

## **Chapter 10. Changed Circumstances**

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## 10. Changed Circumstances

### 10.1 Introduction

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The City of Portland (City) and NMFS foresee that certain circumstances could substantially change during the term of the Habitat Conservation Plan (HCP). Those changes, some due to natural events or factors outside the control of the City or NMFS, could merit changes in the approach as defined in the HCP. Because the Incidental Take Permit (ITP) will authorize the incidental take of covered species under ordinary circumstances as well as changed circumstances (as long as the City is operating in compliance with the relevant requirements), the changed circumstances are specifically identified in this chapter along with the planned responses. If mitigation measures or costs beyond those provided for in the HCP become necessary in response to these circumstances, the City understands that NMFS will not require additional measures or expenditures without the City's prior consent unless NMFS has concluded that a species is in jeopardy of extinction.

### 10.2 Climate Change

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The City has designed its HCP to take into account reasonably predicted climate changes. The City believes that under climate patterns that might prevail over the next 50 years, it should be able to meet its commitments under the HCP. It is possible, however, that climate changes will occur more quickly or in directions that are not now anticipated. Such changes might affect the ability of the City to meet its commitments or the viability of the species protected by the HCP. These kinds of changes are addressed in this part of the HCP.

The City has kept climate-related records for the past 66 years and continues to assess climate patterns and their effect in the Bull Run watershed. The City also monitors current global and regional climate change research and related legal and policy developments. For example, the City hired University of Washington staff to study climate change as it might affect the Bull Run watershed. The study (Palmer and Hahn 2002) showed that winter precipitation may likely increase on average, but that snowmelt may likely provide less flow in spring. Although the length of the longest drawdown period was not predicted to increase, the average length of drawdown for all years was expected to increase. The study also indicated that the reservoirs in the Bull Run system would likely continue to fill each year, because overall winter flows in the watershed are still much greater than the available storage capacity.

Bull Run is primarily a rain-driven system, with peak flows occurring in late spring and early summer, tapering off as the summer progresses. The current research from University of Washington suggests that the shape and timing of the Bull Run hydrograph will probably not change much over the next several decades as a result of climate change. Flow monitoring will enable confirmation or alteration of those predictions.

Although global climate change models vary in predictions of precipitation amounts and patterns—particularly for the summer—predictions of increased temperatures in the future

show a more consistent trend. The University of Washington Climate Impacts Group's (CIG) review of newer global climate models for the 2007 Intergovernmental Panel on Climate Change reports show that, for the Pacific Northwest, the precipitation changes in the summer are still fairly unpredictable, and that predicted temperature increases might be 10-20 years further into the future than estimated in the studies conducted in 2002.

The City is preparing for climate change through research and monitoring. Hydrology and water temperature data for the Bull Run River will continue to be monitored as part of the HCP.

### **10.2.1 Long-term Changes in Hydrology of the Bull Run River**

The lower Bull Run River instream flow measures of the HCP are based on the needs of the covered fish species, the anticipated water supply demands of the City, and a 60-plus-year record of flows in the Bull Run River. The measures represent a balance among conflicting water uses, with provisions for the full range of hydrologic conditions that are likely to exist over the term of the HCP. The HCP addresses extreme seasonal low flows (critical spring and/or critical fall seasons) as determined from the hydrologic record. The definition of a critical flow season, a description of the triggers for recognizing the critical flow condition, and the City's measure for responding to the low season flows are described in detail in Chapter 7 (Measure F-2).

Seasonal low flows are not expected to be lower or to occur with greater frequency than those observed in the historical record. If they do occur more frequently in the future, that circumstance will be addressed as described below under Long-Term Change in Hydrology of the Bull Run River. The focus of implementation will be on defining and responding to the actual low-flow conditions.

Currently available data show a reduction in the Bull Run reservoir inflows over the last 60 years (see Chapter 2, Figure 2-4). The amount of stream inflow into the Bull Run reservoirs has decreased during the traditional reservoir drawdown period. The City used this data when developing the HCP and will continue to monitor river hydrology to determine whether the HCP conservation measures can be met during the term of the HCP.

**Definition:** A significant reduction of inflow to both Bull Run reservoirs evaluated in 2025 (and every 5 years after) and determined by statistical testing will be considered a changed circumstance. The City will apply three statistical tests to the Bull Run reservoir inflow data to determine whether there had been a significant change:

- Trend analysis
- Comparisons of means and/or median flow values
- Frequency of critical flow year occurrence

The reference condition will be Bull Run Reservoir inflow data from 1946–2004. If two of the three tests indicate that there has been a statistical reduction in the Bull Run reservoir inflows, this will be considered a changed circumstance. Appendix H, Impact of the Long-Term Climate Changes on Bull Run Stream Flow, describes the approach to testing whether there has been a significant reduction in flow.

**Response:** If a long-term change in Bull Run reservoir inflows occurs, the City will consider three options:

- Continued implementation of flow measures with no modification of the HCP
- Revised instream flow measures with minor modification of the HCP
- A proposed major amendment to the HCP

Under the first option, the City will consider its current water supply situation, the water supply demands, and the original HCP fish flow commitments. If the City determines that the fish flow commitments can still be met feasibly even with a reduction in Bull Run reservoir inflows, implementation of the flow measures will continue. If the City determines that it cannot meet the HCP flow measure commitments due to the changed circumstance, it will enter into good-faith discussions with NMFS to review the HCP flow measures and identify modifications that would comply with ESA requirements. The City will also determine the potential changes to Weighted Usable Area (WUA) values associated with the long-term change in hydrology and will make the data available to NMFS.

The City's incidental take coverage will continue while response options are being discussed and any necessary amendments to the HCP are made. During those discussions, the water supply system will continue to be operated to provide favorable flows for salmonids to the maximum extent practical.

### **10.2.2 Changes in Water Temperature of the Bull Run River**

Water temperature is a key management concern in the lower Bull Run River. The covered fish species are sensitive to water temperature and can experience metabolic stress if temperatures exceed certain levels. The Oregon statewide water quality standards include two tests for compliance. The biologically based (numeric) criteria for maximum water temperature are 16 °C for salmonid rearing and 13 °C for salmonid spawning. However, if those numeric criteria cannot be met due to natural, nonanthropogenic conditions, then natural conditions are the standard to be met.

Detailed modeling analysis has demonstrated that even under natural pre-water-system conditions, temperatures in the lower Bull Run River would often exceed the state numeric criteria for salmonid rearing and spawning. The natural temperatures are elevated in the summer months because of the river's east-west orientation, bedrock morphology, and low summer flows. Consequently, during those periods, the water quality temperature standard in the Bull Run River is the "natural temperature." Given these natural conditions and given the constraints imposed by the limited storage of cold water in the City's reservoirs, the flow measures were designed to manage temperatures in the lower Bull Run River to meet the state standard and to favor native salmonids to the maximum extent practicable.

Under the terms of the Oregon Department of Environmental Quality (ODEQ) Total Maximum Daily Load (TMDL) for the Sandy River Basin, ODEQ uses temperatures in the Little Sandy River, as a surrogate to represent natural temperatures in the lower Bull Run River. The City's analysis indicates that it can and will meet the ODEQ standard. During

the term of the HCP, however, it is possible that climatic conditions will change and Bull Run reservoir inflow (i.e., upper Bull Run River) temperatures will increase to the extent that the City cannot meet the Little Sandy River reference standard. If that occurs, the City will enter into good-faith discussions with NMFS and ODEQ to review the HCP flow and temperature measures. Possible outcomes of the discussions include the following:

- Continued implementation of flow and temperature measures, with no modification of the HCP
- Revised flow and/or temperature measures, with minor modification of the HCP
- A proposed major amendment to the HCP

The City's incidental take coverage will continue while response options are being discussed and any necessary amendments to the HCP are made. During those discussions, the water supply system will continue to be operated to provide favorable temperatures for salmonids to the maximum extent practical without additional structural modifications to the infrastructure.

### 10.3 Significant Change in the Status of Habitat within the Sandy River Basin

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The HCP conservation measures were designed to ensure that incidental take associated with the Bull Run water supply system will not reduce the likelihood of the survival and recovery of species covered by the ITP in the wild. A major consideration in the development of the measures was the current status of the covered species and their habitats in the Sandy River Basin. A significant decrease in the quantity or quality of fish habitat within the Basin could alter the overall status of one or more covered species, as well as the relative impact of incidental take associated with the water supply system. In the event of such a change, it will be necessary to review all ongoing fish habitat conservation efforts in the Basin, including the HCP. The process for review and modification of the HCP following a significant change in habitat is described below.

**Definition:** A significant change in the status of habitat in the Sandy River Basin is defined for the purposes of this HCP as: the loss through destruction or degradation of more than 50 percent of the ability of a sixth-field or larger stream within the Basin to support covered fish species, expected to last for 10 years or longer. For example, such a loss could occur from a catastrophic flood, an eruption of Mount Hood, or an unexpected outcome of the removal of the Marmot or Little Sandy dam. This definition is intentionally kept broad to cover all possible circumstances that could affect the overall ability of the Sandy River Basin to support sustainable populations of the covered species. The City and NMFS will review any and all potentially significant changes in the status of habitat and mutually agree on which changes are significant for purposes of this provision of the HCP.

**Response:** In the event of a significant change in the status of habitat within the Sandy River Basin, the City and NMFS will enter into good-faith discussions to explore available response options. Potential responses by the City could include the following: helping to rehabilitate/restore function in the affected stream, improving habitat in other reaches/tributaries of the Sandy River, altering Bull Run flow releases, and/or using habitat in the upper Bull Run River for covered anadromous species. The type and magnitude of response could vary, depending on the time of the event (i.e., early or late in the HCP term). Joint funding with the Sandy River Basin Partners will be explored if feasible and appropriate. The City's incidental take coverage will continue while response options are being discussed and any necessary amendments to the HCP are made.

## **10.4 Change in the Status of a Species**

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From time to time, NMFS might list additional species under the federal Endangered Species Act (ESA) as threatened or endangered, delist species that are currently listed, or declare a listed species extinct. In the event of a change in the federal status of one or more species, the following steps will be taken.

### **10.4.1 New Listings of Species Not Covered by the ITP**

If a species that is present or potentially present in the Sandy River Basin becomes a candidate for listing, is proposed for listing, is petitioned for listing, or is the subject of an emergency listing under the federal ESA, the City will survey the area affected by the Bull Run water supply system (after coordinating with NMFS) to determine whether the species and/or its habitat(s) are present. If the survey results indicate the species or its habitat(s) are present, the City will report the survey results to NMFS. If NMFS determines there is a potential for incidental take of the species as a result of continued operation of the Bull Run water supply system, the City will exercise one of several options (e.g., choose to avoid the incidental take of the species, or request NMFS to add the newly listed species to the HCP and ITP in accordance with the provisions in the Implementing Agreement and HCP, and in compliance with the provisions of Section 10 of the ESA).

If avoidance of take of a newly listed species isn't possible or interferes with the City's ability to meet its obligations under the HCP, the City recognizes that new or revised mitigation measures may be necessary to satisfy ESA requirements for the newly listed species and will consult with NMFS. If the City chooses to pursue incidental take coverage for the species by amending the HCP or by preparing a separate HCP, the City and NMFS will enter into good-faith discussions to develop necessary and appropriate mitigation measures. All parties will endeavor to secure incidental take coverage prior to final listing of the species. The City's expectation is that NMFS will consider the habitat benefits resulting from the City's ongoing actions at the time of the species evaluations associated with listing. The City's incidental take coverage will continue while response options are being discussed and any necessary amendments to the HCP are made.

### **10.4.2 Delistings of Species Covered by the HCP**

If a species covered by the HCP is delisted, NMFS and the City will review the mitigation measures being implemented for that species to determine whether they are still necessary to protect the species from being relisted. If continued mitigation by the City is necessary to avoid relisting the species, mitigation will continue as specified in the HCP. If cessation or modification of the mitigation for that species will not lead to the relisting of the species, NMFS and the City will revise the HCP to eliminate or otherwise modify the mitigation measures in question. However, if elimination or modification of mitigation measures initially implemented for the species being delisted will materially reduce the mitigation for another covered species, the mitigation measures will not be eliminated.



### **10.4.3 Extinction of Species Covered by the HCP**

In the event that a species covered by the HCP becomes extinct in the relevant Evolutionarily Significant Unit, NMFS and the City will review the mitigation measures implemented for that species to determine whether they are still necessary to meet ESA requirements for the remaining covered species. If the City and NMFS mutually agree that elimination or modification of mitigation measures initially implemented for the extinct species will not materially reduce the protection and mitigation for another covered species, the mitigation measures will be eliminated or modified.