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Review of draft Willamette Wildlife Mitigation Program Monitoring Plan

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I. Background

In response to the Northwest Power and Conservation Council's request of January 5, 2017, the Independent Scientific Review Panel (ISRP) reviewed the draft *Willamette Wildlife Mitigation Program Monitoring Plan* (December 2016) and supporting material for Oregon Department of Fish and Wildlife's (ODFW) *Willamette Wildlife Mitigation Program* (WWMP, project #2011-003-00).

The Monitoring Plan's stated purpose is "to track progress towards meeting WWMP acreage goals established through the 2010 Willamette River Basin Memorandum of Agreement Regarding Wildlife Habitat Protection and Enhancement between the State of Oregon and the Bonneville Power Administration (MOA); to ensure compliance with terms established in each site's conservation easement and management plan; to evaluate effectiveness at protecting or enhancing habitat conservation values on WWMP-protected lands; and to inform adaptive management and direction of the WWMP, including how WWMP implementation fits into broader landscape conservation efforts."

ODFW's submittal includes the following:

- Cover letter
- Willamette Wildlife Mitigation Program – Monitoring Plan
- Program Administration Manual
- Example Applications

ODFW's submittal is intended to address ISRP qualifications recommended in a 2012 review of the program (ISRP 2012-21). The specific qualifications are as follows:

1) During contracting, a clear interim set of directions is needed, until such time that long term program direction is completed. In addition, a reasonable timeline for the development or acquisition of a program database and data management system should be provided.
2) A complete plan for program and project monitoring and a framework for adaptive management should be provided to the ISRP for review by January 2014. The ISRP would also like to see the application form used for 2012 and 2013 proposal reviews as well as the revised 2014 form.

This ISRP review focuses on the second qualification: the monitoring plan. Comments from the ISRP's 2012 review add some context on the ISRP's qualification:

> The program is a valuable one and fits well in the existing network of conservation areas in the Willamette Valley. Further, proposed property acquisition can improve connectivity between upstream/upland restoration activities and the lower portions of the river.
>
> There are three essential components to successful conservation programs: 1) Identifying, acquiring properties and engaging the public to take responsibility for the long term, 2) monitoring to see that objectives are attained, and 3) using adaptive management effectively to adjust the course as conditions change or issues arise. This program identifies properties and potential partner groups, which is absolutely essential, but does not establish monitoring criteria and a plan for adaptive management, which are also essential. The current proposal presents a

general framework for monitoring and adaptive management, but these topics are not developed. The proposal identifies that development of a monitoring plan will soon begin and should be ready for pilot testing in 2014. The project sponsors state they would welcome an ISRP review of the monitoring protocols as they are more fully developed. The ISRP believes that such a review would be beneficial. A framework for adaptive management should also be provided to the ISRP for review.

The ISRP comments on the monitoring plan and supporting documents follow below.

II. ISRP Recommendation

Additional work is needed to create a monitoring plan that will fully meet the ISRP's qualifications.

The documents provided for review are generally responsive to the items identified in the 2012 ISRP review. They show improved organization, content, and detail. Several items of positive note include a much-improved outline for developing a Monitoring Plan, a comprehensive Program Administrative Manual, an improved project selection process and associated selection criteria, workload assessments for various Plan components, strong Program linkage with the Oregon Conservation Plan, development of an initial online application form, and initial thoughts on how to develop an associated database and data management system.

Although there has been improvement, the Monitoring Plan is untested and the data management system is incomplete. Several areas of continued concern relate to an apparent backlog of work. This backlog appears to be the result of not having fully operational data systems, management plans, and Program monitoring in place prior to acquiring individual parcels for the Program. Additionally, specific steps or a timeline to rectify the situation are not mentioned. The Program is now 7 years old, and 27 parcels have been acquired or put under Conservation Easement. The status of management plans or monitoring for these 27 parcels and/or incorporation of relevant data into an operational data management system is not clear. A pilot program is being implemented, but full-scale monitoring and evaluation is still not occurring. An explicit schedule/timeline should be established for completing management plans and associated monitoring programs and making them fully operational.

Currently, the Monitoring Plan is not operational. What has been presented is a plan to develop a monitoring plan. Thus, the ISRP found it difficult to assess the adequacy of provisions for adaptive management because monitoring and evaluation actions have not been conducted. This point was also identified in the 2012 review. Too many gaps remain in the narrative to be able to provide an adequate evaluation. The proponents, however, are moving in the right direction. The next iteration requires substantial further work to establish a viable and effective monitoring program – one with a tangible focus on fish and wildlife. To help in that process, the proponents may wish to consult a recently published guide on stream and watershed restoration edited by P. Roni and T. Beechie.

The ISRP also believes the proponents would benefit from examining the land management strategies for other large collections of reserves (e.g., Natural Reserve System at the University of California and The Nature Conservancy). And there are many others throughout the USA and Canada, including the Columbia River Estuary. The Willamette monitoring efforts would benefit from understanding what others are doing to both manage and monitor multiple land areas as well as the problems they have encountered.

Qualifications include:

1. Completion dates are needed for (a) the Monitoring Plan, (b) establishment of Program databases, and (c) a fully operational data management system. This schedule should include pilot testing, evaluation, and refinement of current efforts.

2. Reports will be needed to document the results of pilot testing for various monitoring components and for the Program database.

The ISRP looks forward to discussing and reviewing a response on the status of these items during the Council's upcoming Wildlife Project Review. The ISRP appreciates that ODFW shared a draft plan that can be revised to reflect consideration of ISRP comments.

III. ISRP Comments

A. Comments on the Monitoring Plan

1. Comments on the Introduction

The Introduction addresses the history of the agreements between BPA and ODFW; clearly identifies the goal of the MOA for acquisition and stewardship of properties; identifies previously purchased acres; defines the purpose of the Willamette Wildlife Mitigation Program (WWMP), its work to identify selection criteria for lands, and its costs; and defines the purpose of the Wildlife Advisory Group (WAG). The Introduction provides seven strategies (goals and objectives) to guide Program activities. It summarizes four types of proposed monitoring and the role of the Monitoring Team to frame initial goals and monitoring questions. Programmatic-Level Information Needs (Table 1 on page 5) is a useful summary addressing the general intent, how information will be used, a long list of program level questions, and information needs for each monitoring component. It is not clear, however, if these questions, or a subset of them, will be addressed in the core level monitoring program. Also, targeted effectiveness monitoring is introduced. It is noted on page 5 that, "ODFW anticipates that project sponsors will be conducting project-specific monitoring, as described in each management plan, to inform their long-term management of the site" and "that information exchange between the WWMP monitoring program and site-specific project-level monitoring conducted by the sponsor will be useful and informative for both parties." This approach is discussed later in the Plan. The ISRP suggests the Introduction could be strengthened by defining the purpose of the Technical Review Team (TRT) and how this group fits into the WWMP.

The Introduction does not say how the Program will address the backlog of projects that have been completed by the Program since its inception in 2010. It is unclear how many of the Program's 27 parcels have management plans or have undergone any form of monitoring. Nor is any mention made of what monitoring actions or management plans may be in place for the 9,657 acres that were under protection when the MOA was signed. These issues should be discussed in the Introduction.

Because the Program relies heavily on the Oregon Conservation Strategy (OCS) to guide how habitats and species will be prioritized for protection, a brief description of and a link to the OCS is needed. A similar brief description and link to the Willamette Wildlife Mitigation Program (April 2012) is also needed. Additionally, the proponents indicate that their monitoring plan will not address project

effectiveness or address how fish and wildlife respond to habitat protection. Yet, they also acknowledge that targeted monitoring studies that make such evaluations would be of real value to their Program. The ISRP agrees and believes that targeted monitoring of restoration effectiveness should be central to the program. It should not be excluded.

Uncertainty exists on how the Program will employ adaptive management. While adaptive management is shown to be an important component of the Program and questions are provided in the introductory Table (Table 1) that can be used to direct adaptive management, no framework is provided to explain how adaptive management will occur.

2. Comments on the Monitoring Database Section

Database organization is described in a very general way. More detail needs to be provided about the database dedicated to monitoring data and how it will be integrated with the Program's GeoSpatial Data Library. The general philosophy provided for data management was not sufficient for evaluation. More details should be provided on quality assurance protocols, what the data management system is expected to do, and how it will be used (e.g., a central location or spatially distributed centers) and by whom (e.g., adequate technical capacity, security issues). On page 11 it says "Designing a data management system that can meet the information needs of the WWMP monitoring program is not a simple task and providing detailed instructions for its development is beyond the scope of this Monitoring Plan. Using the information described in this plan, ODFW plans to develop and maintain a data management system." How and when a data management system will be designed is not discussed. It is noted that in 2016, "ODFW launched an online project application system where project proponents enter details of their potential projects into an online data system." ODFW hopes to build on that system to flesh out components of their Monitoring Plan. Unfortunately, there is no timeline or identification of responsibility for the development of an operational database to support this ongoing program. Given that the project is now in its seventh year and contains 27 parcels and that a pilot monitoring program is being tested, testing and completion of the Program's database systems is now critical for long-term program success.

Some of the discussion about the database is confusing and needs clarification. On page 7 it says that the Program will be utilizing two different database platforms: a geodatabase for spatial information and a relational database for non-spatial data. Later it is stated, "The central monitoring database will also contain the portfolio-level datasets that are synthesized from individual projects for programmatic purposes." These statements do not paint a clear picture of the proposed approach. For clarity, we suggest that the proponents simply state that the Program's database will have three parts. A geospatial set, a non-spatial set linked to the geospatial data through keys stored in Access (or similar program) and separate files (e.g., Excel spreadsheets, scans of maps, property registry records, etc.) documenting compliance that may be in a variety of formats.

The ISRP suggests the Metadata section be revised to focus on the development and organization of the monitoring database. For example, what types of metadata do the proponents anticipate using and how will this information be incorporated into their monitoring effort? An integrated and coordinated metadata system is essential as it will assure that data in the database can be compared, synthesized, and interpreted. Data acquired from multiple participants can become impossible to assess quantitatively unless metadata standards are established. Furthermore, at present, there is no standard for when participants are required to submit monitoring data. This lack of certainty will lead to variable

performance and difficulties in database synthesis. Explicit reporting requirements need to be developed. Additionally, the Database Development section could be strengthened by identifying key useful pieces in the database accompanied with a brief description of how these pieces will be transferred from the parties involved in the WWMP. This would begin with data from land acquisition and proceed through tracking implementation and monitoring efforts.

We also believe the Data Management section would be improved if it defined some key terms. For instance, the difference between portfolio-level and project-level data needs further clarification. We were not clear about the definition of a primary table and a look-up table, and an example of a "primary key" (Figure 1) from a table in an Appendix would be useful to many readers wanting to understand the databases. We urge the authors to identify acronyms in their Figures (Figure heading?). For example, "CE" in Figure 1 was not defined although it is defined in the Acronym Table, p. v and appears to be an important field. We found the differentiation between spatial data in ArcGIS and other data stored in EXCEL and ACCESS was helpful for understanding ODFW's thinking about the monitoring database.

Edits needed: "Digital databases have become are an essential" p. 7, "Appendix provides" p. 7

3. Comments on the Implementation Monitoring Section

The ISRP noted that the data provided in the current database for project applications and selection directly informs implementation monitoring. It is not clear if there is a specific protocol for gathering and summarizing this information, and whether any actual monitoring has taken place using this platform and, if so, how well it has performed. It is noted that a sampling of existing parcels will be used in a Pilot Test. It would be very informative if results of this test could be shared with the ISRP, along with information on the utility of the Program Database in supporting this effort.

The ISRP suggests the authors consider personnel time as a resource needed to create and maintain their databases and include this information in this section.

Edits:

The ISRP believes the first paragraph of this section could be deleted and the section could begin with the description of implementation questions posed by the WWMP Monitoring Team in 2013. The "resources needed" section is very general, especially with the first sentence being "Resources needed will include those associated with database development and maintenance." This section, with modification, seems a better fit under the previous section, Monitoring Database.

4. Comments on the Compliance Monitoring Section

The section provides a detailed description of the purpose, procedures, frequency, and reporting of Compliance Monitoring. It appears both ODFW and BPA will be tracking compliance, but on different time intervals. We believe providing the frequency of these efforts by each agency would be helpful to readers. We note that BPA relies on self-assessment through landowner reporting and ODFW will do their own monitoring on a more frequent schedule than BPA. It is not clear why this parallel monitoring is needed and why the information is not being shared or integrated. It is noted on page 15 "An agreement between the BPA and ODFW to share monitoring data would result in considerable cost savings for both programs." It does not sound like this is being done, and it is not clear why.

Also, it is stated on page 17 "When management practices are failing to achieve desired future conditions or funding for management activities has been unavailable, then ODFW and BPA anticipate

that Grantors will adapt their management strategies to the altered circumstances and update their written plan." It is not clear what efforts will be made to ensure that these assumptions are true and what follow up is planned if they are not accomplished as assumed. Finally, on page 17 it is noted that WWMP can collect compliance information from three sources, with the first being remote sensing. It is not clear how remote sensing helps to answer the compliance monitoring questions related to adherence to CE's or Management Plans if a base map or an ortho photo is not a Management Plan requirement. More explanation on this is needed.

5. Comments on the Habitat Condition Monitoring Section

This section documented approaches for tracking "the acreages of different Strategy Habitats being protected under the program and to reveal gaps in the portfolio that could be addressed by future acquisitions. A secondary mapping objective is to monitor habitat changes within WWMP properties so that the program may assess progress toward habitat management goals." It is noted that habitat mapping will be primarily GIS-based analysis using remote-sensed information. The indicator metric tracking will be field based and semi-qualitative. The section covers most components of this effort and reflects a good deal of work. Unfortunately, the section lacks the detail and specific direction to ensure consistent implementation and evaluation. It appears that much more work will be needed to make Habitat Condition Monitoring fully operational.

To collect supplemental information that will allow assessment of the quality of the habitat and how it changes over time, a preliminary landcover classification was developed. Using this classification, surveys will focus on a small number of vegetation structure and composition metrics that may indicate the species composition of the wildlife community using the property. We have a few questions about this approach: when will the assessment protocols and definitions for measurement of the detailed metrics be developed? Since the classification system is preliminary, what testing is needed to finalize it and when is that likely to occur? Are there models or procedures in place that will be used to track and evaluate trends in vegetation composition and quality/character and have they been tested to see if they meet expected needs? A reference that the proponents may find useful when developing approaches that can be used to determine if their habitat parcels are functioning properly can be found at https://www.blm.gov/or/programs/nrst/files/Final%20TR%201737-16%20.pdf.

Although there is a good deal of information provided on habitat mapping, photo interpretation, field methods, etc., much of it is very general and does not lay out details needed to allow full and consistent implementation. Some of the topics needing more detail include specific sampling and vegetation type identification and measurement protocols, selection methods for the parcels that will be monitored, and anticipated approaches for analysis. Other examples of items needing additional detail to ensure consistent implementation include: Page 33 under photo interpretation, "Habitat condition assessments will be conducted from a representative point within the selected habitat unit. Using a 150-foot radius from the selected location, habitat metrics will be collected as described in the habitat assessment forms" and "Riparian areas will be delineated using satellite imagery focusing on the transitional area between the water and the upland vegetation." Also, most of the discussion on Habitat Mapping and Habitat Condition is very general and quite vague on specifics needed for implementation. It appears that a good deal of work remains before this component becomes operational. For instance, the ISRP would like to see a proposed list of the habitat metrics that will be used. A timeline for testing, evaluation, and future review would be useful as the process moves forward.

Strong points include providing an initial assessment of resources needed and a section that examines periodic reporting and summary tables to be used (Table 7, page 45). It is estimated that the WWMP will be preparing approximately 12-15 baseline and periodic habitat condition monitoring summaries per year.

Edits: "Strategy Habitattypes," (p. 30), "wetlands respectiviely" (p. 33), Table 7, "Habitatt", p. 44

There was trouble accessing the link, http://orbic.pdx.edu/data.html. It appears that the URL has changed to an Oregon State site.

6. Comments on the Programmatic Evaluation Section

The first paragraph of this section is difficult to interpret, so we suggest it be deleted, and start the section with the current second paragraph. Generally, this section needs editing to more clearly and concisely present the aims of programmatic evaluations. The ISRP suggests providing text that complements the direction provided in Table 8. The proponents could start with goal statements for these evaluations and proceed from there with time tables for when the evaluations are expected to occur.

The Resources Needed section is too general to be useful. The ISRP suggests more specifics be included in this section.

7. Comments on the Targeted Monitoring Studies Section

The proponents explain that numerous factors can affect population processes and that standardized protocols may not be able to identify factors that limit populations. To address this issue, the proponents have proposed to undertake targeted monitoring studies that focus on issues outside of the domain of their standardized monitoring efforts. Two examples of such investigations were provided: assessments of specific novel habitat restoration approaches and evaluations of responses of wildlife populations to restoration procedures. The use of Targeted Monitoring Studies is a unique monitoring concept that requires additional development. The ISRP was uncertain, for instance, to what extent these studies are likely to occur, how they will be organized and implemented, and on how funding and additional staffing are to be developed. For example, the proponents propose that studies be led by a team composed of a representative of the WWMP, resource specialists from ODFW, and members of management staffs from the properties participating in the study (page 50). Given this description, the ISRP believes inclusion of research scientists would improve such teams.

Details of study design and implementation are quite vague and seem unlikely to meet the demands of research level studies. In fact, on page 49, it is noted, "Whether monitoring *needs* to conform to experimental principles is for the team directing the study to decide" and "If end users of the monitoring program are sufficiently confident in assessing management effectiveness based on descriptive data and professional opinion rather than inferential statistics, then monitoring methods can be streamlined and resources conserved." This comment leads us to believe that the authors wanted to distance themselves from the idea that their monitoring could be used as classical ecological research (e.g. Before-After-Control-Impact or BACI). We encourage the proponents to employ BACI designs whenever possible as this approach will reduce uncertainty and lessen the role of opinion on how restoration occurs in the future. Monitoring and assessment of management effectiveness should be quantitative. Professional opinions are inherently biased and although useful in identifying hypotheses should be avoided when evaluating program effectiveness.

The proponents state that if targeted monitoring studies were to occur, there are at least three challenges when it comes to measuring the effectiveness of restoration techniques. One of these is that land managers carrying out on-the-ground conservation actions are independent of ODFW. Hence, there may be some uncertainty about how and when desired actions may have occurred. Secondly, they ask who should decide if management is being carried out effectively. And lastly, they raise concerns about how collected data may be interpreted. For example, ODFW and landowners may draw different conclusions from the same data. With a little forward planning, however, these issues can be ameliorated. The Program's compliance monitoring or site visits should help address the first concern. The second and third concerns could be alleviated if restoration expectations were produced and agreed upon by both land managers and ODFW at the beginning of a project. Joint decisions on how information will be analyzed *a priori,* as well as establishing agreed upon metrics to measure, should help address the third challenge. Additionally, we believe the proponent's idea of using multiple properties when performing targeted monitoring evaluations is a good step. It will help evaluate how effective a restoration method may be across multiple areas. It will also enhance communication among ODFW and multiple landowners which hopefully will lead to productive partnerships.

Conceptual models are discussed at length, and several examples are offered that illustrate how to develop indicator metrics and study designs and to interpret results. They provide some useful details and approaches for Targeted Studies but do not seem particularly appropriate in the main body of the Plan or useful in imparting additional understanding of the basic approaches for development and implementation of these studies. Perhaps including them in an appendix would be more appropriate.

A major goal of this program is to protect a specified number of acres, of various types, by a designated date. Another strategy would be to set quantifiable objectives for key species and have an adaptive management framework in place to guide acquisitions and actions. The vision and non-empirical goals, as stated in this document, are commendable but do not allow for a rigorous evaluation of the program in the future. ODFW is embarking on an innovative landscape management program that needs basic, quantifiable hypotheses to guide their efforts in addition to accounting for various properties. Such hypotheses are the basis of an effective adaptive management plan.

As the proponents state, the fact that "Land managers are in the best position to prioritize among all the challenges they face and decide which issues are the most profitable subjects for monitoring studies" and, as well, that "Land managers and their staffs also have the greatest familiarity with the successes and failures of conservation actions performed at their properties, thus are the stakeholders that can best frame the management questions and testable hypotheses to guide monitoring" underscores the need for an adaptive management framework that incorporates public participation. Adaptive management needs to be a basic part of the program and to occur on a regular timetable.

The proponents suggest constructing "a simple but carefully thought out diagram or narrative that depicts likely management actions and the responses of plant and animal communities." These conceptual models are really hypotheses and should be quantitative whenever possible.

P. 51: The proponents note that "Of critical importance is identifying indicator variables that can clearly be interpreted in terms of values that, if exceeded (so called 'trigger point'), would initiate management action (Noon 2002)." These were originally called "Thresholds of Probable Concern"; the proponents may want to see an article by Kevin Rogers and Harry Biggs (Rogers, K., and H. Biggs. 1999. Integrating indicators, endpoints and value systems in strategic management of rivers of the Kruger National Park. Freshwater Biology 41:439-452) on how it was developed and used in the 1990s. The approach has real

value in situations where monitoring resources are limited and when specific monitoring variables are not well known.

The proponents outline two detailed examples and two concept examples to illustrate the use of targeted monitoring to address wildlife and habitat management questions. If these examples are retained in the Monitoring Plan, the ISRP recommends that they be placed into an appendix. As the ISRP understands the WWMP, the proponents have placed considerable weight on providing linkages or corridors between habitats. We think using this topic as a springboard as a Targeting Monitoring example would make major contributions to restoration. For instance, there are multiple geospatial and monitoring tools (colonization, OCCUPANCY models) that could be useful for monitoring connectivity.

P. 55: The proponents state that "The statistical significance of monitoring findings are (sic) less important than how the data can be used to inform better wildlife and habitat management." The ISRP partially agrees that statistical significance can be problematic as it is not necessarily the same as biological importance. Nevertheless, it is essential that basic parameters such as means, standard deviations, and other repeatable and quantifiable data be collected on the metrics being assessed. These parameters can be used to estimate effect sizes. Effect sizes[1] and uncertainty about effect sizes are key metrics needed by management for rational decision making. For some metrics, however, it will not be possible to calculate means and standard deviations. In those instances we urge the proponents to employ appropriate non-parametric analyses to help inform management. Further, the actions identified in the examples presented are much more than annual activities, and this fact needs to be represented in a program timeline (not presented) and in budgets.

The authors are likely to find the approach used by other groups for selecting and evaluating management/acquisition actions to be helpful. See a paper on work in the Columbia River estuary.

8. Comments on the Preliminary Work Plan Section

This section is a well-organized effort to estimate workload and staffing needs for the Plan. The section is well-documented and logical. It provides a useful, first approximation of future workload needs. Potentially important elements, particularly in the near term, that do not appear to be included are recognition of workloads associated with pilot testing and refinement of various Plan components and the time required for the incorporation of data and information needed from the backlog of 27 parcels that are already in the system. Also, there is no apparent consideration for the extra time that will be required, in the first 2-3 years on testing and revision of the Monitoring Plan before it is truly operational. Additionally, the preliminary work plan is too vague and limited in scope for the ISRP to evaluate the linkage between the work plan and monitoring. The work plan should include an adaptive management framework, timelines, deliverables, budgets, and other essential program components.

[1] Effect size is calculated by dividing the difference between the mean of an experimental group and the mean of a control or reference group by the standard deviation. In practice, the standard deviation is rarely known. Instead it is estimated from the standard deviation obtained from the control group or is a "pooled" value from both the control and experimental treatments (Coe 2002). For an introduction to effect sizes see Coe (2002) at https://www.leeds.ac.uk/educol/documents/00002182.htm.

The ISRP asks for a discussion of the estimated timeline for adding properties. And as mentioned earlier, we wonder if the 9,000 plus acres protected by the Program prior to the MOA with BPA will be incorporated into the proponents monitoring effort.

9. Comments on the Monitoring Methods Pilot Study Section

The ISRP supports the idea of conducting a pilot study, but there is limited detail on the specifics of the study design, planned activities, and an implementation schedule which will lead to a fully operational Plan and associated database. The 27 current properties appear to provide a good base for selecting sample sites and some thought has been provided regarding timing of various Pilot Test activities over the study period. However, discussion is needed on the process that will be used to evaluate study results and the process for selection and documentation of protocols for various monitoring activities, especially habitat mapping and condition tracking. A potentially significant gap is noted on page 68, "Data management is one of the major monitoring tasks. The directions for constructing the fully functioning WWMP monitoring database are beyond the scope of this plan, but ODFW should begin arranging for its development soon." As data management is one of the "major monitoring tasks," testing of a Program database seems to be a missing component of the study. It would be helpful if the proponents provided a schedule, with mileposts for completion of key activities and identification of a planned date for delivery of a fully operational Monitoring Plan, including database(s). Because errors are introduced when different people are collecting data, training is paramount for "standardizing" data collection, especially when visual interpretation is required. No strategies for conducting this exercise are presented in the narrative. Once training is completed, if multiple WWMP employees complete monitoring tasks, then the proponents could estimate the average effort required to complete the tasks outlined.

Edits: "habitat types so as to fully test" p. 65.

B. Comments on the Program Administration Manual

This manual is an update of an earlier 12/31/14 document. The ISRP found the Manual provides comprehensive and clearly written direction for the WWMP Program. It clarifies several areas in the Plan where there were questions in the 2012 ISRP Review. These include identification of various advisory groups and their intended roles in the Program; a very understandable description of the project selection process and associated model, including selection criteria and their definitions; and additional information and a template for development of individual parcel, management plans.

The Project Selection Model is a significant improvement over the past model reviewed by the ISRP. The components and associated points seem more logical and better defined than in the previous review. A good list of references is also provided. A couple of potential improvements could be considered. In the Ecological and Cultural Values Component, Restoration Success element (page 19) the manual asks proponents to provide good faith estimates of costs and a timeline for restoration. The feasibility or accuracy of cost estimates seem questionable given that a management plan will not yet have been completed. Perhaps another way of addressing feasibility would be to use something like High, Medium, or Low cost classes with associated dollar ranges for future restoration to provide a cost estimate but acknowledge the uncertainty of the estimates. Also, the format for displaying individual selection criteria and associated scoring is somewhat variable; it could be improved by adopting for all selection

criteria the format and display of definitions used for Public Access and Costs/Cost Share elements, in the Operations/Administration component.

Another major improvement since the last ISRP review is the increased detail and direction provided regarding the needs, purpose, and development and approval of management plans for individual parcels. A template showing essential management plan elements is provided in Appendix C. A well-defined system for coordination with proponents for the development of management plans and a review process/schedule for their ultimate approval are also provided. It is unclear whether management plans for the 27 parcels, already in the Program, have been completed, nor is there any discussion regarding whether existing management plans are consistent with the recommended template. Also, if plans have been completed, there is no discussion whether any lessons have been learned from their development and use in the existing parcels in the WWMP.

Appendix C, Template Management Plan Outline, identifies the general process, including key participants for development of management plans. It also provides a template displaying a comprehensive list of required sections and topic areas. It does not include any further description of the types or quantity of information that is likely to be needed for individual plan elements. There is no required format established for individual plans. Although this provides flexibility, it may complicate review and/or comparison of individual management plans. The template also does not appear to require a base map or satellite images of individual properties as a required part of each plan. A base map could potentially include habitat types and identification of key features like streams, roads, and other infrastructure like irrigation ditches, fences, structures, etc. The inclusion of a base map and ortho photographs would be useful additions. Finally, direction for Adaptive Management, Item G of the template, does not provide any detail or direction on this important part of any management plan.

Appendix G, Terrestrial Wildlife Monitoring, describes the need to assess wildlife assemblages associated with different habitat types and properties. It provides a framework and examples of three wildlife assemblages that would be informative and better represent the large number of wildlife species that occur in the Willamette River basin. The Appendix also identifies four sources[2] of empirical information on fish assemblages and aquatic communities and habitats. The text states, "These existing datasets may be sufficient to adequately address fish populations and aquatic communities in biological assessments for properties, which allows more resources to be dedicated toward monitoring terrestrial wildlife." The questions or objectives of land management should be clearly identified to determine whether existing databases are adequate and applicable to provide quantifiable answers and guidance. If existing information is inadequate, focused monitoring of aquatic habitats and communities or species of concern will be required.

Again, the ISRP suggests the proponents consider the utility of another approach for assessment of properties (at a minimum, at least acknowledge that alternative approaches are being used). Such an approach is in use in the Columbia River estuary habitat restoration projects. See this hyperlink for further information.

[2] ISRP member Stan Gregory's monitoring and publicly accessible database are one of the four sources referenced here. Because the draft Monitoring Plan cites Gregory's monitoring data, online database, and SLICES website as sources of information, he was not assigned as a primary reviewer of the draft plan.

Edits:

Page 18 – should “grasslands” be changed to “comprised of native spp. Grasses”?

It appears that ODFW receives proposals and then reformats them (page 10-11 PAM). Why not send a template to project proponents to use when they submit their proposal?

Page 54 – suggest identifying bold ***and large font*** are items that must be addressed.

The ISRP suggests that the proponent consider updating the PAM with an Executive Summary that includes progress toward the Program’s acreage goal.

C. Comments on the Example Applications FY 2013-2017

The ISRP was concerned about the major differences in detail provided between the application forms for the Bald Hill and Red Hill projects. Will each project have its own unique application form? The two examples provided show considerable differences between the project applications; perhaps the forms are still evolving, but if not, forms ought to be standardized because data on the forms will be used to build databases.

Bald Hill plan: There are big changes between current and proposed (?) cover types on the area in the document sent to us. What actions are being proposed to create these changes, and what are the associated costs? The ISRP suggests a summary of this information be provided in #4 Project Description.