of Trout Unlimited, 2012, Methow Valley Irrigation District Efficiency Alternatives Analysis, December 2012, online at [http://www.mvid.org/documents/MVID\\_Alternatives\\_Analysis\\_Final.pdf](http://www.mvid.org/documents/MVID_Alternatives_Analysis_Final.pdf) .
- RTT (Regional Technical Team), 2013, A biological strategy to protect and restore salmonid habitat in the Upper Columbia Region. A Draft Report to the Upper Columbia Salmon Recover Board. From the Upper Columbia Regional Technical Team.
- Gregg, 2013, MVID Vegetation Consumptive Water Use Survey, prepared for Methow Valley Irrigation District, 2013.
- Anchor QEA, 2013, Methow Valley Irrigation District Alternatives Evaluation Report, Prepared for Bureau of Reclamation, August 2013, online at: [www.mvid.org](http://www.mvid.org).
- Anchor QEA, 2013, Consumptive Water Use for Vegetation along MVID Canals, Prepared for Bureau of Reclamation, August 2013.
- United States Bureau of Reclamation (USBR), 2013, Hydrogeologic Summary Report, Drilling and Testing of Methow Valley Irrigation District Test Well, Methow River Basin, Washington, November 2013.
- United States Bureau of Reclamation, 2014, Methow Valley Irrigation District Instream Flow Improvement Project Draft Value Engineering Study, January 2014.
- Aspect Consulting, 2014, Evaluation of Methow Valley Irrigation District (MVID) Water Rights, January 2014.
- United States Bureau of Reclamation, 2014, MVID Test Well Report, 2014 pending.
- Anchor, 2014, Evaluation of MVID Project Benefits, 2014.

- Washington State Department of Ecology, Dixon, 2014, Hydrogeologic analysis of the proposed water use under Application G4-33098, January 2014.

**9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.** Yes. Some additional applications or governmental approvals may be necessary for removal of diversion infrastructure and affected area restoration.

**10. List any government approvals or permits that will be needed for your proposal, if known.**

**State:**

- Department of Ecology Trust Water Applications CS4-MVID@155, CS4-118277CL, and CS4-MVID@156.
- Department of Ecology New Water Right Permit Applications S4-33097 and G4-33098.
- Construction Stormwater General Permit needed for drain to Beaver Creek at end of the reconfigured East Canal (no permit other than Construction Stormwater General Permit anticipated based on agency preconsultation)
- DAHP approval / Governor’s Executive Order 05-05 Compliance-needed for any area of disturbance
- Department of Transportation Road Crossing Permits for piping and lateral work
- Washington Department of Fish and Wildlife Hydraulic Project Approval—is needed for instream projects, such as alterations to points of diversion, return flow structures within OHWL, depending on final design
- WSDOT road crossing permit—may be necessary depending on lateral reconfiguration

**County:**

- Building Permit-Required for well houses
- Site Analysis-Required for well houses
- Public Works Road Crossing permit for piping and lateral work.
- Floodplain Development Plan—some construction will occur in the 100-year floodplain, such as lateral construction/rehabilitation construction at Mill Hill to re-route the Barkley Spill, and well construction for some parcels.
- County Public Works Permit—may be needed depending on lateral reconfiguration
- Grading-No grading permit is required in Okanogan County; however, projects grading more than 100 cubic yards (CY) of material require County SEPA input. This proposal is anticipated to require several thousand CY of material.

**City:**

- Town of Twisp Shoreline Permit—may be needed depending on lateral reconfiguration
- Town of Twisp Conditional Use Permit well-drilling waiver—an existing waiver was granted for testing the well for the north end system. A waiver may be needed for permanent use of the wells and for drilling additional wells.

**11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to**

**describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

**Background:**

The purpose of this project is to improve the MVID delivery system near Twisp, Washington with resulting benefits to instream flows and fish life in the Twisp River, Methow River, and Alder Creek, improved reliability for MVID members, and additional public water supply for the Town of Twisp (also an MVID member). MVID's gravity-fed, open-canal irrigation system has helped supply the Methow Valley's agricultural production since the MVID was organized and the system became operational in the early 1900s. Water is diverted from the Methow River approximately 4 miles upstream of the Town of Twisp and supplies the east side of the valley between Twisp and Carlton via the East Canal. Water is diverted from the Twisp River approximately 3.5 miles upstream of the Town of Twisp and supplies the west side in the same area via the West Canal (see Figure 1).

Following years of litigation, the Department of Ecology and MVID entered into a Settlement Agreement to reduce diversions from the Twisp River to 11 cubic feet per second (cfs) by 2016. MVID also agreed to reduce diversion from the Methow River to 20 cfs less inflow from the Barkley Ditch. This project includes infrastructure improvements to both canals systems to meet these goals, with additional planned water savings further benefiting instream flows and fish life, member irrigation, and Twisp public water supply.

**Project Goals:**

- Increase instream flows in the impaired lower 4.5 miles Twisp River by adding 11 CFS for the mutual benefit of fish life restoration and recreational opportunities, including but not limited to fishing, swimming, kayaking, and wildlife viewing. .
- Improve instream flows by abandoning the Alder Creek diversion.
- Improve instream flows by creating irrigation efficiency improvements that benefit the Methow River, fish life and recreational opportunities.
- Improve instream flows by converting surface diversions to groundwater sources, which removes fish screens and reduces peak irrigation impacts on the Twisp and Methow Rivers.
- Prevent impacts to ESA-listed fish species and resident stocks, and eliminate annual instream and riparian habitat impacts at MVID's diversions.
- Improve access to spawning and rearing habitat for ESA-listed fish species, and reduce injury to juvenile fish species.
- Allow for future instream and riparian habitat improvements at the MVID Twisp River and Alder Creek points of diversion.
- Provide a reliable water supply for MVID members who have been affected (at times) by uncertain deliveries to their lands.
- Restore MVID member water duty from 2.83 acre-feet/acre to 4.0 acre-feet/acre as it was in the 1990s.
- Make some surplus consumptive use available to MVID members not currently irrigating

their assessed land.

- Convert surplus seasonal consumptive use associated with the Twisp / MVID lease to year-round municipal use, providing for greater public water supply in the Town of Twisp service area.

Reduced diversions would be accomplished through the conversion of the majority of West Canal users, and users at the downstream end of the East Canal, to individual groundwater wells. West Canal users in and near the Town of Twisp would be served through a smaller pressurized pipe system supplied from groundwater wells. Much of the MVID East Canal system would be replaced with gravity-fed pipe system under Alternative 5, or converted to groundwater wells under Alternative 4. Options for Lateral E1 users would include 1) being served irrigation water through the Town of Twisp potable water distribution system or 2) through a new lateral system supplied by a groundwater well, or connection to the East Canal pipeline. Lateral E1 is currently piped and the piping and valves for Lateral E1 and other East Canal laterals could be upgraded as a result of this project.

The canal conversions described above will require water right applications and approval from the Department of Ecology (DOE). In total, two new water right applications will be submitted to DOE (surface water right application no. S4-33097 for irrigation use and groundwater right application no. G4-33098 for irrigation and municipal use). These two new water right applications will be offset and mitigated for through three trust water right applications that will replace three water rights, currently held by MVID to serve its members. These three water rights currently authorize diversions on the Twisp River (West Canal), Alder Creek (West Canal), and Methow River (East Canal). This suite of water right approvals is collectively called the MVID Water Bank, and will be governed by a Trust Water Agreement between MVID and the Department of Ecology. MVID will assign portions of its permit to excluded members, to Twisp for surplus water transferred to municipal use, and will retain the balance for service of the remaining westside piped system and eastside canal/pipe system.

### **Project Elements:**

The following sections contain a description of the proposed project. The project is being evaluated through a Value Engineering Study that may alter some project elements. The Value Engineering Study is described in greater detail at the end of this section. Project elements and their nomenclature may change slightly as the Value Engineering Study progresses.

**North Satellite System:** The North satellite system will consist of a pressurized pipe/pump system designed to deliver approximately 2.8 cfs to 141 assessed acres within the MVID. The system will extend from a point above the Lookout Mountain Road at approximately Sta 130+50 (Anchor map stationing) down to about Sta 333+00 below the Archambeault property. It will drain and flush into the West Canal and thence to an existing spill into the beaver ponds along the Twisp Carlton Road. MVID members located within the town of Twisp who are not served by the E-1 lateral system will be supplied by the North Satellite system.

The water source will be a production well(s) with a withdrawal rate of approximately 900 gpm located on the Schulz Property within the Town of Twisp at the north end of the system. North Satellite system laterals will be evaluated and may be replaced and relocated as needed as part of this project.

Well Conversions: Approximately 79 MVID parcels with a total assessed acreage of approximately 420 acres on the south end of the canal system will be converted to individual groundwater wells in continuity with the Methow River. In addition, approximately 6 parcels located above the upper end of the North Satellite system pipe will also be converted to wells. The canal from the existing river intake down to the satellite system and the canal below the south end of the satellite system will be abandoned. The abandoned canal sections will be evaluated for potential risks from ephemeral drainage collecting in the abandoned canal and resulting in failure and will be mitigated as part of project design and implementation. Finally, under the Alternative 5 preferred alternative, approximately 8 parcels with a total assessed acreage of 29.68 acres beyond the lower end of the East Canal pipe at Beaver Creek spill will be converted to wells. Additional well conversion on the east side is being considered by MVID in response to potential funding limitations to fully implement Alternative 5. This could include the entirety of the East Canal service area, and was reviewed under the Alternatives Analysis as Alternative 4.

E-1 Lateral System: The Alternative 5 preferred alternative in the 2013 Anchor Report presumed that an agreement would be reached between the Town of Twisp and MVID for a water delivery contract. MVID members located within the Town presently served or potentially served by the E-1 lateral system (134.78 assessed acres/ 2.7 cfs) would remain within the District and would be supplied using the Town's existing infrastructure. The source for this system would be the Town's existing W-4 well located on the Lloyd property. More recent discussions between MVID and the Town identify renovation of the E-1 lateral based on connection to the East Canal pipe and retained under MVID service control. Either option, or a combination thereof, remain viable at this time, although the current proposal suggests that MVID-operation of E-1 is more cost-effective.

East Canal Pipe: Under Alternative 5, the East Canal system would be a pressurized pipe supplying approximately 617 assessed acres. The design flows at the Loop Spill intake would be approximately 10 cfs. The pipe would be designed considering the pressures that may result if the canal is eventually piped from the existing MVID Methow River headgate to Beaver Creek. This project would pipe the section of the canal from approximately 2400 feet above the Loop Spill (Sta 190+30) to Beaver Creek (Sta 451+00). Users on the E-14 lateral near Beaver Creek would be served by extending the lateral to the end of pipe at Beaver Creek or to the E-13 lateral. The trestle at Beaver Creek would be abandoned.

East Canal system laterals (with the possible exception of E-1) will be evaluated and replaced and relocated as needed as part of this project.

In response to potential funding limitations to fully implement Alternative 5 for the East Canal, potential piping and well conversion modifications are being considered by MVID. Piping could instead (or in addition) start at the canal diversion and proceed down-canal to Barkley Spill (or beyond depending on available funding).

Spills and Terminuses: There will be a main spill and two terminuses of the pipe system. The first is an irrigation drain on the Methow Valley Irrigation District west canal which will go into existing Beaver Ponds (see Figure 2 and 3). This drain will only be operated a couple times a year for approximately 4 hours in duration to clean out the sediment from the pipe.

There is an irrigation spill from the Methow Valley Irrigation District east canal which will drain into an alcove (see Figure 3). This spill may operate more than the west canal spill because it will be turned on in case of issues in the lower portion of the ditch such as a blowout. There could be as much as 20 cfs coming out of this spill.

The MVID East Canal will terminate at Beaver Creek drain (see Figure 3). There will be a discharge pipe that will allow water to flow into the existing concrete structure, to dissipate the energy associated with the water discharge, and then seep into the ground, and which will eventually end up in Beaver Creek. There will be no disturbance in Beaver Creek. This drain again will only be operated a couple times a year for approximately 4 hours in duration to clean out the sediment from the pipe.

A new spill may be required to be constructed near Mill Hill to route excess Barkley water back to the Methow River. Currently, this water often is conveyed further downstream to the end of the East Canal. The new spill is shown on Figure 4.

MVID, TU, and Reclamation convened a 4-day Value Engineering Study of the 30% design for the MVID Project. Six (6) central ideas were identified for evaluation that could alter the project, along with 25 additional lesser modifications. The 6 main ideas were:

- Assess and possibly pressure-test the east side laterals, which could avoid their replacement.
- Eliminate service meters.
- Relocate the intake structure on the east main pipeline, which would reduce installed piping.
- Trench pipe in the canal or pipe at the invert with minimum cover.
- Lengthen the construction season.
- Manage the project as a design-build method.

These options and lesser modifications to both the supply and conveyance systems may continue to be evaluated as design progresses. Phased implementation of design modifications may occur as this project will span several construction seasons. Depending on how the project is implemented, the project description may change in response to the ideas set forth in the Value Engineering Study. However, the overall elements (e.g. well conversions, canal to piping improvements, and removal of Twisp and Alder Creek diversions) are not expected to change.

**12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

Under the proposal, the District's service area will encompass approximately 1,300 assessed acres between the communities of Twisp and Carlton in Okanogan County. The proposed groundwater well fields will be located along the Twisp River in Twisp, the Methow River in Twisp, and the Methow River near Alder Creek. The East Canal service area will extend from Twisp to one-half mile downstream of Loup Spill. The West Canal service area will extend from Twisp to one-half mile downstream of Roach Spill and from Alder Creek to the End Spill. The revised service area is shown on Figure 1.

## B. ENVIRONMENTAL ELEMENTS

### 1. Earth

#### a. General description of the site.

Project area topography is characterized largely by flat terrain in the Methow River Valley, with some areas of rolling terrain and steep slopes.

#### b. What is the steepest slope on the site (approximate percent slope)?

The steepest slope on site is 100%. There is a wide range of slope in the project area from 0%-100%.

#### c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Glaciation greatly influenced the water resources in the Methow Valley. The glaciers originally carved U-shaped valleys into the mountain's basalt. As the continental ice sheet receded, deposits of glacial till and outwash filled the valleys, providing a broad, shallow alluvial aquifer. This aquifer is very permeable allowing water to flow underground as groundwater, and in rivers and streams as surface water. The sediments of glacial till and outwash have since been reworked along major streams and tributaries resulting in coarsely textured and permeable soils. Konrad et al. (2003) further discusses the geology and hydrogeological interpretation for the Methow Basin. Most soils are gravelly sandy loams or stoney fine sandy loams. (BPA 2004)

#### d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Sections of the existing canals are located on steep slopes subject to erosion. These areas include the East Canal at and above Twisp, and the West Canal between the intake and Twisp. One

purpose of the project is to improve the reliability of the water system by abandoning canal sections in areas that have unstable slopes and reducing canal seepage in other areas, thereby reducing the risk of canal washout.

**e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

Grading and/or filling will be required in converting sections of open canals and laterals to enclosed pipe. Several thousand cubic yards of material grade/fill is anticipated and would trigger County SEPA input. Reclamation is currently refining the overall grading and fill for the project from the several thousand cubic yard estimate. The final design will determine these quantities, which are heavily influenced by the decision for the East Canal to retain Alternative 5 (a portion of East Canal converted to pipe and retain upper canal) or move to Alternative 4 (move completely to wells and decommission East Canal in its entirety).

**f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.**

Limited erosion could occur as a result of filling and grading during construction. However, the project area is fairly arid (15 to 20 inches annual precipitation) and rainfall is light, limiting the potential for erosion. Most areas subject to construction disturbance are flat, and activities will be limited to backfilling the pipe within the existing canal depression. Best Management Practices (BMPs) that minimize erosion impacts will be employed.

**g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

Minimal impervious surfaces associated with the wells (roof, concrete pad) are anticipated, in addition to potential storage tanks. New impervious surface quantity is likely on the order of several hundred square feet.

**h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:**

Based on preconsultation with Ecology, the project is anticipated to be covered under Ecology's Construction Stormwater General Permit. Compliance with the permit requirements will include development and implementation of a Stormwater Pollution Prevention Plan, water quality monitoring as applicable, and use of established BMPs to implement temporary erosion and sedimentation control (TESC) measures for construction activities. Final site stabilization will be achieved to fulfill the stormwater permit requirements.

The end of the MVID West ditch will spill into beaver ponds twice at the beginning of the season to remove sediment build up from the pipe, and once at the end of the season to prevent freezing. The end of the MVID East ditch will spill into Beaver Creek twice at the beginning of the season

to remove sediment build up from the pipe, and once at the end of the season to prevent freezing. Drains will include erosion prevention control measures.

a. **Air**

a. **What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

Temporary automobile and dust emissions would occur during construction. No long-term emissions are expected.

b. **Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.**

None known.

c. **Proposed measures to reduce or control emissions or other impacts to air, if any:**

Dust abatement during construction is expected (e.g. spray water control of roads and staging areas).

3. **Water**

a. **Surface:**

1) **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

The MVID is located in the Methow Subbasin of the Okanogan Highland physiographic province in north central Washington State. The subbasin is entirely within Okanogan County and includes the towns of Twisp, Winthrop, Methow, Pateros, and Carlton. The Methow River Valley drains approximately 1,772 square miles of the eastern slopes of the Cascade Range and joins with the Columbia River at Pateros, Washington. The Twisp River is a primary tributary to the Methow River; their confluence is at the Town of Twisp. The legal descriptions of the East Canal, West Canal, and Alder Creek diversions are as follows.

- East Diversion, Methow River, T. 34 N., R. 22 E.W.M., Section 30 (SW ¼, NW ¼)
- West Diversion, Twisp River, T. 33 N., R. 21 E.W.M., Section 10 (SW ¼, SE ¼)
- Alder Creek Diversion, Alder Creek, T. 32 N., R. 22 E.W.M., Section 3 (NE ¼, NW ¼)

The Twisp River, Methow River, and Alder Creek are perennial surface water bodies. Wetland and riparian areas occur in the floodplain of these streams. Tributaries to the Methow River in the reach between Twisp and Carlton include Beaver, Benson, Canyon, Texas, and Alder Creeks. MVID maintains a diversion on Alder Creek, Twisp River, and Methow River. Wetland and riparian vegetation is present within and along both the East and West Canals and is sustained in part by leakage from the canals. Beaver ponds are present near the east and west canals. Wetland maps

and analyses of wetlands are contained in the June 1996 Methow Valley Irrigation District Water Supply Facility Plan.

**2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

Alternative 5 will include conversion of the majority of West Canal users and users at the downstream end of the East Canal to individual groundwater wells. West Canal users in and near the Town of Twisp would be served through a smaller pressurized pipe system supplied from a groundwater well. Most of the MVID East Canal system would be replaced with a gravity-fed pipe system. The two different options for Lateral E1 users include 1) most users would be served irrigation water through the Town of Twisp potable water distribution system or 2) through a new lateral system supplied by a groundwater well or connection to the East Canal pipeline. The Twisp River and Alder Creek diversions will be decommissioned. Design plans are underway by Reclamation and are subject to final decisions regarding the level of well conversions.

**3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

No filling or dredging of wetlands is anticipated. Fill will be placed in the existing canals adjacent to the Twisp and Methow Rivers at the West Canal intake. Areas to be filled are artificial canals and are not subject to jurisdiction by the U.S. Army Corps of Engineers.

**4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

There will be no new net surface water withdrawals or diversions. MVID will abandon the West Canal and Alder Creek diversions. Removal or modification of the Twisp River diversion is anticipated to be completed, under a separate proposal managed by the MSRF between 2016 and 2018. SEPA review for these actions may be completed under separate applications if necessary. Members formerly served by these diversions will be served by groundwater wells ultimately diverting less water (with the balance conveyed to the State Trust Water Program). MVID East will continue use of their existing diversion with any water savings from well conversions / piping not used by MVID Members being conveyed to the State Trust Water Program.

The water right permitting approach for the project contains a new surface water application for the East Canal and groundwater application for the East and West Canals, that will be offset by trust water quantities transferred to the MVID Water Bank (e.g. RCW 90.42) from MVID's Twisp River, Methow River, and Alder Creek water rights. The purpose of the trust water right applications is to create a water bank for the two new water right applications. The elements of the MVID Water Bank is summarized by the combined public notice for the 3 trust water change

applications and two new permit applications (see Appendix A). The following summarize the potential impacts and benefits associated with the MVID Water Bank:

- Approved trust water rights and new permits from the MVID Water Bank will result in an increase in flow in the Twisp River of approximately 11 cfs from the historic point of diversion downstream. The wells supplying the new north end system for the west canal may decrease this water savings near the confluence of the Twisp and Methow Rivers.
- Approved trust water rights and new permits from the MVID Water Bank will result in an increase in flow in Alder Creek of 2 cfs. MVID will eliminate diversions on Alder Creek.
- Approved trust water rights and new permits from the MVID Water Bank may result in an increase in flow from the confluence of the Twisp and Methow Rivers to the end of the MVID canal system spill locations on the east and west sides, due to irrigation efficiency benefits. The Methow River flow benefit to the environment is a function of the final design, MVID and individual member choices about what land will be returned to irrigation, how to deal with Barkley inflow, and other factors.
- Approved trust water rights and new permits from the MVID Water Bank may increase or decrease flows in the roughly 4 miles of the Methow River above the confluence with the Twisp River to the East Canal diversion location. Flow may decrease because some East Canal users will be converted to wells and there will be irrigation efficiency improvements. Flows may decrease, because some consumptive use savings from the west canal may be transferred to MVID members on the east side. Until design and full coordination is realized, a final water balance is only estimated.
- Approved trust water rights and new permits from the MVID Water Bank will allow removal of diversions on Twisp and Alder Creek, which will eliminate the annual in-river push-up dam construction that occurs through the irrigation season, and cessation of end-of-year fish trapping on the west side. Note, currently WDFW helps MVID move out any fish that are in the area of the diversion/fish bypass before the fish screen, so they don't get dewatered.
- Approved trust water rights and new permits from the MVID Water Bank may shift the season of impacts of irrigation diversions on the Methow Rivers. Historically, surface diversions from the East and West Canal created instantaneous impacts on surface water. By shifting some of this demand to groundwater, there will be a lag of impacts for weeks or longer depending on well construction, well proximity to the river, and subsurface conditions. For example, Ecology has preliminarily estimated that for some of the wells proposed to be constructed, 90% of pumping impacts on the Methow River will have been eliminated approximately 3 weeks after the end of the irrigation season. Some wells may recover faster or take longer depending on the factors described above (Ecology, Dixon, 2014). An equal or greater amount (based on irrigation efficiency) will benefit the river during the spring and summer due to the pumping lag.
- Approved trust water right and new permits from the MVID Water Bank will increase groundwater withdrawals and could create local well interference. Drawdown modeling by Ecology (Ecology, Dixon, 2014), based on actual pump tests, indicate that the water level

declines associated with any single withdrawal are expected to be less than 6 feet at a distance of 10 feet from the pumping well and less than 3 feet at a distance of 250 feet from the pumping well. Cited pump tests results indicate that aquifer drawdown at distances of 250 feet or greater from a pumping well will likely be less than 0.5 feet. Basin-wide drawdown of a conservatively modeled aquifer as a result of the proposed project was estimated to be 4.4 feet. However, it is expected, based on the actual physical parameters of the aquifer, that the drawdown within the project area would likely be less. Based on the analysis presented above, any groundwater drawdown that might occur as a result of the permitting action is not expected to interfere with the ability of nearby well owners to fully utilize their well(s).

- Approved trust water rights and new permits from the MVID Water Bank will reduce groundwater recharge of the Methow River from previous canal seepage. There will be no net decrease in seepage. Rather the water won't be diverted and will instead remain instream. The USGS Report (Konrad, 2005) "Hydrogeology of the Unconsolidated Sediments, Water Quality, and Ground-Water/Surface-Water Exchanges in the Methow River Basin, Okanogan County, Washington," examined the flow of water between rivers and aquifers in the Methow River Basin. The report identified groundwater discharges to the Methow and Twisp Rivers and aquifer recharge by the Methow and Twisp Rivers. The report evaluated seepage from unlined irrigation canals and found them to be a source of recharge to the unconsolidated aquifer during the late spring and summer. Seepage from 13 unlined irrigation canals in the study, including MVID's canals, "would represent about 9 percent of annual non-fluvial ground-water recharge in the basin as simulated by the model for water years 1992-2001." Converting a portion of the MVID West and East Canals to wells and piped conveyances will reduce groundwater contributions by a small amount.

Ecology's waste order allows 11 cfs and 2,716 acre-feet to be diverted from the Twisp River, with an overall canal efficiency of 56% (e.g. 56 out of every 100 gallons reaches the farm). Therefore, the total groundwater contribution from seepage on the West Canal is 44% of 2,716 acre-feet, or approximately 1,195 acre-feet. For a 183 day irrigation season, this represents an average groundwater contribution of 3.3 cfs (1,481 gpm). Some groundwater seepage will continue under the new piping system on the west side (e.g. Department of Health acceptable leakage standards for municipal systems is 10% or less).

The decrease in groundwater seepage from improvements on the East Canal will depend upon the total well conversions. The East Canal also receives contributions from Barkley Canal spill, and serves Barkley lands. MVID is aware of a potential improvement project for the Barkley Canal that could improve that system, which could in turn affect the quantity of spill and service currently supplies by the East Canal, but no project has been formally acted on by the Barkley Canal directors or has been funded to date. Based on these uncertainties, the total decrease in groundwater seepage cannot be directly estimated. Ecology's waste order limits a combined MVID and Barkley East Canal service of 4,909 acre-feet for 838 acres (combined). At 4 acre-feet/acre on-farm duty, the on-farm total is 3,352 acre-feet, with 1,557 acre-feet remaining for canal losses. This quantity could represent the total diminishment of groundwater seepage from the canals if the entire east canal were converted to wells. If a portion remains piped and in existing canal, per Alternative 5, this quantity would be less. All groundwater seepage losses are offset at the

Twisp and Methow Rivers by a commensurate increase in instream flow that would not be diverted.

- Approximately 124 acre-feet of consumptive use from MVID irrigation supplies designated for use within the Town of Twisp by 2001 Change Application CS4-WRC003935 will be converted to year-round municipal use. This shift creates benefit to instream flows in the Methow River (from withdrawals from Town of Twisp wells) in the summer of approximately 0.20 cfs (mid-May to mid-August), and a decrease in instream flows in the Methow River in the winter of approximately 0.05 cfs (January to mid-May and mid-August to December), see Figure 5. Anchor QEA evaluated the overall project benefits compared to conversion of up to 138 acre-feet of consumptive seasonal irrigation to year-round municipal use (Anchor QEA, 2014). Using an IFIM method and a point-based model, they concluded that even when considering streamflow impacts associated with winter diversions associated with season of use change, and groundwater attenuation from previous surface diversions, the project has overwhelming instream flow and habitat benefits for critical life stages of fish.

The proposed permit assigned by MVID to Twisp would include requirements to not increase consumptive use beyond the approximately 124 acre-feet of consumptive use purchased by Twisp. This would include a requirement that any wastewater returned to the Methow River from Twisp's municipal wastewater treatment plant under this permit not be diverted or reclaimed for a new use. A new permit issued to Twisp would include provisions to track and enforce the consumptive use limit to ensure that water that is expected to remain or return to the river in perpetuity can be verified.

The Report of Examinations (ROEs) that will be prepared by Ecology for the new water right applications will analyze surface water effects, including whether or not proposed wells are in hydraulic continuity with the Methow or Twisp Rivers, the extent of groundwater attenuation of historic irrigation diversions, and impacts on the State instream flow rule and private water rights.

**5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

Some of the construction actions will occur within the 100-year floodplain, including potential lateral reconfiguration, and some parcels that will receive wells. Structures will be designed in accordance with County flood hazard regulations. The general location of the well fields are shown on Figure 1.

**6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

Yes. The portion of the MVID water right converted to Twisp year-round municipal use will be served by the municipal wastewater treatment system (surface discharge). Discharges will be pursuant to the Town's NPDES permit.

**b. Ground:**

**1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

Yes. Groundwater will be withdrawn from the reconfigured west-side pressurized system managed by MVID, and from private well owners on the east and west side that are no longer served by MVID. Under the MVID Water Bank, MVID will assign portions of its groundwater permit to excluded members. The MVID Water Bank will operate on consumptive use equivalents, so there will not be an increase in water use (groundwater or surface water). A summary of Groundwater Application G4-33098 is provided in Appendix A.

Project Details:

West Canal Improvements

Replacement of canal system from Station 161+00 to Station 329+05 with a smaller pressurized pipe system supplied through a groundwater production well near the Methow River. Canal users upstream of 161+00 and downstream 329+05 would be converted to individual well systems (MVID Alternatives Evaluation Report, Anchor QEA, August 2013).

A Test Well was drilled on September 26-27, 2013. Aquifer testing was conducted between October 30 and November 1, 2013. The Test Well was completed to 66 feet and was pumped at an average rate of 512 gpm with 7.59 feet of drawdown. Water levels were recorded for the Test Well and in four observation wells (Town of Twisp #3 Well, the Schulz Well, the Simms Well, Hollbrook Well).

Results of the Test Well analysis showed the Methow River acts as a no-flow boundary between the north-west side wells and the south-east side wells. Further, there was minimal drawdown in the three wells on the same side of the river as the Test Well and drawdowns do not extend across the river to the Town of Twisp #3 Well. The findings conclude with 10 days of pumping the yield from the Test Well will be coming more from the River than from Storage in areas under high hydraulic conductivity conditions. In areas under low hydraulic conductivity conditions, it is after 30 days of pumping the yield from the Test Well will be coming more from the Methow River than from Storage.

East Canal Improvements

Some East Canal piping improvements will affect groundwater by reducing the magnitude of canal seepage. Under Alternative 5, this project may include the installation of pipeline to replace the MVID East Canal from Station 193+00, approximately 2,400 feet upstream of the Mill Spill, to the Beaver Creek Spill at Station 453+00. The system would be supplied by gravity through an inlet structure constructed in the existing East Canal. The

pipeline would operate full under pressure by closing a valve at the downstream end and maintaining submergence at the inlet. Approximately eight water users that are currently served from the MVID East Canal downstream of Lateral E14 would be converted to individual wells (MVID Alternatives Evaluation Report, Anchor QEA, August 2013).

The following summarize the potential groundwater impacts and benefits associated with the MVID Water Bank:

- Removal of leaky canal structures for water delivery – Eliminating portions of the canal will result in a potential decrease of groundwater contributions from a leaky canal.
- Converting surface supply to groundwater – Groundwater withdrawals will increase in proportion to the consumptive use issued from the MVID Water Bank that was formerly diverted from the Twisp and Methow Rivers. Groundwater impacts are concentrated in the area of the former west canal (greatest number of users converted).
- In the reach of the Methow River below the confluence with the Twisp River to the end of the canals, there is currently a net increase in groundwater flow to the Methow River. Following reconfiguration of the system, the Methow River will likely supply water to shallow groundwater, which will be offset by trust water conveyances from the MVID Water Bank. While the magnitude on a consumptive basis is expected to be offset one-for-one, the exact timing of the discharge-recharge relationship cannot be predicted. In general, it is expected that there will be a shift on the order of several weeks to later in the season (e.g. October, November) for the majority of the impacts (e.g. on the order of 90%), with some continuing small impacts (e.g. less than 10%) persisting for a longer duration.
- In the vicinity of Alder Creek, there is likely a net increase in groundwater recharge as the 2 cfs Alder Creek water right is left instream instead of being diverted.
- There is the potential for some well interference if wells are not sited properly. Ecology is expected to specify controls/setbacks to minimize interference potential when issuing the new groundwater permit from the MVID Water Bank.

**2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

No waste material is anticipated to be discharged to groundwater. The portion of the MVID water right transferred to Twisp year-round municipal use will be served by the municipal wastewater treatment system (surface discharge). As new houses are constructed, there will be a proportionate increase in wastewater discharge under Twisp's NDPES permit.

**c. Water runoff (including stormwater):**

**1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

The Methow Valley Irrigation District Instream Flow Improvement Project will result in minimal increase in impervious surfaces (production well roofs and concrete pads, and pressure tank(s)) and no runoff. Standard construction techniques will be used to control stormwater during project implementation.

Approximately 124.2 acre-feet of consumptive use water will be transferred for municipal use in the Town of Twisp, which will result in new home construction. No specific subdivisions or development plans are proposed as part of this Project. Any new development would be subject to Town development regulations, which include BMPs for stormwater control.

Water draining from the reconfigured canal and piping system is described in the project description. Water quality will be materially the same as current spills of canal water back into the Twisp and Methow Rivers, but may include surface infiltration, discharge to Beaver Creek, and discharge to Beaver Ponds. No adverse change in water quality is expected as a result of the proposed project, although lack of exposure to the sun and air temperature from an open canal (as opposed to a pipe) may result in a beneficial temperature reduction.

**2) Could waste materials enter ground or surface waters? If so, generally describe.**

No unregulated discharge of waste materials to ground or surface water will occur. Twisp has an approved NPDES permit and will continue to maintain required levels of treatment for any portion of irrigation water converted to municipal supply.

**d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

Groundwater impacts will be mitigated by surface water trust holdings, and by adequate setbacks for wells to minimize interference.

**4. Plants**

The BPA 2004 Final Environmental Assessment (BPA 2004) documented wetland, shrub steppe vegetation occurring in the project area.

The Okanogan Highlands Province is characterized by moderate slopes, broad rounded summits, and broad river valleys (Franklin and Dyrness, 1988), and the primary natural plant community consists of high desert steppe. This association is characterized by bunchgrasses and threetip sagebrush. The steppe is arid to semiarid, with low precipitation, warm-to-hot summers, and relatively cold winters.

The project landscape is largely confined to the valley bottoms, and lies adjacent to the Methow and Twisp Rivers. The Methow Valley is predominantly agricultural bottomland and upland steppe. Most of the valley bottom vegetation communities are croplands that grow hay, alfalfa, wheat, peas or orchards. Steppe communities are located upslope of the existing canals where native vegetation is relatively undisturbed. Dominant vegetation along the canals consists of both

species that are drought-tolerant and those that tolerate both moist and dry conditions. The habitat at the East diversion and fish screen site shows evidence of past disturbance. Small rocks and bare ground without vegetation represent an estimated 35 percent of the surface. The West diversion and fish screen site is well vegetated along the canal banks and in the immediate vicinity of the existing screens. Some plant species observed during an October 28, 2003 site visit included the following:

<u>East Site</u>		<u>West Site</u>	
Red alder	Box Elder	Willow sp.	Mannagrass
Bitterbrush	Phacelia sp.	Snowberry	Horsetail
Horsetail	Bulbous bluegrass	Birch (dark)	Orchardgrass
Mannagrass	<u>Calamagrostis</u> <u>sp</u>	Goldenrod	Rose sp.
		Bitterbrush	Bentgrass

Riparian zones are areas that are located adjacent to aquatic systems with flowing water and that contain elements of both aquatic and terrestrial ecosystems that mutually influence each other. Some portions of the canals resemble natural riparian characteristics because water is contained within them during the irrigation season and other parts of the year, as well. A 1996 survey of riparian vegetation along the canals conducted for the MVID Water Supply Facility Plan identified hydrophytic, facultative, and drought-tolerant species (Parametrix, 1995, in MWG, 1996). Most of the riparian areas within or next to the canals contain relatively low species richness and a predictable list of species.

More recently an independent vegetation survey was completed and is summarized in the MVID Vegetation Consumptive Water Use Survey (Gregg 2013). The crew surveyed canal and vegetation widths every 1,000 feet from Station 200+00 to Station 400+00 on the MVID East Canal and from Station 0+00 to 160+00 on the MVID West Canal. The crew also characterized vegetation by type as deciduous, conifer, or shrub/grass. The density of each type of vegetation was characterized as low (0 to 50 percent of total cover), medium (50 to 80 percent of total cover), and high (80 to 100 percent of total cover). Vegetation was characterized along the East Canal from Station 197+00 to Station 491+00 (upstream of the Mill Spill to downstream of the Beaver Spill) and along the West Canal from Station 0+00 to Station 674+00 (diversion at Twisp River to the end of the canal).

**b. What kind and amount of vegetation will be removed or altered?**

Minor vegetation consisting primarily of grasses will be cleared at the pump station and/or wells, storage tanks, and pipeline. Tree and shrub mortality along the piped canal section of the West and East Canals is anticipated as a direct impact of construction. In addition, mortality of established trees and shrubs in areas down gradient of abandoned canals is expected. The total removed/altered vegetation is estimated to be approximately 85 acres. This estimate was developed by Anchor QEA based on existing vegetation survey data (Anchor QEA, 2013). Anchor determined that approximately 63 acres of vegetation would be removed or no longer receive subsurface irrigation from the West Canal system, and a corresponding 22 acres from the East Canal system. Canal fill areas may provide area for additional plant growth.

Some of the riparian areas that have developed along the open canals are likely to revert to drier upland conditions following conversion. Where supplemental irrigation is not provided by private landowners, species such as black cottonwood (*Populus trichocarpa*), quaking aspen (*P. tremuloides*), and red-osier dogwood (*Cornus stolonifera*) will die over time and be replaced by native upland species such as big sagebrush (*Artemisia tridentate*) and bluebunch wheatgrass (*Agropyron spicatum*).

The proposed changes to the MVID canal system will result in a loss of riparian vegetation, ponds and marshes along the MVID east and west canals. These riparian vegetation, ponds, and marshes are primarily supported by canal seepage, and are quantified in the Anchor QEA analysis (2013). These losses will result from reduced diversions from the Twisp and Methow River diversion structures, converting portions of the west and east canals to a closed pipe system, and moving some water users from surface diversions to groundwater diversions. However, increased instream flows are expected to at least partially offset these losses by improving riparian and vegetation conditions along the natural river and creek corridors.

**c. List threatened or endangered species known to be on or near the site.**

The BPA 2004 Final Environmental Assessment (BPA 2004) documented that although one ESA-listed plant, Ute ladies’ tresses, is potentially found in the area, this species was not found in the area during two separate botanical surveys. Chapter 5.2 of the 2004 EA has a detailed discussion on ESA consultation for this and other listed species. No additional species listings have occurred since that time.

**d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:**

Native grass species will be reseeded along the backfilled canal and any areas used for temporary construction staging.

**5. Animals**

**a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:**

<u>Common</u>	<u>Name</u>
mule deer	songbirds
white tail deer	pileated woodpecker
coyote	amphibians
squirrels	bald eagle
common loon	golden eagle
mallard	osprey
Canada geese	red tailed hawk
great blue heron	Northern Spotted Owl

red winged blackbird	gray wolf
grizzly bear	Canada lynx
black bear	wolverines
brown bear	moose
spring Chinook salmon	Coho salmon
summer steelhead	summer Chinook salmon
bull trout	lamprey

**b. List any threatened or endangered species known to be on or near the site.**

<b>Common Name</b>	<b>Federal Status</b>
spring Chinook salmon	Endangered
summer steelhead	Endangered
bull trout	Threatened
Coho salmon	Unlisted
summer Chinook salmon	Unlisted
northern spotted owl	Threatened
gray wolf	Threatened
Grizzly bear	Threatened
Canada lynx	Threatened

**c. Is the site part of a migration route? If so, explain.**

Deer migrate through the project area. Anadromous fish are present in the Twisp and Methow Rivers. All anadromous fish life stages migrate to some degree in the fluvial environment. Bald eagle are known to use the Methow River as a primary migratory flyway.

**d. Proposed measures to preserve or enhance wildlife, if any:**

The project is intended to preserve or enhance wildlife as follows:

- Improve instream flow in the flow-impaired lower 4.5 miles of Twisp River by adding approximately 11 cfs.
- Contribute towards salmonid recovery by eliminating impacts to ESA-listed fish species and reduce habitat impacts at MVID’s Twisp River Point of Diversion.
- Eliminate fish impacts associated with MVID’s annual actions required to maintain the Twisp River pushup dam, fish screen operations, and the stranding of redds (fish egg placement and incubation sites) and juvenile fish in the MVID.
- Allow for the future removal of the West Canal intake and fish return channel.
- Eliminate the low-flow fish passage barrier associated with annual maintenance of the MVID West pushup dam. Improvements provide access for fish to their spawning and rearing grounds upstream of the diversion.
- Allow for the future removal of the Alder Creek diversion and improve flow in Alder Creek. Lower Alder Creek is juvenile fish rearing habitat.

This project will increase instream flows in the Twisp River. Flow improvements will benefit all aquatic species, but particularly the federal listed ESA Upper Columbia River Spring Chinook and the Upper Columbia River Steelhead.

As identified by the Yakama Nation's stream reach assessment for the Lower Twisp River Basin, both low instream flow and water temperatures are contributing factors to a degraded fish habitat. During the time frame of 07/01 to 10/15 is the most critical for adult migration and spawning of ESA species. Degraded fish habitat and an increase in barriers are caused by instream flow reductions. A major reason for the reduction in instream flow along the lower Twisp River is diversion by MVID. This project proposes to work with the MVID to reduce their diversion, thus improving fish passage and habitat.

Portions of the Twisp River are on Washington State's 303(d) list for both temperature and instream flow. The Yakama Nation's stream reach assessment for the Lower Twisp River Basin identifies a restoration objective of using practical and feasible means to increase instream flows in the Twisp River. This objective was identified in effort to prevent further habitat degradation and improve existing habitat. Enhancing low base flows during summer months will help improve water temperature barriers that currently impact fish migration.

## **6. Energy and natural resources**

**a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.**

Well pumps and/or surface pump stations including booster pump stations will use electrical power.

**b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

No.

**c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:**

Variable frequency drive pumps/motors are being considered for production wells as part of the project.

## **7. Environmental health**

**a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.**

None are anticipated.

**1) Describe special emergency services that might be required.**

None required by the project. However, during construction, in the unlikely event of an accident, local emergency services would be used.

**2) Proposed measures to reduce or control environmental health hazards, if any:**

No environmental health hazards are anticipated.

**b. Noise**

**1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

None anticipated.

**2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

Impacts from temporary noise related to construction activities may occur from dawn to dusk approximately 12 hours per day. Pumps and/or wells will create minor noise upon project completion.

**3) Proposed measures to reduce or control noise impacts, if any:**

Temporary construction noise will be mitigated by limiting activity to standard working days and hours. Noise associated with pumps and/or wells will be mitigated by placing them in a station structure at the discretion of individual land owners.

**8. Land and shoreline use**

**a. What is the current use of the site and adjacent properties?**

The current use of most of the site and adjacent properties is agriculture, residential, and commercial. In addition a variety of recreational activities take place nearby.

**b. Has the site been used for agriculture? If so, describe.**

Yes, a majority of the site has been and will continue to be in agriculture use. This project is to improve the irrigation system of an irrigation district that serves water to its Members. The majority of the crops are irrigated pasture, grass hay, and alfalfa with some in orchard.

**c. Describe any structures on the site.**

Throughout the length of both MVID West and MVID East there are numerous structures. The MVID East and West system includes structures for diversion and control of flow, fish screen facilities and various gates flumes and control structures required for conveyance of flows. Structural improvements will be impacted on both the East and West systems. The ditch construction will take place within the existing easements and landowner approved areas. There are no structures on the site where the new MVID West production wells will be installed. This site is 300 feet south of the Hanks Grocery store and more than 400 feet west of the closest residence. Individual land owners will site wells on their properties near power supplies and structures at their discretion.

**d. Will any structures be demolished? If so, what?**

Various aspects of the surface conveyance canals and controls will be abandoned and or obliterated by this project. Other aspects of the East and West diversion and delivery systems may require future work efforts to reduce or mitigate impacts associated with abandonment. For example, the West Canal diversion is expected to be addressed under a subsequent project by MSRF. Alder Creek's diversion may also be removed under a separate project.

**e. What is the current zoning classification of the site?**

Most of the MVID system is located in unincorporated Okanogan County in either the Methow Valley Review District's Uplands zoning district (20-acre minimum lot size) or the MVRD 5 zone (5-acre minimum lot size). The well location for MVID West is located within the Town of Twisp in the zoning district R3 Residential. A portion of the delivery system (E-1) lateral is located within the Town of Twisp

**f. What is the current comprehensive plan designation of the site?**

Lands within the District fall within the Intensive Agricultural, Unclassified, and Urban Comprehensive Plan designations.

**g. If applicable, what is the current shoreline master program designation of the site?**

The Methow River is designated in the Master Program for Okanogan County Shoreline Management (Shoreline Master Program) as Rural Environment.

**i. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.**

Okanogan County adopted critical area regulations under the State's Growth Management Act of 1990, as amended, to protect wetlands, areas with critical recharging effects on potable water, frequently flooded areas, geologically hazardous areas and fish and wildlife habitat conservation areas. The existing and proposed MVID facilities are located in some of these areas. Ecology and MVID will continue to coordinate the proposed actions with the county planning department to specifically address any concerns regarding zoning or conflict with critical areas.

**i. Approximately how many people would reside or work in the completed project?**

Existing MVID members reside in the project area, which is expected to remain the same.

The approximately 124 acre-feet of consumptive use that will be converted from seasonal irrigation to year-round municipal use will allow new house construction in Twisp over time (likely on the order of a few percent a year). The final portion of the permit assigned or issued to Twisp will depend on the final consumptive use math Ecology establishes for the MVID Water Bank. Because Twisp has a higher return flow percentage than the historic MVID irrigation use (e.g. wastewater returns, system lost water), Twisp may receive more than 138 acre-feet in their new permit based on a “consumptive use equivalents” model under the MVID Water Bank. Currently, a house in Twisp uses approximately 202 gpd/house. At that rate, approximately 4 houses can be constructed for each acre-foot of water transferred (subject to no increase in consumptive use).

**j. Approximately how many people would the completed project displace?**

None.

**k. Proposed measures to avoid or reduce displacement impacts, if any:**

Not applicable.

**l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

The project has been developed through extensive coordinating with landowners potentially impacted by the project to ensure their irrigation needs provide for continued agriculture. The wells and pump station will be located in a remote portion of a largely undeveloped parcel. The pipeline will be buried.

**9. Housing**

**a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

New houses in Twisp is subject to the final consumptive metrics established for the MVID Water Bank. No specific houses will be constructed as part of this project. The project includes new water rights for Twisp which will create future housing opportunities within the Town’s water service area.

**b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

None.

**c. Proposed measures to reduce or control housing impacts, if any:**

Not applicable.

**10. Aesthetics**

**a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?**

The well houses will be constructed to a height not to exceed 15 feet.

**b. What views in the immediate vicinity would be altered or obstructed?**

Views will potentially be altered along both the east and west canals as the seepage supported vegetation corridor dies or is removed and is slowly replaced by a lower native grass and shrub dominated assemblage

**c. Proposed measures to reduce or control aesthetic impacts, if any:**

The majority of the project infrastructure will be buried.

**11. Light and glare**

**a. What type of light or glare will the proposal produce? What time of day would it mainly occur?**

The pump station and/or well house will include an outdoor light for safety of access during nighttime.

**b. Could light or glare from the finished project be a safety hazard or interfere with views?**

No

**c. What existing off-site sources of light or glare may affect your proposal?**

Not applicable.

**d. Proposed measures to reduce or control light and glare impacts, if any:**

None proposed.

**12. Recreation**

**a. What designated and informal recreational opportunities are in the immediate vicinity?**

The Twisp River supports a significant recreational fishery for rainbow, brown, and brook trout. The Twisp River drainage is the most extensively used area for recreation in the MVID project area also includes hiking, rafting, camping, mining, horseback riding, and birding.

**b. Would the proposed project displace any existing recreational uses? If so, describe.**

No, increasing instream flows in the Twisp River will increase recreational opportunities.

**c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

None. There will not be significant impacts to recreation.

**13. Historic and cultural preservation**

**a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

Information on Tribal Rights and Traditional Uses can be found in the 1997 EA. In October 1996, BPA conducted a field investigation of the East and West canals. The possible pipeline, reservoir, and well locations for the 1997 Alternative 1 were also inspected, which generally overlap the Alternative 5 project area. Two artifacts were recorded. Although five cultural resource sites have previously been identified in the vicinity of the canal, only the Chilliwist Trail is within the project area. It is also known that unmarked Native American cemeteries are located in the area, and one known cemetery has been marked with a rock (Confederated Colville Tribal member, public meeting, 1996).

In November of 2003, a BPA archaeologist surveyed the East and West fish screen replacement proposal sites, including the fish and water bypass and electrical cable trenching areas. No cultural materials were found.

The MVID canal system has been determined to be eligible for inclusion on the National Register of Historic Places (National Register), under Criterion A (property associated with events that have made a significant contribution to the broad patterns of our history). The system has been the most significant irrigation feature in the Methow Valley. Although neglect and numerous changes in the structural materials have caused substantial deterioration, both the East and West canals are still mostly located in the original right-of-way. (BPA 2004)

In December 2013, a Methow Valley Irrigation District In-stream Flow Improvement Project Cultural Resources Survey was conducted by an archeologist with Cascadia Conservation District. The cultural resource identification consisted of a literature review and field inspections for archaeological sites and standing structures, through pedestrian survey and subsurface testing. The literature review revealed that the Methow Valley Irrigation District East and West Canals had been determined eligible for listing on the National Register of Historic Places in 1996. The current survey served to update the existing documentation on both the East and West Canals and identify additional cultural resources located within the projects proposed area of potential effect. Two additional cultural resources were identified; one historic mining shaft on the west canal and a historic debris scatter on the east canal. Both sites date to the historic period, i.e., greater than 50 years old. The mining shaft is located within a segment of the West

Canal that will be abandoned and will not be impacted by project activities. The debris scatter is located near a segment of ditch that will be piped, but is separated from proposed activities by a paved road and will not be impacted. An adverse effect to the Methow Valley Irrigation District East and West Canals has been determined, which will require additional consultation with representatives from the Department of Ecology and the Department of Archaeology and Historic Preservation.

**b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.**

The East and West Canals are considered a landmark of cultural importance. In addition a few artifacts have been recorded in previous cultural resource surveys as described above.

**c. Proposed measures to reduce or control impacts, if any:**

The Methow Valley Irrigation District will work closely with the Washington State Department of Archeology and Historic Preservation and affected Tribes to reduce or control impacts through the cultural resource survey process. An anticipated mitigation for a portion of this project will be to leave portions of the historic ditch undisturbed through abandonment.

**14. Transportation**

**a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.**

The well stations will be accessed from the Twisp River Road, Twisp-Winthrop Eastside Road, Twisp Carlton Road, and/or Highway 20. Private wells will be accessed by landowners from their parcel access. Canal access and spills/drains will be accessed by MVID from established easements.

**b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

No. A limited public transportation system serves Okanogan County, WA.

**c. How many parking spaces would the completed project have? How many would the project eliminate?**

Minimal parking spaces will be constructed at the pump station in accordance with the building permit for the structure.

**d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).**

A gravel surfaced road accessing the wells and pump station will be constructed on private property.

**e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

Not applicable.

**f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

Occasional operational vehicular trips to project infrastructure and monitoring locations will occur but not on a daily basis.

**g. Proposed measures to reduce or control transportation impacts, if any:** Not applicable.

#### 15. Public services

**a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.**

None are anticipated.

**b. Proposed measures to reduce or control direct impacts on public services, if any.**

Not applicable.

#### 16. Utilities

**a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

Power is anticipated to be available to the property for the site of the proposed wells and/or pump stations.

**b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

Power will be required for the wells and/or pump stations.

#### 17. Cumulative Impacts (this section has been added for this specific proposal)

There are other similar projects occurring nearby, they are not causally-related to this project. However, for completeness we considered the cumulative impacts associated with all these projects occurring in the same geographic area in the same time period. These include:

- Methow Basin Irrigation Efficiency Grant Program Projects. Ecology and the Conservation Commission coordinate to fund irrigation efficiency projects in the Methow Basin. The resulting water savings are trusted for instream flow. This type of project typically yields non-consumptive water savings that are protected in the primary reach of the Methow River and its tributaries via the trust water program.
- OCR Gold Creek Acquisition. Gold Creek is a key tributary of the Methow River that suffers from low instream flows. Tributaries are limited in the Methow River and are vital to the success of salmon, steelhead, and bull trout production. There are few landowners who have water rights out of this tributary. This project was a permanent acquisition that resulted in 79.08 acre feet per year (216.8 gallons per minute). This water is protected April 15<sup>th</sup> to September 15<sup>th</sup>, during the irrigation season. It can be reallocated to new uses, but is currently held in the trust water program.
- Barkley Ditch Improvements: Through various agreements and efficiencies in the system the Barkley Ditch in cooperation with Trout Unlimited (TU) has reduced the diversion quantity to approximately 19.6 cfs over the last several years. Continued improvements in this system could include improved ditch maintenance activities to reduce impacts to listed species in the Methow River mainstem and Barkley Diversion side-channel of the Methow River, further irrigation efficiency, and a potential downstream point of diversion move.
- Methow Wildlife Area (Big Valley Ranch): Through one of Trout Unlimited's NRCS Irrigation Efficiency grants the lessee on the Big Valley WDFW land was able to upgrade their irrigation system to pivots. A temporary point of diversion change was made to bring the water downstream for use; however current plans may include long-term donations of water to the trust water program.
- Chewuch/Bear Creek: This project coordinated by Trout Unlimited includes irrigation efficiency and diversion changes that could result in approximately 9.5 cfs of water savings trusted in the lower Chewuch. A DNS was issued for this project in 2012 by Okanogan County (SEPA 2012-3 Chewuch Canal Efficiency).
- WAC 173-548 Reserve Reallocation: The Methow Watershed Council is evaluating a proposal to reallocate the original reserve established in WAC 173-548 to better match reserve supply to reach-specific demands in the basin. Such a reallocation would have to occur by rule amendment.
- Twisp and Methow River Surface to Well Conversions: Trout Unlimited, Ecology and other entities continue to work on surface to well conversions in the Twisp and Methow Rivers, which help eliminate seasonal in-river construction work, fish screens, and attenuate demand over time.
- Twisp River Flood Plain Enhancement Project – The MSRF project is in the planning stages which may enhance and restore floodplain conditions within the reach segment including the MVID West diversion site.

The projects above are not directly related to the proposal herein. However, they have similar impacts and are in the same general proximity. Impacts will largely be beneficial and will include more instream flow in the Methow River and tributaries. Although as a whole the projects are

considered beneficial (and worthy of state and federal funding), some impacts do occur. For example, irrigation efficiency projects can reduce groundwater contributions to surface water, can reduce habitat in some areas, and generally result in more water available in the spring and summer, and less in the fall and winter, since groundwater return flow currently persists after the end of the irrigation season. Similarly, conversions of surface diversions to groundwater attenuate the demand hydrograph. The MVID proposal has impacts that are similar to those in the list above and are largely beneficial.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. The answers were compiled from the applicants (MVID and OCR) and a number of technical experts coordinating implementation of the project, including Trout Unlimited, Van Hees Environmental, Aspect Consulting, Forsgren Associates, and the Bureau of Reclamation. I understand that the lead agency is relying on them to make its decision.

Signature: John Richardson 3/24/14  
Date Submitted: .....