Grand Coulee's Third Powerplant
500-kilovolt Transmission Line Replacement Project

Revision Sheet for the Environmental Assessment
Finding of No Significant Impact
Mitigation Action Plan

DOE/EA-1679
December 2011

SUMMARY

This revision sheet documents the changes to be incorporated into the Grand Coulee's Third Powerplant 500-kilovolt (kV) Transmission Line Replacement Project Preliminary Environmental Assessment (EA). With the addition of these changes, the Preliminary EA will not be reprinted and will serve as the Final EA.

On May 2, 2011, the Preliminary EA was sent to agencies and interested parties. Notification that the EA was available and how to request a copy was sent to all others on the mailing list of potentially affected parties. Comments on the Preliminary EA were accepted until June 10, 2011. These comments and responses to comments are addressed within this document and can be found in the **Public Comments** section.

REVISIONS TO THE EA

There are no substantial changes to the Preliminary EA issued for public review and comment in May 2011. The one change that has been made to the EA involves providing further information concerning the Bureau of Reclamation's (Reclamation) plans for the existing mid-station tour bridge that currently spans the area between the incline elevator and the Third Powerplant (TPP). In the Preliminary EA, removal of this bridge was proposed as a part of all overhead alternatives. Subsequent to issuance of the Preliminary EA, however, Reclamation's Technical Service Center identified a previously unknown structural relationship between the TPP Superstructure and the tour bridge, and recommended that the bridge not be removed. Based on this recommendation, Reclamation's Grand Coulee Power Office has decided not to remove the mid-station tour bridge. Even though the bridge will remain, Reclamation plans on adhering to their revised tour in which Reclamation will be providing vans to move visitors from place to place along the tour. The bridge, however, will not be accessible to visitors participating in the revised tour.

To reflect this further information, the following clarifications have been made to the EA:

Summary and Synthesis, the sixth paragraph has been revised as follows:

Specific Adverse Impacts Identified and Mitigation. (1) Due to electrical connections behind the TPP required for overhead transmission lines, the pedestrian tour bridge ~~would be removed~~ and the viewing balcony used for the TPP public tour would be closed.

Summary and Synthesis, the seventh paragraph has been revised as follows:

Unavoidable Adverse Impacts. (1) While a revised public tour would be provided, ~~removal~~ closure of the tour bridge and ~~closure of~~ this portion of the tour for public safety purposes cannot be avoided.

Page 2-1, Proposed Action Alternatives, the second paragraph has been revised as follows:

Once preliminary alternatives were identified, they were reviewed against the purposes identified as part of the scope of the EA. In brief, the process screened out alternatives that would be unreliable, unsafe, technically infeasible, and/or environmentally or financially unsound. As a result of this development and screening, Reclamation identified five alternatives to consider in the EA, one of which is the new Preferred Alternative. Four of the Proposed Action alternatives include an overhead configuration, and one includes an underground configuration (see Alternatives section). All overhead alternatives include ~~removal~~ closure of the TPP Tour Visitor's Bridge. Also, as part of a Value Engineering report prepared by Reclamation (USBR 2010), Reclamation identified five additional proposals to include as part of the Proposed Action:

Page 2-2, the second bullet has been revised as follows:

- Remove the Visitor's Bridge used for public tours of the TPP. This ~~is being~~ was initially proposed for all overhead alternatives ~~described below~~ in order to make way for conductors and attachments to the Forebay Dam and to provide adequate separation from visitors. However, a previously unknown structural relationship between the TPP Superstructure and the Visitor's Bridge was subsequently identified which essentially prevents removal of the bridge. Accordingly, removal of the bridge is no longer being considered as part of the overhead alternatives; instead, the tour bridge would remain but be closed to the public under these alternatives. Reclamation still would provide a replacement tour allowing similar viewing opportunities, as it planned with bridge removal.

Pages 2-2 and 2-3, the following sentence has been deleted from where it occurs in Section 2.1.1 through 2.2.4:

~~This alternative would also require the removal of the Visitor's Bridge that is used in tours of the TPP~~.

Table 2.1. Comparison of Alternatives, Page 2-13 - Historic Properties (for the Preferred Alternative), the following sentence has been revised as follows:

The visual presence of proposed lines and towers and ~~removal~~ closure of the historic tour bridge and viewing balcony portion of the public tour would alter the historic character of Grand Coulee Dam, which is eligible for listing on the National Register of Historic Places.

Page 3-42 to 3-43, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: Public Tour, the following section has been revised as follows:

For safety and design reasons, Reclamation is proposing to ~~remove~~ close the outer portion of visitor's tour bridge. The portion being ~~removed~~ closed is the bridge that connects the mid-point stop from the incline elevator to the TPP building as seen in Figure 3-8. In addition to solving safety concerns with the aging tour bridge, its ~~removal~~ closure will also allow for ~~more clearance of the proposed lines that begin behind the TPP~~ additional public safety. Additionally, the ~~removal~~ closure of the tour bridge will permanently affect the way tours were conducted prior to 2010 in which the public was able to access the cantilevered balcony that looks out over the river downstream from the dam as well as facing the Visitor's Center. This tour bridge portion of the tour also ~~includes~~ included interior roof-level views within the TPP, allowing visitors to look down on the massive turbines covers. Seeing workers from this perspective likely ~~provides~~ provided a sense of large size of the building and the turbines. Floor level views may have also provided a sense of scale but may not ~~be~~ have been as impressive as the roof-level view provided by the bridge before its closure in 2010.

Eliminating access to the inner tour bridge and the cantilevered balcony portion of the tour would cause visitors to no longer be able to see the size of the TPP's interior extending on either side of them, or the close views of turbulent water exiting the turbines within the TPP as they look out at main dam and spillway to the left when they are using the cantilevered balcony.

Even though the outer portion of the tour bridge would be ~~removed~~ closed, the elevator (once back in service) and the observation deck atop of the dam would remain part of the tour, though lines would be visible on either side of viewers.

Page 3-44, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: Consistency with Original TPP Plan, the following sentence has been revised as follows:

The Proposed Action would depart from two aspects of the original TPP project related to visitor use:

- the visual presence of transmission lines extending from the TPP and the Visitor's Center and towers located above SR 155 and visible from the Visitor's Center
- the loss of access to the tour bridge and viewing balcony portion of the public tour

Page 3-45, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: 3.6.3.3 Public Tour, the following section has been revised as follows:

The Value Engineering Report prepared for the project found that replacing and enclosing the tour bridge and repairing the Incline Elevator were possible, but not financially sound. Reclamation estimates costs for replacing the bridge to be $780,000, in addition to bridge maintenance costs. Several promising opportunities are available to replace the tour bridge and maintain an enjoyable and informative public tour. Even though a portion of the tour bridge will be ~~removed~~ closed, Reclamation is investigating

other future options to allow the public to be able to access the inner portion of the tour bridge and the cantilevered observation deck.

Page 3-46, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: 3.6.3.5 Public Tour, the following sentence has been revised as follows:

…visitors and Reclamation tour guides. Therefore, ~~removal~~ closure of the bridge is classified as an unavoidable adverse impact of the Proposed Action.

Page 3-46, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: 3.6.3.5 Public Tour - Replace Lost Opportunities from Tour Bridge, the following section has been revised as follows:

The loss from closure of the tour bridge and viewing balcony could be offset by providing new opportunities to view and experience Grand Coulee Dam. Reclamation has already developed an improvised replacement tour during the time the Incline Elevator has been out of service that includes alternate access to the main floor-level access and a tour stop on top of the dam. A permanent tour plan could be developed and implemented as long-term mitigation for eliminating the tour bridge closure.

Page 3-47, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: 3.6.4.5 Public Tour, the following section has been revised as follows:

~~Elimination~~ Permanent closure of the outer tour bridge portion of the public tour would be unavoidable under the Proposed Action. This would not, however, eliminate the public tour, which is the focus of this specific issue. The tour could continue under the Proposed Action just as it has with the improvised tour provided by Reclamation during recent elevator shutdowns. The improvised tour has been popular with the public, so a permanent replacement along similar lines could allow Reclamation to continue to provide enjoyable and informative public tours.

Page 3-49, Affected Environment, Environmental Consequences, and Mitigation Measures - Land Use: 3.6.5.3 Reclamation Lands, the following section has been revised as follows:

Public Tour. Permanent ~~removal~~ closure of the outer tour bridge portion of the public tour would make a permanent loss that is currently being experienced due to the temporary closure of the Incline Elevator. As previously stated, the elevator and bridge were closed for the 2009 and 2010 visitor seasons. Return of the elevator to service would reduce the total cumulative effect.

Page 3-70, Affected Environment, Environmental Consequences, and Mitigation Measures - Visual Quality, the following section has been revised as follows:

Views with Preferred Alternative. For safety and design reasons, Reclamation is proposing to ~~remove~~ close the TPP visitor tour bridge to make way for proposed lines leading from the TPP, eliminating use of the TPP visitor tour bridge and viewing balcony portions of the tour.

Page 3-79, Affected Environment, Environmental Consequences, and Mitigation Measures - Visual Quality: 3.8.3.1 TPP Visitor Tour Bridge and Viewing Balcony, the following section has been revised as follows:

Replace Lost Opportunities from Tour Bridge. The loss from the permanent closure of the tour bridge and viewing balcony could be offset by providing new opportunities to view and experience Grand Coulee Dam. Reclamation has already developed an improvised replacement tour during the time the Incline Elevator has been out of service that includes alternate access to the floor-level access and a tour stop on top of the dam. A permanent tour plan could be developed and implemented as long-term mitigation for removing the TTP visitor tour bridge.

Page 3-81, Affected Environment, Environmental Consequences, and Mitigation Measures - Visual Quality, the following sentence has been revised as follows:

In addition, ~~removal~~ closure of the tour bridge cannot be avoided ~~without significant design changes~~ due to safety reasons, but ~~though~~ a replacement tour is likely to provide similar visitor experiences.

Page 3-81, Affected Environment, Environmental Consequences, and Mitigation Measures - Visual Quality: 3.8.5 Cumulative Impacts, the following sentence in the third paragraph has been revised as follows:

The permanent ~~loss~~ closure of the TPP visitor tour bridge and viewing balcony portions of the tour would permanently extend a loss that has already occurred on a temporary basis.

Page 3-99, Affected Environment, Environmental Consequences, and Mitigation Measures – Cultural Resources and Tribal Consultation, the first paragraph has been revised as follows:

As noted above, the existing pedestrian tour bridge, a significant Breuer-designed element and a character-defining feature of the original TPP design, located between the Mid-Station of the Incline Elevator and TPP, will be ~~removed~~ closed. ~~It is unclear at this point what, if any, of the bridge connection will remain at either the Mid-Station or the connection to the TPP wall, however concrete supporting elements of the bridge connections on both sides of the span will likely remain to document the change~~.

Page 3-101, Affected Environment, Environmental Consequences, and Mitigation Measures - Cultural Resources and Tribal Consultation, the third paragraph has been revised as follows:

High voltage overhead transmission lines at the Forebay Dam in the vicinity of the existing Visitor Bridge require ~~removal~~ closure of that feature and the denial of public access to the Mid-Station on the Incline Elevator. The tour bridge, integrally designed as part of the increased public amenity that was part of the TPP project, is considered a key element in the Breuer design. The abandonment of the Mid-Station, while of minimal physical impact, alters the functional role of that facility and diminishes visitor access to the interior of the TPP by precluding access to the bridge, and from the bridge to the interior visitor overlook.

Page 3-102, Affected Environment, Environmental Consequences, and Mitigation Measures – Cultural Resources and Tribal Consultation: 3.10.4 Unavoidable Impacts Remaining After Mitigation, the first sentence has been revised as follows:

Specific impacts include impacts to visitor's view of the dam from the Visitor's Center, and the ~~removal~~ closure of the tour bridge and viewing balcony portion of the TPP.

Page 3-120, Affected Environment, Environmental Consequences, and Mitigation Measures - Socioeconomics and Environmental Justice, the third paragraph has been revised as follows:

Grand Coulee Dam. Under the Proposed Action, Reclamation would ~~remove~~ close the tour bridge portion of the public tour that travels to and through the TPP to an observation balcony. These components were built into the TPP specifically for public use and enjoyment of the facility, and loss of these features would reduce visitor experiences and opportunities associated with the tour. However, mitigation options identified as part of the public tour special report provide promising opportunities to replace the values lost from closure of the bridge and balcony, such as providing visitor access to the top of the dam as has been done when the Incline Elevator is out of service.

Additional changes to the EA include updating Figure 2-3 on Page 2-6 with the following figure (*Figure 1*):

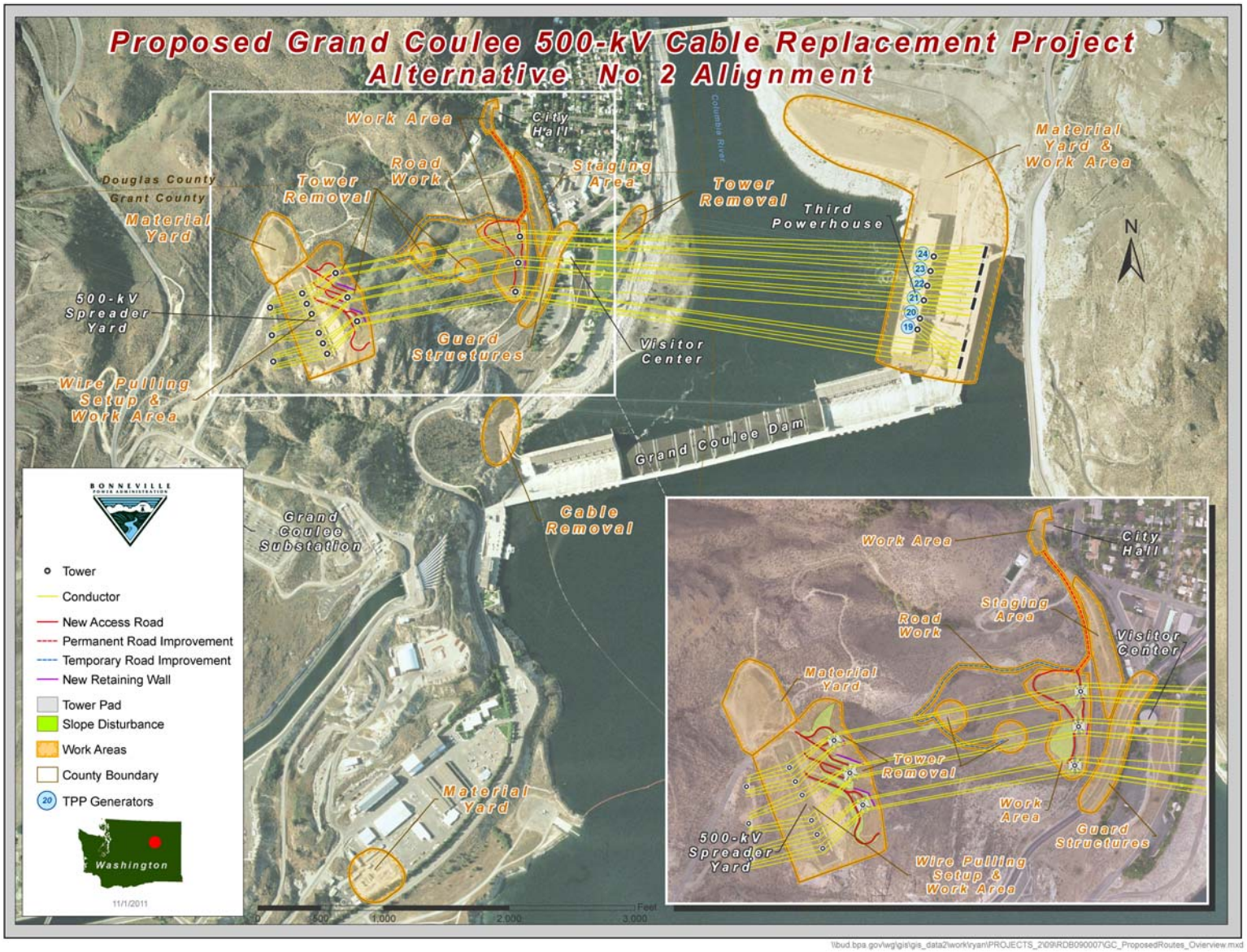

Figure 1. Areas of ground disturbance associated with the Preferred Alternative.

Areas of ground disturbance and the acreage associated with the construction activity have also been updated and corrections to the EA have been made in the following sections:

Table 2.1. Comparison of Alternatives, Page 2-10 - Vegetation (for the Preferred Alternative), the following sentence has been revised as follows:

No plant species protected under the Endangered Species Act are likely present. Vegetation would be temporarily disturbed at tower construction and removal sites. Native shrub-steppe habitat would be disturbed during construction of the upper towers. Total impact area would be less than ~~two~~ fifteen acres.

Page 3-8, Affected Environment, Environmental Consequences, and Mitigation Measures - Vegetation, the next-to-last paragraph has been revised as follows:

At the top of the hill, two of the towers would be constructed at existing tower locations and one within a new location. The northern-most tower location is within disturbed habitat, while the southern tower is located on a north facing slope and native grasses have recovered nicely under the tower. Less than ~~one~~ five acres of native shrub steppe would be removed during construction at this tower location. The third tower location contains mixed disturbed and Idaho fescue habitats. Once the native shrub steppe cover is removed, vegetation might have difficulty reestablishing should soils on steep slopes start to erode. The north facing orientation of the central tower (Line 2- Tower 2, and existing southern tower) would better support re-vegetation than would the more exposed northern tower (Line 1-Tower 2).

Page 3-22, Affected Environment, Environmental Consequences, and Mitigation Measures - Fish and Wildlife, the second paragraph has been revised as follows:

Other than removal of one of the two osprey nests, no impacts to wildlife would be expected from tower removal or from temporary transmission lines spanning over the Visitor's Center grounds and SR 155. Habitat that would be removed at tower locations and where existing towers would be removed would result in less than ~~two~~ five acres. Impacts would occur at the scale of individuals and would not be sufficient to create effects at the population level. Direct habitat disturbance would alter small mammal, insect, and other communities. Effects would be limited to the site of action and habitat values would be expected to recover to previous habitat values over time.

Page 3-23, Affected Environment, Environmental Consequences, and Mitigation Measures - Fish and Wildlife: 3.3.2.3 Special Status Species and Habitats, the following section has been revised as follows:

Disturbance of native shrub-steppe habitat would result in temporary impacts of less than ~~2~~ 15 acres and permanent impacts of less than ~~1~~ 5 acres. Overall impacts would be limited to the site of action and individuals and would not likely adversely impact overall populations or ranges.

PUBLIC COMMENTS

This section presents the comments received on the Preliminary EA and responses to those comments. The comments are numbered consecutively as they were received. Breaks in the number sequence result when comments are deleted because they were submitted in error or have inappropriate content (such as "spam").

GCT11-0002 – Christopher M. Galbreath
Coulee Dam, WA 99116

Comment: *Don't waste any more of my money and time re-studying transmission lines around Coulee Dam. Just get those overloaded and dangerous cables out of the dam. Overhead transmission lines have been here for 70+ years. Pandering to complainers may help justify jobs for legal beagles but it is a waste of government funds when carried to this extreme.*

Response: Thank you for your comment. Analyzing the potential effects to the man-made and the natural environment from a proposed action is a requirement for federal agencies as outlined in 40 CFR Parts 1500-1508 under the National Environmental Policy Act of 1969.

GCT11-0003 - Patricia A. Walgamott
Federal Way, WA 98023

Comment: *I feel this project is overdue. It is something that will provide great need as well as important for the Grand Coulee community. Thank you for the update.*

Response: Thank you for your comment.

GCT11-0004 – Renee McCarty
Electric City, WA 99133

Comment: *Overhead lines interfere with beautiful landscape.*

Response: Thank you for your comment. The Preliminary EA addresses impacts to both Visual Quality (Section 3.8) and to the Laser Light Show (Section 3.9) within Chapter 3 – Affected Environment, Environmental Consequences, and Mitigation Measures.

GCT11-0005 – Daniel Kosloski
Grand Coulee, WA 99133

Comment: *You are going to put those power lines where you want and nobody can stop you. You proved that when you put that new 500 KV line and tower next to my house and lowered my property values by 50%.*

Response: Thank you for your comment. Reclamation and BPA believe that they have considered a broad range of options for the project, and have taken into account public views in considering which alternative to select. Both Reclamation and BPA met with the public during scoping meetings held on July 16 and August 11, 2009, to receive public input regarding line placement and other issues. The five action alternatives presented in the preliminary EA were identified based upon public input during scoping, technical engineering feasibility, and right-of-way access. Public input received during the Preliminary EA public review period in May and June 2011 also helped inform agency consideration of the alternatives.

GCT11-0006 – Michael Iannetta
Grand Coulee, WA 99133

Comment: *From 12 to 52 – NO!!! Why not remove the underground cables and put them underground or move them behind the dam. Why obstruct the view more. Millions of people come to see this dam. Shame on Bonneville Power! Even the no water over the dam 99% of the time.*

Response: The rationale for the selection of alternatives for the proposed action is described in Chapter 2 of the EA. Please also refer to the response to comment GCT11-0005 above.

GCT11-0007 - No Name Given

Comment: *They sure wouldn't build this eyesore at Hoover Dam! Spend a little money and use some imagination! New 8th eyesore of the world.*

Response: Thank you for your comment.

GCT11-0008 - Bob Valen
Grand Coulee, WA 99133

Comment: *My concern revolves around the potential impact on the view-shed as it relates to our World-Class geology. The specific geological elements are the volcanic basalts and, of course, the Ice Age Floods and Lakes. Our current geologic landscape occurred during the*

Miocene with a period volcanic eruptions creating the Columbia River plateau basalts. Later, during the Pleistocene, the ice age and floods heavily modified the landscape to generally what we see today. Glaciation is an important element of our landscape. Glacial Lake Columbia is the primary creator of the Grand Coulee, the upper Grand Coulee lies just to the south of Grand Coulee Dam. Because we have acknowledged these geological events with the development of the Coulee Corridor National Scenic Byway in the 1990's, a scenic route from Connell, WA to an area south of Omak, WA and, recently, in 2009, Federal Legislation established the Ice Age Floods National Geologic Trail administered by the National Park Service (MT, ID, WA and OR), it would be prudent for the BPA and BOR to consider our view-shed as it relates to these two entities as they are significant tourist and scientific attractions. It is estimated that more than one million visitors come to the greater Grand Coulee region annually participating in a wide range of activities. Certainly one of those activities is to view in both a general and specific sense the Grand Coulee area by studying or otherwise walk-on this nationally significant geologic landscape.

Response: Both the Coulee Corridor National Scenic Byway and the Ice Age Floods National Geologic Trail have been addressed under Sections 3.8.2.1, Visual Components of (the) Proposed Action on page 3-75 of the preliminary EA. The analysis concluded that both the Byway and the Trail are used as educational tools to the public in telling the story of the Ice Age Floods that occurred during the Pleistocene period. As recommended in Section 3.8.3.3, could offset the visual encroachment that the proposed action would have in the area by offering an updated storyline as to how Grand Coulee Dam and its related electrical components are also part of the story and part of the history in the area. Lastly, as outlined in Section 3.8.4, Unavoidable Impacts Remaining after Mitigation, the visual presence of towers and lines from the proposed action are unavoidable.

GCT11-0009 - Public Meeting comments received at the Public Meeting on May 18, 2011.

a. Comment: *Scott Hunter, publisher/editor of The Star and president of the Grand Coulee Dam Area Chamber of Commerce, raised a new issue: workers to the dam for all the ongoing projects have already taken up much of the rental housing available in the community. Specifically, contractors working at the dam tend to rent housing for use during the work week, commuting back to their homes and families for weekends. This has resulted in little rental housing available for residents or perspective residents. Because of this concern, he would like the final EA to define as much as possible the numbers and timing of workers at the dam from the proposed action as well as from all other Reclamation projects planned at the dam over the next several years, and what effect this would have on the area's rental property availability and costs.*

Response: Vacancy rates from the 2000 Census are indicated in Affected Environment (Table 3-14) of the preliminary EA. 2000 census data indicated that there was a 7.1% to 22.8% vacancy rate for existing homes in the cities studied, which indicates sufficient availability of rental housing. At the time the preliminary EA was released, the 2010 census data was not yet available. However, since the publication of the preliminary EA, the 2010 census data has been

released. For 2010, census data indicated that vacancy rates ranged from 11.7% to 38.5% in 2010 around the Project area. The new census data showed that 31 total units were available in 2010 - when combined with available hotel lodging, this should be sufficient, but could put a strain on tourism if construction is at its peak during major tourism events. As indicated in the preliminary EA, there should be sufficient lodging available for workers during construction. Additionally, given the temporary nature of this proposed project the impact to available housing in the area is likely to be low.

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b. Comment: *Is the ground stable?*

Response: Yes. Preliminary geotechnical studies (exploratory borings) show that the upland slopes consist of relatively competent subsurface conditions that should be adequate for support of the transmission line tower foundations, using either spread footings or drilled shafts to support the tower legs.

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c. Comment: *What are the effects on the Laser Light Show?*

Response: As discussed within Section 3.9.2.1 of the Preliminary EA, the direct impact that is anticipated from the Preferred Alternative (Alternative 2) is that the proposed lines will partially obstruct the laser light beam respective to laser trajectories for certain portions of the show. An additional concern is that the effect would be greater during certain times of the summer months due to elevated temperatures (which cause transmission lines to sag). The effects as the laser light beam encounters the proposed overhead lines will cause reflection, shading and distortion, and silhouetting issues. These issues currently exist with the existing transmission lines that extend from the Right Powerplant. These issues are also minutely noticeable depending on the location from where the laser light show is being viewed. Nevertheless, as noted within Chapter 3.9 of the Preliminary EA, Reclamation is considering suggestions such as implementing a change within the existing laser light show using the current laser projector or upgrading to a newer laser projector.

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d. Comment: *What are the effects on the elevator tour and tourism?*

Response: The effects on the proposed Project have been addressed in the preliminary EA, specifically in Section 3.6 – Land Use. As stated in this section, "*In response to the elevator being out of commission, Reclamation developed an alternative tour for the 2010 season that includes stops on top of the dam itself, something that was not available before. Visitors were not able to see the TPP from the balcony during 2010 but were still are able to see the floor, as accessed through an alternate route and entrance. Reclamation is providing vans to move visitors from place to place along the tour. Internal discussions for the 2011 season have included the possibility of adding vehicles that are easier for visitors to get in and out of, which is difficult in the vans currently being used. Otherwise, the modified tour has been well received*

by visitors." For the 2011 season, Reclamation provided shuttle buses instead of vans for the revised tours. The public was very receptive to being able to go on top of the dam and look over the spillway.

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e. Comment: *Effect on property values in Coulee Dam West?*

Response: Concerning impacts on housing values, most available information indicates that there are many factors, both national and local, that contribute to housing values, and that transmission lines by themselves typically do not a significant negative effect on these values. More specific to the proposed project, impacts to Housing Characteristics in the vicinity of the Project Area were discussed in Chapter 3.13, Socioeconomics and Environmental Justice. It is noted within this Chapter that in addition to Washington State experiencing a downturn in housing development since 2005, "*cities in the study area have also experienced high vacancy rates compared to the state, which could explain the low housing construction rates. Home values in the study area are also much lower than their representative counties, and particularly when compared to the state. Part of this disparity could be attributed to an aging housing stock, slow population growth, and a relatively older and entrenched population*." More recent studies have been performed regarding transmission lines and rural land values and can be seen at *http://www.irwaonline.org/EWEB/upload/Nov10_Web_Translines.pdf*.

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f. Comment: *Have the tower sites on the hill (Option 2) been drilled to test for stability?*

Response: Yes. Please see response to comment GCT11-0009b above.

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g. Comment: *All 4 overhead options are bad, aesthetically*

Response: Thank you for your comment. Aesthetics, more specifically, Visual Quality was addressed in Section 3.8 of the preliminary EA.

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h. Comment: *What is the cost of replacing cables?*

Response: The estimated direct cost for removal and construction is approximately $30 million.

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i. Comment: *I think #2 (the preferred plan) is the way to go.*

Response: Thank you for your comment.

j. Comment: *How many transmission lines are in the project?*

Response: There would be 6 lines with a total of 54 transmission lines (conductors) spanning across the Columbia River from the Third Powerplant to the 500-kV Spreader Yard. Figure 2 below depicts how the proposed lines will be laid out once the proposed lines meet the first set of towers on the Upland Slope above SR 155.

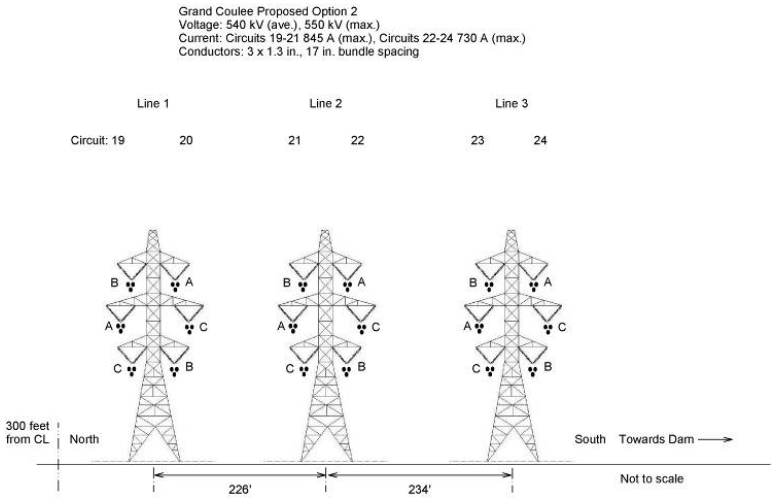

Figure 2. Double-circuit 500-kV towers for the proposed Grand Coulee Line Replacement Project.

As described in Chapters 1 and 2 of the Preliminary EA, each of the six turbine generators within the Third Powerplant (TPP) (G-19 through G-21) actually have one circuit that originates from them, which is then translated to 9 transmission lines (conductors) that originate from the TPP (one circuit is equal to three phases (A, B and C); therefore, three transmission lines exist per turbine generator and there are six turbine generators within the TPP). Each phase of the 6 lines will be triple-bundled as shown in Figure 2 above which in turn equals to 54 transmission lines or conductors. Although not shown in Figure 2 above, there also will be 10 overhead ground wires attached to the towers depicted in Figure 2.

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k. Comment: *Will the overhead lines impact someone with a pacemaker?*

Response: A discussion of this effect of the proposed lines was included in Appendix A of the Preliminary EA. This discussion ultimately stated that "*Electric and magnetic fields from various sources (including automobile ignitions, appliances and, possibly, transmission lines) can interfere with implanted cardiac pacemakers. In light of this potential problem, manufacturers design devices to be immune from such interference.*

However, research has shown that these efforts have not been completely successful and that a few models of older pacemakers still in use could be affected by 60-Hz fields from transmission

lines. There were also numerous models of pacemakers that were not affected by fields larger than those found under transmission lines. Because of the known potential for interference with pacemakers by 60-Hz fields, field limits for pacemaker wearers have been established by the ACGIH. They recommend that, lacking additional information about their pacemaker, wearers of pacemakers and similar medical-assist devices limit their exposure to electric fields of 1 kV/m or less and to magnetic fields to 1 G (1,000 mG) or less (ACGIH, 2008). Additional discussion of interference with implanted devices is given in the accompanying technical report on health effects (Exponent, 2009).

The electric fields from the proposed 500-kV lines would meet the ACGIH standards, provided wearers of pacemakers and similar medical-assist devices are discouraged from unshielded right-of-way use. (A passenger in an automobile under the lines would be shielded from the electric field, as would a person in the visitor center.) The electric fields in a small area on the steep hillside above the Visitors Center (Profile 1 could exceed the ICNIRP guideline for public exposure. However all areas in the vicinity of Profiles 2 and 3 would have electric fields less than the limits established by both ICNIRP and IEEE. The electric fields in all areas would be less than the occupational limits set by all three agencies. The magnetic fields from the proposed lines would be below the ACGIH, ICNIRP, and IEEE limits for occupational and public exposure in all areas.

The estimated peak electric and magnetic fields under and near the proposed transmission lines would meet limits set in all states that have established limits. The BPA maximum allowable electric field limits for on and off the right-of-way, for road crossings and for parking lots would be met for all options [alternatives] of the proposed lines."

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l. Comment: *Did you consider moving the transmission lines onto the bridge so we wouldn't see the lines from in town?*

Response: We believe that the commenter was referring to the Grand Coulee Columbia River Bridge on which State Route 155 crosses the Columbia River downstream of the Grand Coulee Dam. A Downriver Alternative was considered where an existing, lower voltage BPA transmission line provides power to Elmer City and to Tribal areas toward Nespelem, Washington. However, utilization of this particular route would require more towers, would encroach on private residences, and would impact the visual quality of the Town of Coulee Dam. Utilization of the Grand Coulee Columbia River Bridge for placing the proposed transmission lines is not possible as there is not room for the lines and required separation between them.

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m. Comment: *Are there EMF issues with the project?*

Response: The effects of electric and magnetic fields (EMF) were addressed in Section 3.14.1.2 of the Preliminary EA. Additionally, Appendix A of the Preliminary EA addressed all Electrical Effects associated with the Proposed Action. For the Preferred Alternative, it is

expected that there would be no greater than 1-kV/m at distance of 300 feet away from the center-line of the middle set of transmission lines for electric fields. The levels listed in Table 3-22 of the preliminary EA are far below the BPA electric-field guidelines of 9-kV/m. Magnetic fields for the Preferred Alternative are expected to be no greater than 16-mG. Comparisons of the expected magnetic field for the Preferred Alternative can be made against Table 3-21 of the Preliminary EA.

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n. Comment: *What is the proposed construction time if the project is approved?*

Response: If approved, dismantling of old and construction of new towers would commence in March 2012 and be completed by December 2012.

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o. Comment: *There is an Osprey nest on the furthest tower downstream.*

Response: Both Agencies are aware of this nest. The nest would not be disturbed if it is in use. However, once unoccupied, the nest would be relocated to a nearby perch pole. Perch poles that are available for both osprey and eagle usage are located in and around the area downstream of the dam.

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p. Comment: *One homeowner is happy with the preferred alternative since it is furthest from the housing.*

Response: Comment acknowledged. The rationale for the selection of alternatives for the proposed action was discussed in the response to comment GCT11-0005 above.

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q. Comment: *How long are the transmission cables in the tunnel that will be removed?*

Response: Each of the 18 cables is approximately 1.5 miles long.

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r. Comment: *Are the tunnels side by side?*

Response: The two tunnels used for the existing cables are side by side for much of their length.

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s. Comment: *What will happen to the tunnel? It would make an excellent skateboard park.*

Response: The tunnels may be used for communication cables, but they are not available for general access to the public.

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t. Comment: *The transmission wires will devalue housing by approximately 10%. We are protective of our neighborhood and want the transmission lines to be hidden from sight*.

Response: The commenter's preference is noted. Effects of the proposed project on views in the vicinity are addressed in Section 3.8 of the preliminary EA. Please refer to the response to comment GCT11-0005 above concerning potential effects on property values.

GCT11-0010 - John McNeil
Coulee Dam, WA 99116

Comment: *It seems a wasted opportunity to further Electric HV cable development by not re-installing them. The tunnels have been dug and CW piping placed at a huge expense. Now to put up towers and demolish towers with all the safety concerns at a huge expense is a waste of ratepayer's money. If there are terrorists, you just made their job easier by putting up towers that are easy to get to. The cables in the tunnels are much more secure. We are rapidly losing the space to place towers in other parts of the country. Place the HV cables back in the tunnels to gain the practical knowledge on O&M of them. Before you know it, Portland and Seattle may require the cables underground as the population density increases.*

Response: The commenter's preference for reinstalling the cables in the existing tunnels is noted. A rebuild alternative is included in Chapter 2 of the Preliminary EA as a possible option for the proposed project, and this chapter also provides a comparison table for each of the four overhead alternatives, the rebuild alternative, and the No Action alternative. Additionally, the rebuild alternative is considered in detail in Chapter 3 of the EA, along with the overhead alternatives and the No Action alternative.

GCT11-0011 – Mark Kulaas/Douglas County Transportation and Land Services
East Wenatchee, WA 98802

Comment: *Project activities do not appear to be within the boundaries of Douglas County: do not appear to impact county facilities. We have no comment, based on these.*

Response: Thank you for your information.

GCT11-0012 – Jim Erickson
Coulee Dam, WA 99116

Comment: *Please have your environmental studies look at: The medical, physical and mental impacts on residents and employees living in Coulee Dam.*

Response: Impacts to Public Health and Safety for individuals living and working near and around the Project Area were addressed in Section 3.14 of the preliminary EA.

GCT11-0014 – Leslie Royall
Oakland, CA 94618

Comment: *I have a home in Coulee Dam (West side) on Douglas Ave and have recently retired from active duty with the USPHS. I plan on returning to WA and I have concerns with this project that I wish to communicate to you.*

The Grand Coulee Dam is the second largest concrete structure in the world and the largest hydro power producer in the United States. As I understand it, integral components of the original plan were the absence of overhead lines and towers. The preliminary Environmental Assessment pages 3-44, 3-45 states:

"The Proposed Action would depart from two aspects of the original TPP project related to visitor use: the visual presence of transmission lines extending from the TPP and the Visitors Center and towers located above SR 155 and visible from the Visitors Center the loss of the tour bridge and viewing balcony portion of the public tour."

While these effects would not be counter to the general provision of constructing "a Visitors Center" specified in the congressional authorization for the TPP, these effects would depart from the original plan developed for the TPP which included the open air space created by the absence of overhead lines and towers and by eliminating the unique viewing platform built in to the TPP. Both of these features were integral components of the original plan."

As I understand it the back-up overhead lines have no power to them, I am unsure how they received approval in 1978, 1981, and 1986 from The Shoreline Management Act of 1971, RCW 90.58.020. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto. The preliminary Environmental Assessment states: "The reestablishment of numerous overhead transmission lines in the power-house and tailbay areas will noticeably change the view from below the dam, especially for permanent residents."

The visual changes alone will affect the historic values of the Grand Coulee Dam and Visitor Center, but not so obvious are the Public Health Safety issues that can affect the local residents

and avian habitat. The NIEHS report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields prepared in Response to the 1992 Energy Policy Act (PL 102-486, Section 2118) states: The current biophysical theories for ELF-EMF would suggest little possibility for biological effects below exposures of 100 μT. However, considering the complexity of biological systems and the limitations required by the assumptions used to mathematically model these theories; this finding has to be viewed with caution. NIEHS Conclusion: "As part of the EMF-RAPID Program's assessment of ELF-EMF-related health effects, an international panel of 30 scientists met in June 1998 to review and evaluate the weight of the ELF-EMF scientific evidence (12). Using criteria developed by the International Agency for Research on Cancer, none of the Working Group considered the evidence strong enough to label ELF-EMF exposure as a "known human carcinogen" or "probable human carcinogen." However, a majority of the members of this Working Group (19/28 voting members) concluded that exposure to power-line frequency ELF-EMF is a "possible" human carcinogen. This decision was based largely on "limited evidence of an increased risk for childhood leukemias with residential exposure." I want to emphasize the previous last sentence stating that the study is also based largely on residential exposure and 19/28 members concluded that exposure to power-line frequency ELF-EMF is a "possible" human carcinogen.

The Grand Coulees Third Powerplant 500-kV Line Replacement Project Summary and Synthesis states: "Corona-generated electromagnetic interference from the proposed line would be comparable to or less than that from existing 500-kV lines in Washington. Radio interference levels would be at or below limits identified as acceptable. Television interference, a foul-weather phenomenon, is anticipated to be comparable to or less than that from existing 500-kV lines in Washington. It is unlikely that radio or television interference will occur...." What exactly does this mean? I don't know what the existing 500-kV lines in Washington produce. I do know that the Grand Coulee Dam produces more electricity than any other hydro dam in North America, are the other lines in Washington the same magnitude as the proposed lines here?

The environmental influence on the mortality and interference with the foraging areas for the bald eagles and osprey nesting alone are reasons not to replace with overhead lines, yet to what extent will the impact will be to the nomadic and immature birds is unknown.

There are other issues during the construction period for visitors and residents - noise, pollution-control for dust, transportation, these are obvious concerns. It is the after construction that is not obvious or unknown. Not only the loss of the only hydro electric dam with underground transmission lines in the United States, though your report says this will not affect tourism, I'm sure some people do come to view the openness of the dam, as this is how it was designed. In your report you stated: "Acts of sabotage or terrorism on electrical facilities in the Pacific Northwest are rare, though some have occurred. These acts generally focused on attempts to destroy large transmission line steel towers. For example, in 1999, a large transmission line steel tower in Bend, Oregon, was toppled." Was this tower in Bend 300 ft high? The Grand Coulee Dam is the largest producer of hydro electricity in North America, how are the towers/lines being protected and what happens if these lines come down on the residents/visitors below?

What is the noise from the transmission lines going to be, also transmission line corona effects can create ozone and other gases during certain weather conditions. The most recent study (in your report) found regarding ozone and transmission lines was conducted in Europe (Valuntait and Girgdiene 2009). That study found ozone concentration close to the high voltage lines in rural areas was on average by 2% higher than the background ozone concentration, but what is the current ozone level and is a 2% increase acceptable? From the information reviewed and discussed previously above, the ELF-EMF exposure hazard is actually unknown.

Replacing the existing lines with overhead transmission lines would affect the historical value of the Grand Coulee Dam, the Visitor Center, the community that lives there and the value of their property, along with the wildlife and avian habitat. You need to fix the tunnel to be safe for the workers and replace the lines in the tunnel. The Grand Coulee Dam is a historic land mark and must be preserved with the openness that was intended.

Response: The commenter's concerns about the potential for the proposed project to affect the historical character of Grand Coulee Dam and other resources are noted. In response to your question as to how the back-up overhead transmission lines received environmental clearance back in the 1980s, the Bureau of Reclamation received emergency approval from the Council of Environmental Quality in order to provide a new route from the power being produced from the Third Powerplant's Generators 22, 23, and 24.

EMF and noise issues have been addressed in Section 3.14 and Appendix A of the preliminary EA as well as in responses to comment GCT11-0009-m above and comment GCT11-0016 below.

An Avian Protection Plan (APP) has been prepared under guidance from the U.S. Fish and Wildlife Service. The APP outlines the protective measures to be taken during the construction of the Preferred Alternative (if approved) to protect migratory birds and/or eagles that are protected by the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712); Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d); and Endangered Species Act of 1973 (16 U.S.C. 1531-1544). Additionally, the APP also provides for post-construction (operation) mitigation in that bird deflector devices would be placed on the overhead ground wires as well as the possible relocation of a single perch pole for the proposed overhead transmission lines under the Preferred Alternative. These post-construction activities would help lessen the potential for bird collisions with either transmission lines and/or overhead ground wires associated with the Proposed Action.

Lastly, the potential for the Proposed Action to deviate from the "original plan" associated with the TPP and the Visitor's Center was discussed throughout the preliminary EA (but specifically in Section 3.6, Land Use). The Need for Action section (Section 1.2) of the preliminary EA provides a detailed justification for the Proposed Action.

GCT11-0016 – Gail M. Kuehne
Keller, WA 99140

Comment: *If proposed lines are going over or near businesses or residence, please look into the health hazards to long time exposure by living under the lines or near them.*
That is my only concern for your new line location. Thank you for this opportunity to voice my concern.

Response: The proposed transmission lines will be occupying a right-of-way over Reclamation-owned lands. There are no residences or businesses that exist within this proposed corridor. However, the proposed lines will go over the incline elevator, the Third Powerplant, and the Visitor's Center that are operated by Reclamation. An analysis of electromagnetic fields was done and presented as Appendix A in the Preliminary EA. The results of this analysis are summarized below:

Table 1. Electric Field, Magnetic Field, and Audible Noise Values expected for the Preferred Alternative.

Profile No.	General Description	Approximate Location Relative to Towers		
		Preferred Alternative (Alternative 2)		
		Electric Field kV/m	Magnetic Field mG	Audible Noise dBA
1	On hillside above State Highway 155	**2.3[a]** 0.4[b] 0.1[c]	**23[a]** 10[b] 4[c]	**48[a]**
2	Adjacent or through GC Visitors Center	**1.1[a]** 0.6[b] 0.1[c]	**12[a]** 11[b] 4[c]	
3	On flat area 300 ft. east of Visitors Center	**1.3[a]** 1.0[b] 0.1[c]	**16[a]** 16[b] 4[c]	47[b]
4	Along center of Third Powerplant roof	**2.1[a]** 0.3[c]	**39[a]** 9[c]	

a: maximum (for audible noise, value is maximum level underneath lines)
b: value at 300 feet North of Line 2 Centerline
c: value at 600 feet North of Line 2 Centerline