Visual Impact Assessment
Final

Arthur R. Bowman Dam

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and

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On behalf of

Portland General Electric Company

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Visual Impact Assessment

Crooked River Hydroelectric Project
Arthur R. Bowman Dam

Portland General Electric Company

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LIST OF ACRONYMS

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
USBR	Bureau of Reclamation
OPRD	Oregon Parks and Recreation Department
KOP	Key Observation Points
ORV	Outstandingly Remarkable Value
RMP	Resource Management Plan
VRI	Visual Resource Inventory
VRM	Visual Resource Management

VISUAL IMPACT ASSESSMENT

CROOKED RIVER HYDROELECTRIC PROJECT ARTHUR R. BOWMAN DAM

PORTLAND GENERAL ELECTRIC COMPANY

EXECUTIVE SUMMARY

This Visual Resources Analysis and report assesses the potential visual effects on scenic resources of Portland General Electric Company's proposed Crooked River Hydroelectric Project at the Arthur R. Bowman Dam (Bowman Dam) (FERC No. 13527). The report is developed as part of a potential license application to be submitted to the Federal Energy Regulatory Commission.

The visual resource impact analysis included 4 components:

- Review of relevant land use planning documents;
- Assessment of existing conditions;
- Development of design recommendations; and,
- Completion of contrast rating.

The analysis area included the Bowman Dam, and the Lower Crooked River for 0.5 miles downriver of Bowman Dam. Portions of Highway 27 were also included; however, sections of the Highway were limited to the dam crossing, and 0.05 miles on either side of the dam. The Bowman Dam contains the Prineville Reservoir to the east. The Chimney Rock Segment of the Crooked River dominates the landscape character of the proposed project area. The earthen dam is textured with large cobble and boulders arranged in linear bands of color, including gray, red and yellow (tan) that blend the dam with the surrounding landscape.

The project proposes the addition of power generating facilities to be developed at the foot of the Bowman Dam within lands administered by BLM as Visual Resource Management (VRM) Classes II and III.

- *Class II* -- Retain the existing landscape character. The level of change to the existing landscape should be low.
- *Class III* --Partially retain the existing landscape character. The level of change to the characteristic landscape should be moderate.

The Management Classes provides a visual standard for which to measure the potential impacts to visual resources. Proposed facilities within the project area include: a powerhouse structure, an upgraded access road, bridge, and transmission access.

Key observation points (KOP) representing sensitive viewing areas were identified. Photographs were taken from these points to understand the baseline condition. These photographs were then used to develop visual simulations of the proposed project. The simulations were then compared to the existing conditions images, and impacts were analyzed to see if they met the BLM VRM Classes objectives.

In order to minimize visual impacts and meet the BLM VRM Classes, PGE developed design options based on "landscape form, line, color, and texture" to reflect the natural patterns represented within the Bowman Dam, the surrounding landscape character, and to minimize glare and reflection from the Crooked River. The simulations were developed to reflect these criteria.

- Powerhouse – The proposed powerhouse will be textured and colored to mimic the lines, texture and colors of the existing landscape setting. Material choices for the exterior walls included earth tone paint, cor-ten steel fascia, and colored CMU block. The roof was designed as a neutral charcoal, asphalt composite shingle. Exterior structures, such as the power transformer, were colored grey to match the color of the building and the lower level rock color of the dam.
- Bridge -- The proposed bridge design minimizes the visual impact and reflection off the river. Design elements include a tan surface color to match the color of the service road and provide a visual transition from the road to the bridge. The upstream and downstream faces of the bridge will be colored gray in order to minimize reflection off the river.

Utilizing the design criteria listed above, the proposed powerhouse and bridge will result in weak, long-term contrast against the Bowman Dam and surrounding landscape. The project will be visible, but will not attract undue attention from the casual observer.

Weak contrast and element is congruent with Class II VRM objectives and is consistent with the visual resource management goals of the Crooked River Wild and Scenic River (BLM and USBR 2003).

Restoration of disturbed areas with native plants, particularly where scarring of the ground plane resulted from construction-related impacts will help to further reduce visual impacts.

INTRODUCTION

Portland General Electric Company (PGE) is proposing to develop the Crooked River Hydroelectric Project at the Arthur R. Bowman Dam (Bowman Dam) (FERC No. 13527). The proposed project includes construction and operation of a powerhouse at a location just downstream of the existing Bowman Dam (Figure 1). The proposed project is located at the base of the U.S. Bureau of Reclamation (USBR)-owned Bowman Dam, within lands also administered by the Bureau of Land Management (BLM).

The Bowman Dam impounds the Prineville Reservoir. The reservoir provides water storage for irrigation and flood control for the Crooked River. State Scenic Highway 27, a National Back Country Byway, is located adjacent to the project area, and traverses the top of the dam. Sensitive viewers within the vicinity of the project area include recreators (above and below the dam), anglers on the Crooked River below the dam, and roadway travelers located along Highway 27.

The visual resource assessment presented in the Preliminary Application Document for the Crooked River Hydroelectric Project[1] indicates that the proposed addition of power generation facilities at the Bowman Dam would be located within lands managed by BLM Visual Resource Management (VRM) Class II and Class III Objectives[2] (Figure 2). Although the proposed project is currently located within a federally designated wild and scenic river (BLM and USBR1992), a bill has been introduced in Congress that will move the wild and scenic boundary approximately ¼ mile downstream of the dam. Accordingly, if the legislation is enacted, PGE's proposed project area will no longer be within the wild and scenic designation.[3]

This Technical Report contains the results of a visual resource impact analysis of the proposed project. The analysis focused on three components of the project, including the powerhouse structure, access road and bridge, and transmission lines. The analysis presented in this report assessed potential impacts to visual resources that may result from the proposed project, and

[1] Portland General Electric. 2010. Preliminary Application Document, Crooked River Hydroelectric Project (FERC No. 13527)
[2] United States Department of Interior (USDI), Bureau of Land Management (BLM). 1989. Visual Resource Inventory (Manual H-8431-1)
[3] If the legislation to move the wild and scenic river boundary is not enacted, the project will not be built.

determined the consistency of those impacts with stated BLM VRM objectives and regulations of the federal Wild and Scenic Rivers Act (Public Law 90-542; 16 U.S.C. 1271 et seq). Because the proposed project is located on BLM-administered lands, the visual assessment will follow the BLM VRM system[4]

This analysis assumes the following:

- Access to the Crooked River below Bowman Dam will continue to be open to limited walk-in access downstream of the project boundary.
- Visual sensitivity within the analysis area is high due its recreational use and designation of the area as a Wild and Scenic River.

METHODOLOGY

The analysis area for the visual resource impact assessment included the Bowman Dam, and the Lower Crooked River for 0.5 miles downriver of Bowman Dam. Portions of Highway 27 were also included; however, sections of the Highway were limited to the dam crossing, and 0.05 miles on either side of the dam. The visual resource impact analysis included 4 components:

- Review of relevant land use planning documents;
- Assessment of existing conditions;
- Development of design recommendations; and,
- Completion of contrast rating.

Existing conditions were assessed through review of relevant planning documents and field observations. Relevant Planning Documents included the following:

- Upper Deschutes Resource Management Plan (BLM 2005)
- Prineville Reservoir Resource management Plan (2003)
- Lower Crooked Wild and Scenic River (Chimney Rock Segment) Management Plan (1992)
- The Brothers LaPine Resource Management Plan (BLM 1989)
- Crook County Comprehensive Plan

Existing visual resources were assessed through field observations at Key Observation Points (KOPs) located within the analysis area. Key Observation Points were established at 3locations

[4] http://www.blm.gov/nstc/VRM/

representing common views, sensitive viewer groups, and/or landscape features. Landscape character was described for views toward the Project area from each KOP, and included basic visual character elements of form, line, color, and texture, and included a discussion of analysis factors such as scale (size relationship, proportion), dominance (attraction, visibility), distance from the project, predominant angle of observation, dominant use (i.e., recreation or travel), and average travel speed at which the project would be viewed. Project-level information on scenic resources was used to inform design options to avoid or reduce potential impacts to visual resources that may result from operation of the proposed project.

Indicators used to measure potential impacts to visual resources that could result from the project included:

- Impacts to visual resources, measured by the level of visual contrast created by the project, and
- Conformance with existing VRM objectives.

Visual contrast was measured using the BLM's visual contrast rating procedure (BLM 1986). This method assumes that the extent to which the project results in adverse effects to visual resources is a function of the visual contrast between the project and the existing landscape character. Contrast was assessed using photosimulations depicting project features during the operational phase. Impact determinations were based on the identified level of contrast, and are not a measure of the overall attractiveness of the project (BLM, 1986).

At each KOP, existing landforms, vegetation, and structures were described using the basic components of form, line, color, and texture. Project features were then evaluated using simulations, and described using the same basic elements of form, line, color, and texture. The level of perceived contrast between the proposed project and the existing landscape was then classified using the following definitions:

None: The element contrast is not visible or perceived.
Weak: The element contrast can be seen but does not attract attention.
Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong: The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

The level of contrast was assessed for all project components during the operation and maintenance phase. No photosimulations of construction or decommissioning were developed. Contrast Rating Forms are provided in Appendix C.

REGULATORY SETTING

This section describes the regulatory framework pertinent to visual resources and scenery management.

Bureau of Land Management – Visual Resource Management System (BLM 1986)

The BLM administers the 8-mile segment of the Lower Crooked River between Bowman Dam and State Scenic Highway 27 (mile marker 12) as a designated Wild and Scenic River corridor. Visual resources on BLM-administered lands are managed under the VRM System (BLM 1986). The VRM system provides the framework by which to manage visual values by classifying all BLM-administered lands into one of four VRM Classes. Classification of lands occurs during the resource management plan (RMP) development process by considering the relative visual value of lands within the context of other resource and land management needs. Visual values are established through the visual resource inventory (VRI) process, which classifies scenery based on the assessment of three components: scenic quality, visual sensitivity, and distance zones. Each VRM class is defined by a specific management objective that describes the acceptable level of change to visual resources. Change in the resource is measured though implementation of the contrast rating procedure and by assessing shifts in VRI values. The VRM Class objectives are defined as follows:

- *Class I* -- Preserve the existing landscape character. This objective is assigned to areas with special designations, such as national wilderness areas and the wild sections of national wild and scenic rivers.
- *Class II* -- Retain the existing landscape character. The level of change to the existing landscape should be low.
- *Class III* --Partially retain the existing landscape character. The level of change to the characteristic landscape should be moderate.
- *Class IV* -- Allow major modification of the existing landscape character that minimizes visual impacts to the extent possible.

Upper Deschutes Resource Management Plan (2005)

The Upper Deschutes RMP identifies VRM designations applicable to the project area (Figure 2). The Plan identifies the Cooked River corridor as a VRM Class II area. Objective VR-1 indicates that all BLM-administered lands in planning area managed as VRM Class II should "*retain the existing character of the landscapes. Manage landscapes seen from high use travel routes, recreation destinations, special management areas, or that provide visual backdrop to communities for low levels of change to the characteristic landscape. In these areas, management activities may be seen but should not attract the attention of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.*"

The Plan identified the immediate foreground of State Hwy 27as VRM Class III. Landscape managed as Class III should "Partially retain the existing character of the landscape. Manage VRM Class 3 lands for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape."

BLM guidelines under the Upper Deschutes RMP include the following:

- Completing a visual resource impact analysis prior to any ground-disturbing activity per BLM's contrast rating methodology, regardless of size or potential impact.
- Designing projects to minimize impacts to visual resources

Prineville Reservoir Resource Management Plan (USBR 2003)

The Prineville Reservoir RMP was prepared in cooperation with the Oregon Parks and Recreation Department (OPRD). The purpose of the Plan is to provide management direction for lands and waters under USBR jurisdiction in the vicinity of the Prineville Reservoir. Management objectives for visual resources contained in the Prineville Reservoir RMP include:

- Objective LMI 1.5: "Coordinate with BLM and Crook County to…explore viewshed impacts and general land management considerations on lands outside of Reclamations ownership." (USBR 2003).

The Brothers LaPine Resource Management Plan (BLM 1989)

The Brothers LaPine RMP provides management objectives for the proposed project area. Applicable land management objectives are provided through the areas designation as an Area of Critical Environmental Concern (ACEC), federally-designated Wild and Scenic River, and assigned VRM objectives. Management standards are described as follows:

- *Wild and Scenic River*– Public lands adjacent to the 8-mile segment of the Crooked River currently designated as Wild and Scenic will be managed to "protect the outstandingly remarkable values (ORVs) which qualified them for consideration until such time that they are designated or released from further study." The segment of the Crooked River below Bowman Dam was identified as having ORVs for recreation.
- *Visual Resource Management Designation* – The Plan states that an analysis to determine potential adverse effects on visual qualities will be completed prior to any ground-disturbing activities. Activities "within areas of high or sensitive visual quality may be permitted if they would not attract attention or leave long-term adverse visual change on the land." The proposed project is located in an area identified as having high or sensitive visual quality. Activities that "would not attract attention or leave long-term adverse change on the land" are consistent with VRM Class III

Lower Crooked Wild and Scenic River (Chimney Rock Segment) Management Plan (1992)

As noted, in October 1988, the 8-mile segment of the Lower Crooked River between Bowman Dam and State Scenic Highway 27 (mile marker 12) was designated by the U.S. Congress as a National Wild and Scenic River, and classified as a recreational river area. The Congressional Record indicates that scenic and recreational values within the river corridor boundaries qualify as Outstandingly Remarkable (BLM 1992). The segment is also protected as an ACEC as described in the Brothers/La Pine Resource Management Plan. The Lower Crooked Wild and Scenic River (Chimney Rock Segment) Management Plan (1992) serves as a comprehensive management plan for this segment, and is considered a subordinate site-specific activity plan designed to complement and implement portions of the Brothers/La Pine RMP and Prineville Reservoir RMP (BLM 1992). The Plan states:

> *"All lands within the wild and scenic river corridor will be managed to protect, or where possible enhance Visual Resource Management (VRM) classifications to retention [VRM Class II[5]], primarily on the west side of the river and east of Highway 27, or partial retention [VRM Class III] within the primary use areas between the east side of the river and Highway 27". (BLM and USBR 1992*)

[5] VRM Class interpreted by the author and is not explicitly stated in BLM and USBR (1992).

Crook County Comprehensive Plan (2003)

It is the goal of Crook County to "satisfy the recreational needs of the citizens of Crook County and visitors by providing for human development and enrichment with recreation areas, facilities, and opportunities. These include, but are not limited to, open space and scenic landscapes; recreational lands; historical, archeology and natural science resources; scenic roads and travelways..." The Plan identifies the Palisades of the Crooked River, below Bowman Dam, as a scenic resource. Natural Resource Goal Policy 1 indicates that the Palisades should be protected through the Natural /Scenic Area Buffer Policy, under the coordination and cooperation of local, state, and federal agencies. The Chimney Rock segment of the Crooked River that extends from Bowman Dam to Dry Creek is identified as a significant Goal 5 resource due to its designation a Wild and Scenic River corridor.

EXISTING CONDITIONS

The proposed project area is located in the high Rimrock desert of central Oregon. The area is characterized by the Prineville Reservoir, which is formed by an earthen dam (Bowman Dam) at its west end. The Prineville Reservoir measures approximately 14.6 miles long and is as much as 4,700 feet wide. The landscape surrounding the reservoir is dominated by steeply sloping hills with occasional peaks and buttes in the distance. Vegetation is characterized by stippled juniper scattered amongst basalt outcrops, and brown and reddish soils (USBR 2003).The downstream portion of the reservoir lies within the Crooked River Canyon and is bounded on either shore by steeply sloping canyon walls. An 8-mile reach of the lower Crooked River between Bowman Dam and mile marker 12 of State Highway 27 is a National Wild and Scenic River was classified as a recreational river area (USBR 2003)[6]. The Lower Crooked River corridor encompasses 2,560 acres of public and private land along this reach of the river. The USBR manages one river mile (20 acres), while the BLM manages seven river miles (2,300 acres). The corridor is located in Crook County. The river meanders through a rugged canyon that includes basalt cliffs up to 600 feet high, with scattered western juniper growing on steep hillsides. State Scenic Highway 27, adjacent to the river on the cast bank, was designated a National Back Country Byway in

[6] Pending redesignation to exclude Bowman Dam and an approximate ¼ mile reach below the dam.

1989. Several primitive BLM camping areas and the Chimney Rock Recreation Site are also located on the east bank between the highway and the river.

Landscape Character

Both the Bowman Dam and the vertical rock faces of the Chimney Rock Segment of the Crooked River dominate the landscape character of the proposed project area. Bowman Dam is roughly 240 feet high and 750 feet wide. The west slope of this earthen dam is textured with large cobble and boulders arranged in linear bands of gray, red and yellow(tan) that blend the dam with the surrounding landscape. The color and texture of the dam decrease the visual contrast of the structure against the landscape. Though apparent, the structure does not attract the attention of the casual observer. At the base of the dam is a peninsula that separates the spillway from a small wetland pond. The wetland pond collects water from the hillside and backwater from the river through a culvert and dike. The peninsula is accessed from a road located on the south side (river left) of the Crooked River. From the top of the south side of the dam is a remnant access road traversing the south slope of the hillside toward the dam. This road provided construction access from the top of the dam; however, the road has since eroded and is now visible as a diagonal line that contrasts the existing slope.

The OPRD-administered Big Bend campground is located approximately 0.25 miles downstream of Bowman Dam. At the east edge of the campground is a trailhead and gated access road leading upstream toward the dam. At the terminus of the road is a small, open meadow that contains scattered grasses and sagebrush. This area is restricted due to dam safety issues and is primarily used to stage maintenance activities for the dam. Currently, there is a large pipe staged at the margin of the hillside and the meadow.

Key Observation Points

For the purpose of the impact analysis, three KOPs (Figure 3) representing common and/or sensitive views were identified. The KOPs served as standard locations to establish baseline conditions, collect photographs for visual simulations of the proposed project, and implement the visual resource impact analysis. Existing conditions at each KOP are described as follows:

- ***KOP 1***: KOP1 is located on Highway 27, on the south (river-left) side of the Bowman Dam, on the downstream side of the roadway. The KOP was placed alongside an existing pull-out and overlook of the Crooked River facing west-southwest. This KOP represents views experienced by motorists or cyclists who may pull off to the side, and access this location to obtain views of the Chimney Rock segment of the Crooked River, below Bowman Dam. With USBR's addition of the parapet wall after the KOP was established, the road was raised and a guardrail was added to the southwest edge of the road blocking the pullout from direct access by the casual observer. Access to this viewpoint is now from a parking pullout on the southeast edge of the dam. The viewer must park and walk across the road to access this location.

  Views downstream include the deeply incised canyon characterized by patches of talus, rock outcroppings and columnar basalt, and widely-spaced pinion-juniper. The landscape is characterized as enclosed – due to river canyon – but large in scale. A small section of the river is visible before it turns north and out of view. Views from KOP 1 include the dam (talus) and the spillway, and double-track dirt roads on either side of the river. Highway 27 is visible on river-right. The scale of landform seen from this vantage point is co-dominant with the river. The dramatic vertical cliffs and meandering corridor of the Crooked River are considered dominant to views of the Dam from this location. The landscape draws the viewers' attention outward and away from the dam.
- ***KOP 2:*** KOP2 is located on river left, approximately 500m downstream of the dam, across the river from the southern edge of Big Bend campground. This KOP was selected to represent views of the project area experienced by anglers. The view is slightly enclosed and the scale is large. There is a distinct gray line at the top of the dam that delineates the parapet floodwall. The bands of colored texture on the dam reflect the colors of the surrounding landscape. From this vantage point the spillway of the dam is obstructed by the bulbous landform and the basalt face and the curvature of the river. Moderate vegetation from the ponderosa pines also inhibits the view of the spillway on river right while river left is a dominant line of Ponderosa Pine.
- ***KOP 3:*** KOP 3 is located on river right of the Crooked River, approximately 100 meters downstream of the Bowman Dam. The Dam structure is the dominant feature in the view. This KOP was selected to represent views of recreators who may be accessing the project area from Big Bend Campground via the maintenance road. This location represents the closest viewer position to the proposed project that also includes the proposed bridge. The view is enclosed, and small in scale. The color and texture of the Dam is consistent with the surrounding landscape. The primary contrast of the Dam with the surrounding landscape is the result of the bold horizontal line created by the structure. The spillway appears smooth and glossy; particularly when compared to the texture of the surrounding structure. Existing transmission lines are visible from this KOP.

PROJECT DESIGN

PGE developed the following design options to minimize impacts of the proposed project to visual resources. Design options focused on repeating elements of landscape form, line, color, and texture to blend with the existing landscape and backdrop of the Bowman Dam, and minimize glare and reflection from the adjacent Crooked River.

- Powerhouse – The proposed powerhouse will be textured and colored to mimic the lines, texture and colors of the existing landscape setting. Material choices for the exterior walls included earth tone paint, cor-ten steel fascia, and colored CMU block. The roof was designed as a neutral charcoal, asphalt composite shingle. Exterior structures, such as the power transformer, were colored grey to match the color of the building and the lower level rock color of the dam.
- Bridge -- The proposed bridge design minimizes the visual impact and reflection off the river. Design elements include a tan surface color to match the color of the service road and provide a visual transition from the road to the bridge. The upstream and downstream faces of the bridge will be colored gray in order to minimize reflection off the river.

PHOTO SIMULATIONS

To support the visual resource impact analysis, and to disclose expected visibility of project components from various vantage points, photographic simulations of the powerhouse structure and bridge were prepared for KOP 2 and KOP 3 (Figures 4 and 5). The simulation did not include the transmission line, as it will be located below ground or within the existing infrastructure. No design detail is available at this time for that project component.

KOP 2 was selected, because it represented views that would be experienced by recreational anglers moving upstream through the Wild and Scenic River corridor. KOP 3 was selected, because it represented views that would be experienced by recreationists walking upstream from the Big Bend Campground. Recreational viewers within the Wild and Scenic River Corridor are considered the most sensitive viewer group within the project area that may experience direct views of the project.

The simulation was produced by rendering of project components using 3D computer models, and super-imposing these images onto photographs taken from KOPs. Model parameters account for environmental factors, such as viewing angle and light conditions, thereby resulting in an

accurate virtual representation of the appearance of the proposed project. The static simulations are presented as a set of two photographs: One photograph demonstrating existing conditions and the second photograph of the same view includes the simulation of the Project facilities. On each photograph sheet the following information is recorded: date and time, latitude and longitude, weather, camera and lens type, viewing direction of the photograph, and distance to the nearest structure based on a preliminary engineering plan within the layout.

ENVIRONMENTAL CONSEQUENCES

The proposed powerhouse and bridge would be characterized by a cubic form, colors, vertical and horizontal lines and coarse texture that are expected to result in weak, long-term contrast against the backdrop of the Bowman Dam and surrounding landscape. The project, constructed and operated under the proposed design option, would be visible, but would not attract attention. The color and texture of the structure is expected to blend with the backdrop of the earthen dam and surrounding floodplain, thereby minimizing contrast of the structure.

When viewed from the upstream portion of Big Bend on the Crooked River, the proposed project would be largely eclipsed by existing vegetation (Figure 4). The muted color and horizontal line of the bridge structure would be visible; however, it would blend with the existing horizontal line of the flood plain. Perceived contrast would be minimized by the high degree of absorption provided by the backdrop of the Bowman Dam, and the expansive vertical scale of the Chimney Rock Segment of the Crooked River.

Although it is expected that the structure would be more easily detected at close proximity; the color and texture of the powerhouse structure and bridge would blend with the existing Bowman Dam and access road, thereby resulting in weak visual contrast (Figure 5). The project, constructed and operated under the proposed design option, would be visible but would not attract attention.

The powerhouse and bridge are expected to be visible from the pull-off located south of Bowman Dam; however, the structures are expected to be subordinate to views across the Chimney Rock segment and Palisades of the Crooked River. The rooftop of the structure would be constructed of asphalt shingles, and colored charcoal grey, thereby blending with the

backdrop of the floodplain. Consequently, the structure is expected to result in weak visual contrast when viewed from this location.

Weak element contrast is consistent with the Class II Visual Resource Management (VRM) objective assigned to BLM-managed lands at the location of the proposed project area (BLM, 2005). Weak element contrast is also consistent with the visual resource management goals of the Crooked River Wild and Scenic River (BLM and USBR 2003).

MITIGATION OPPORTUNITIES

Impacts to visual resources could be further reduced through restoration of disturbed areas with native plants, particularly where scarring of the ground plane resulted from the expanded footprint of construction-related impacts. Visual screening using vegetation is important to soften the visual interface from casual observer and to further improve visual quality.

REFERENCES

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Figure 1. Vicinity Map and Land Ownership

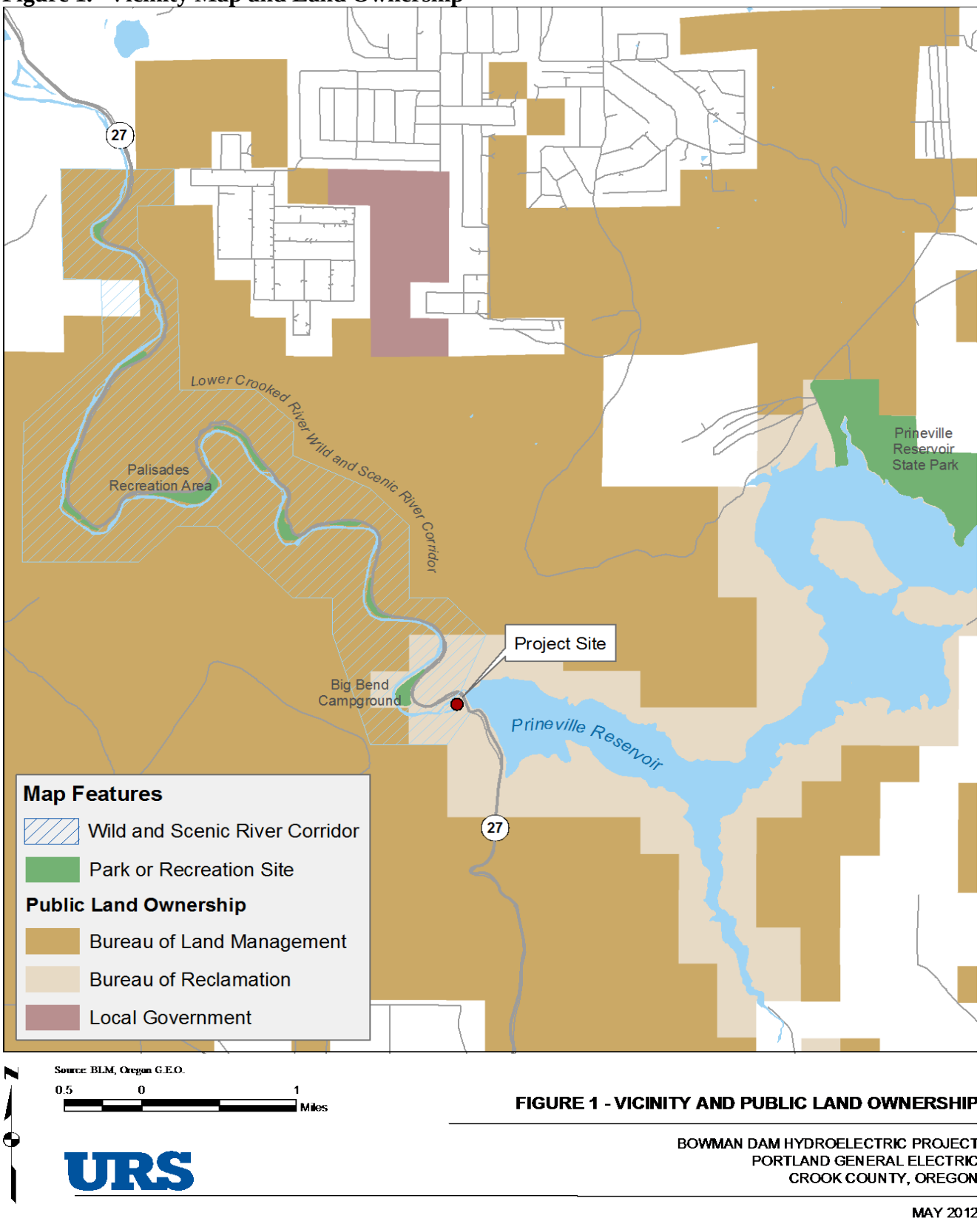


Figure 2. Visual Resource Management (VRM) Classes

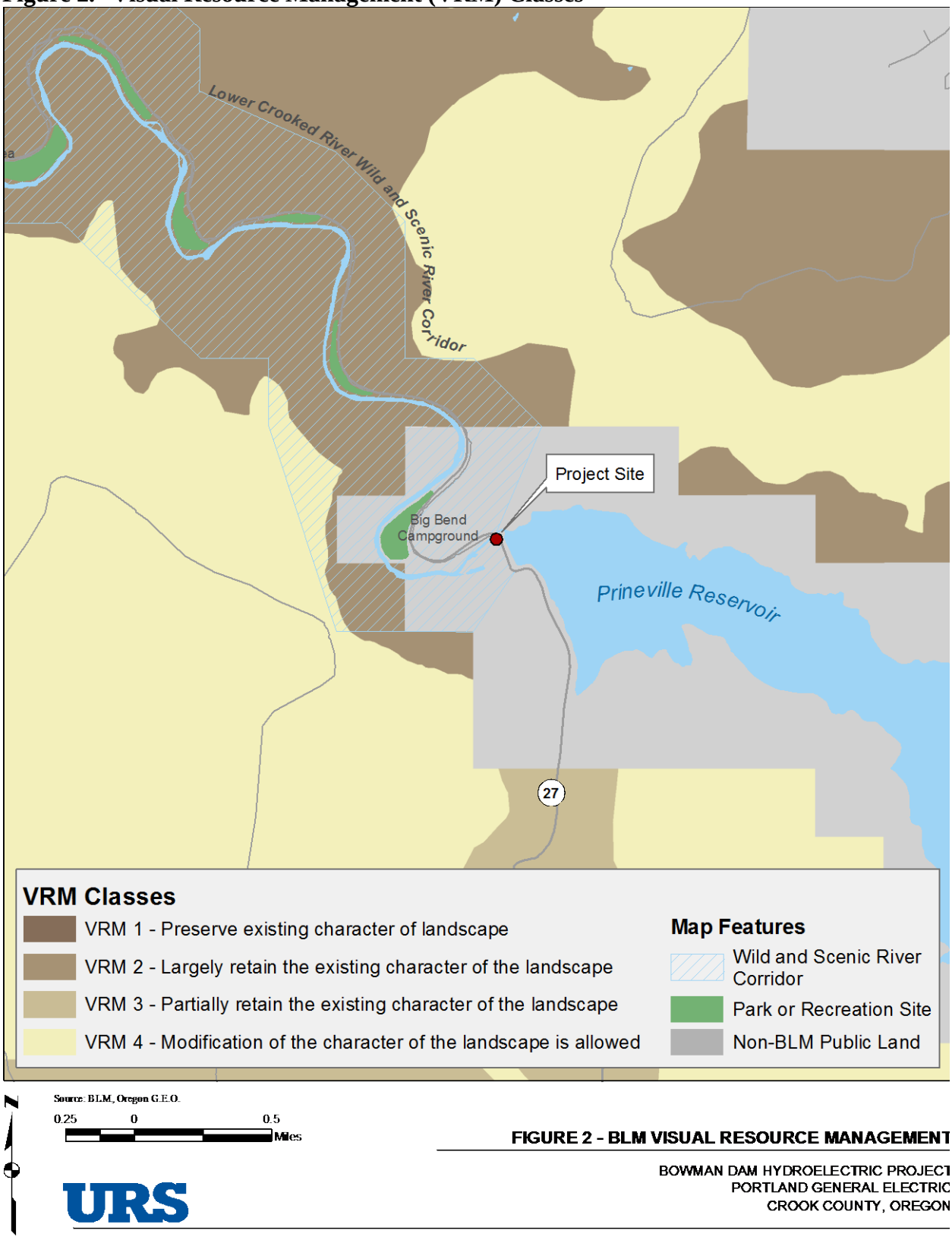
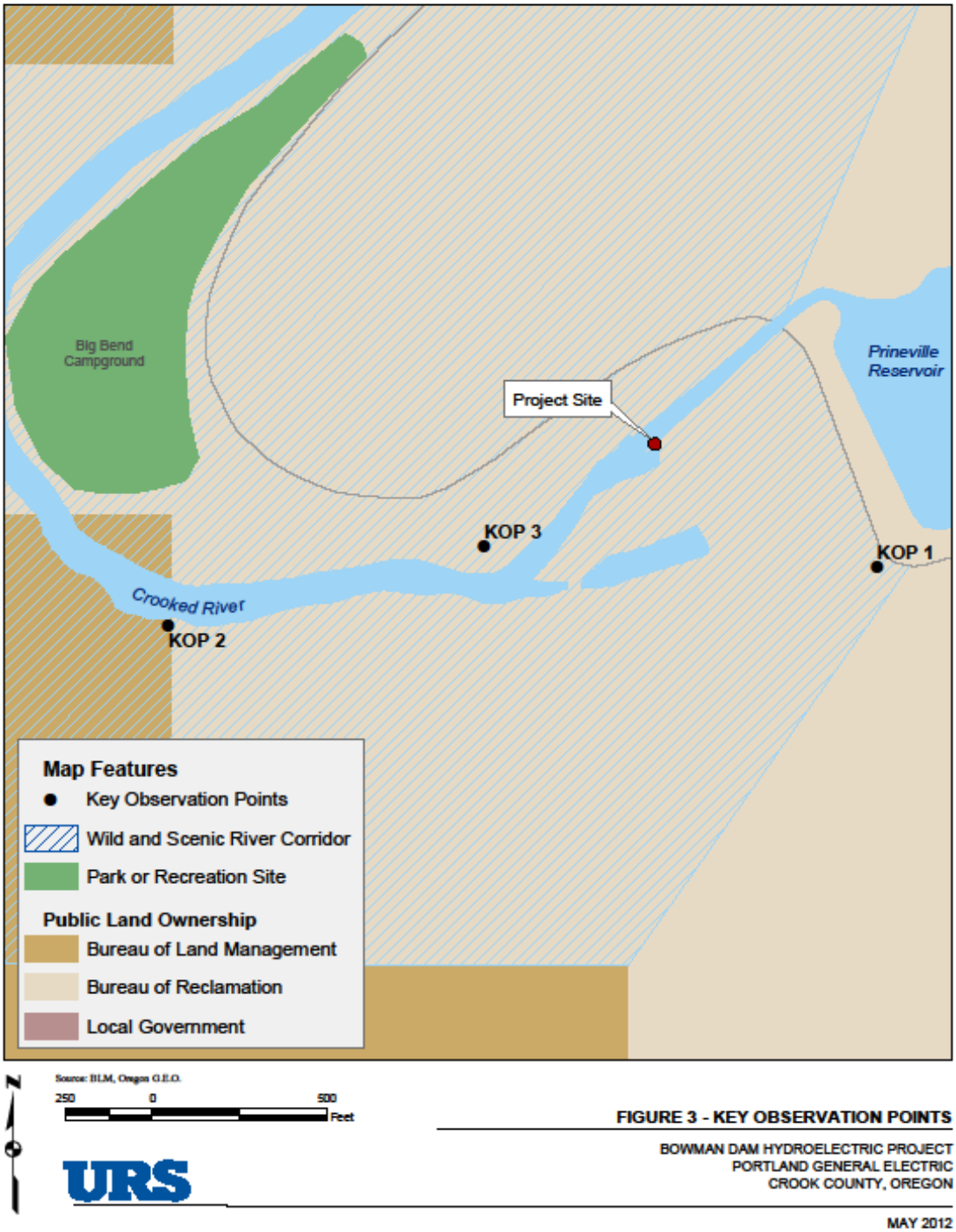


Figure 3. Key Observation Points (KOPs)



Appendix A

Photo Log

Crooked River West view downstream

Crooked River West view downstream from top of Dam

Crooked River South View across river

Bowman Dam Reservoir East view above dam

Bowman Dam East dam retaining wall

Bowman Dam East dam retaining wall upper view

Bowman Dam East dam retaining wall view from downstream

Bowman Dam Downstream east view

Crooked River Context North view

Crooked River Context West view

Appendix B

Visual Simulations

KOP 1 – Before

No Simulation Developed

KOP 2

Before

After

KOP 3

Before

After

Appendix C

Contrast Rating Forms

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET
DRAFT – CR IN PROGRESS

Date: June 20, 2011
District/ Field Office: Prineville
Resource Area:
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name **Bowman Dam Hydro**	4. Location Township_____	5. Location Sketch
2. Key Observation Point **KOP 1**	Range_____	
3. VRM Class **II / II**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Steep, bold, angular, tall, mesa-like; pyramidal / cylindrical	Cylindrical, dense, short	Dam, spillway, road, dirt roads (access)
LINE	Horizontal, vertical, angular, curvilinear, bold	weak	Diagonal, horizontal, curvilinear, angular
COLOR	Reddish, light grey., brown, dark grey	Mosaic of green, light/bright to dark, yellow, tan	Light grey; reddish orange, brown
TEX-TURE	Rough, ordered to random, granular (talus)	Stippled, soft, contrasting	Coarse, angular, medium, rounded, smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	N/A
LINE	N/A	N/A	N/A
COLOR	N/A	N/A	N/A
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names Date

SECTION D. (Continued)

Comments from item 2.

KOP #1 is located on the east side of the Bowman Dam, on the downstream side of the roadway. The KOP was placed alongside an existing pull-out and overlook of the Crooked River facing south-southeast. Views downstream include the deeply incised canyon characterized by patches of talus, bold rock outcroppings and columnar basalt, and widely-spaced pinion-juniper. The landscape is characterized as enclosed – due to river canyon –but large in scale. A small section of the river is visible before it turns west and out of view. Views from KOP #1 include the dam (talus) and the spillway, and two double-track dirt roads on either side of the river. Highway 27 is visible on river-right. The scale of landform seen from this vantage point is co-dominant with the river.

Additional Mitigating Measures (See item 3)

- ☐ Offset proposed structure to one side of the river / canyon
- ☐ Reduce contrast of existing spillway by adding texture. If spillway is removed or altered, consider texturizing new or modified structure
- ☐ Consider historic "pump house" aesthetic
- ☐ Consider expanding historic theme to structure above dam on Hwy 27

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET
DRAFT – ORIN PROGRESS

Date: June 20, 2011
District/ Field O ce: Prineville
Resource Area: Prineville Reservoir
Activity (program):

SECTION A. P ROJECT INFORMATION

1. Project Name **Bowman Dam**	4. Location Township_____	5. Location Sketch
2. Key Observation Point **KOP 2**	Range_____	
3. VRM Class **II/ III**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WA TER	2. VEGETATION	3. STRUCTURES
FORM	Enclosed, solid; broad	Sagebrush, pinion-juniper	Dam, ume, road, t-line
LINE	Horizontal, vertical, angular	weak	Reds, brown, grey, tan
COLOR	Brown, green, tan, grey, red	Mosaic of green	Horizontal, diagonal, converging
TEX - TURE	Rough, coarse	Stippled, smooth	Smooth, rough, angular

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rectangular mass	Sagebrush, native grasses, juniper,	Dam, road bridge, power house
LINE	Horizontal, vertical, layered	Week	Green, yellow, tan, grey
COLOR	Brown, green, tan, grey, blue, red	Green, yellow, tan, grey	Horizontal diagonal converging
TEX - TURE	Rough, course	Stippled, smooth	Sooth, Rough, Angular

SECTION D. CONTRAST RATING ___SHORT TERM ___LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names Date

SECTION D. (Continued)

Comments from item 2.

KOP #2 is located on river left of the Crooked River, approximately 500 meters downstream from the dam at the point of where the river begins to bend The view is slightly enclosed and the scale is large. There is a distinct gray line at the top of the dam that delineates the parapet flood wall. The bands of colored texture on the dam reflect the colors of the surrounding landscape. From this vantage point the spill way of the dam is obstructed by the bulbous landform and the basalt face and the curvature of the river. Moderate vegetation from the ponderosa pines also inhibit the view of the spill way on river right while river left is a dominant line of Ponderosa Pine.

Additional Mitigating Measures (See item 3)

- Place pump house at margins
- Add variety and sequence to guardrail (introduce vertical and angular lines)
- Consider planting

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET
DRAFT – CR IN PROGRESS

Date: June 20, 2011
District/ Field Office: Prineville
Resource Area: Prineville Reservoir
Activity (program): Bowman Dam

SECTION A. PROJECT INFORMATION

1. Project Name **Bowman Dam Hydroelectric Project (PGE)**	4. Location Township_____	5. Location Sketch
2. Key Observation Point **KOP #3**	Range_____	
3. VRM Class **II / III**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Bold, solid, incised canyon, outcrops, talus	Sagebrush, grasses, pinion/juniper	t-line (monopole / wood); dam, flume
LINE	Vertical, angular, diagonal, broken, irregular	Weak; some curvilinear/horizontal along riparian zone	Horizontal, vertical (transparent)
COLOR	Grey, red; black / dark grey	Mosaic of green / tan	Reds, greys, tan, brown
TEX-TURE	Rough, coarse	Soft, stippled	Rough, coarse (dam), smooth (flume); smooth (t-line)

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rectangular mass	Sagebrush, native grasses, juniper,	Dam, road bridge, power house
LINE	Horizontal, vertical, layered	Week, space pasture grass and sagebrush, scattered ponderosa pine	Green, yellow, tan, grey
COLOR	Brown, green, tan, grey, blue, red	Green, yellow, tan, grey	Horizontal diagonal converging
TEX-TURE	Rough, course	Stippled, smooth	Sooth, Rough, Angular

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? ___Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names Date

SECTION D. (Continued)

Comments from item 2.

KOP #3 is located on river-right of the Crooked River, approximately 100 meters downstream of the Bowman Dam. The Dam structure is the dominant feature in the view. The view is enclosed, and small in scale. The color and texture of the Dam is consistent with the surrounding landscape. The primary contrast of the Dam with the surrounding landscape is the result of the bold horizontal line created by the structure. The spillway appears smooth and glossy; particularly when compared to the texture of the surround structure. Existing transmission lines are visible from this KOP.

Additional Mitigating Measures (See item 3)

- ☐ Place pump house at margins
- ☐ Add variety and sequence to guardrail (introduce vertical and angular lines)
- ☐ Consider planting