# Comprehensive Data Delivery README FILE

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| **Study Section** | Study 10.15: Waterbird Migration, Breeding and Habitat Use |
| **Study Component** | (not applicable) |
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| **Field Date Range** | April 20, 2013–October 18, 2014 |

**Introduction:** The goal of this data collection effort was to collect baseline data on waterbirds migrating through and breeding in areas with the potential to be affected by construction and operation of the proposed Susitna–Watana Hydroelectric Project (Project) in Alaska. These data will enable assessment of the potential impacts of the Project and inform the development of appropriate protection, mitigation, and enhancement measures.

The study area for the Waterbird Study encompassed lakes, ponds, rivers, streams, and flooded wetlands within a 3-mi (4.8-km) buffer area around the proposed reservoir inundation zone, the dam site and camp facilities area, and the alignments of the various road and transmission corridors (Gold Creek, Chulitna, Denali East and Denali West corridors). The study area extended outside this region in some places to include other water bodies surveyed by Kessel et al. (1982). and followed rivers up to 10 miles outside the road and transmission corridors for breeding Harlequin Ducks.

In 2013 and 2014, waterbird data collection included repeated aerial surveys for migrating birds during spring and fall (mid April–late May and mid August–late October), for breeding birds during late spring (late May–Mid June) and for broods during summer (mid July–mid August). Additionally, a ground-based study was conducted from a benchland approximately 1 km northwest of the proposed Watana dam site during spring (mid April–early June) and fall (mid August–mid October) 2013. The ground-based study included diurnal visual surveys, nocturnal audiovisual surveys, and nocturnal radar monitoring of flight activity.

This multi-year study began in 2013 and was completed in 2014. The Study Completion Report (SCR) for the Waterbird Study was produced in 2015.

**Data Summary:** Data for the Waterbird Study consist of GIS study area and data layers, and Excel spreadsheets with complete data sets for both the aerial and ground components of the study. All field data were collected electronically and have undergone at least a QC3 level of review.

Data for the aerial component of the Waterbird Study consist of 12 GIS feature classes outlining the study areas, sub-areas and lake groups surveyed during aerial surveys; 7 feature classes of water bodies, rivers and streams surveyed; 4 feature classes of summarized data and 3 of raw data used for map production in the SCR, and 6 Microsoft Excel files with complete observational data sets from the aerial surveys. Data for the ground survey component consist of 2 GIS feature classes for the study area, 2 feature classes of visual observational data, and 3 Excel files with diurnal visual, nocturnal audiovisual, and nocturnal radar data.

*Field Data*—In 2013 and 2014, a series of aerial surveys were conducted for waterbirds from a Robinson-44 helicopter. Waterbird locations were approximated during surveys using an onboard GPS, and were later geolocated to water body centroids or locations on rivers or streams as mapped in the National Hydrography Dataset (NHD). In 2013, a ground study was conducted from a point approximately 1 km NW of the proposed dam site to obtain information on the volumes, flight directions and altitudes of birds migrating through the study area. The ground study employed a combination of visual observations and radar monitoring during both spring and fall migration periods.

*Study Water Bodies and Rivers*—Water bodies and rivers to be surveyed were identified prior to the study from the National Hydrology Dataset (NHD), and observations during aerial surveys were assigned to these features for analysis and summary.

*Study Areas*— The study area for the Waterbird Study encompassed a 3-mi (4.8-km) buffer area around the proposed reservoir inundation zone, the dam site and camp facilities area, and the alignments of the various road and transmission corridors (Gold Creek (2013–2014), Chulitna (2013), Denali East (2014) and Denali West (2013–2014) corridors). Water bodies within these buffers were surveyed during spring and fall migration, and during breeding population surveys. During brood surveys the buffer was 1 mile. Additionally, during breeding population surveys a rectangular survey block was surveyed on the upper end of the reservoir inundation zone both years. Water bodies were grouped into study units for planning and conducting surveys.

**Data Organization:** Field data for the study are archived in the subfolder /10-WILD/10.15-WTRBRD/Field\_Data. The folder contains 9 Excel files with tabular data collected during aerial and ground-based surveys. The tabular data include:

* 10\_15\_WTRBRD\_Breeding\_Lake\_20170630: waterbird observations during lake-to-lake breeding bird aerial surveys
* 10\_15\_WTRBRD\_Breeding\_Transect\_20170630: waterbird observations during breeding bird transect aerial surveys
* 10\_15\_WTRBRD\_Brood\_Survey\_20170630: waterbird observations during brood aerial surveys
* 10\_15\_WTRBRD\_Fall\_Migration\_20170630: waterbird observations during fall migration aerial surveys
* 10\_15\_WTRBRD\_Harlequin\_Breeding\_20170630: waterbird observations during Harlequin Duck breeding bird and brood surveys
* 10\_15\_WTRBRD\_Spring\_Migration\_20170630: waterbird observations during spring migration aerial surveys
* 10\_15\_WTRBRD\_Nocturnal\_Visual\_20170630: nocturnal visual observations during the ground-based migration study
* 10\_15\_WTRBRD\_Radar\_20170630: surveillance radar targets data during the ground-based migration study
* 10\_15\_WTRBRD\_Visuals\_20170630: visual observations during the ground-based migration study

The GIS data are archived in the subfolder, /10-WILD/10.15-WTRBRD/GIS which contains one geodatabase (SuWa\_10\_15\_GIS\_20170630.gdb) containing 30 feature classes:

* WTRBRD\_Breeding\_LakeGroups: lake groups surveyed from the air for breeding waterbirds
* WTRBRD\_HarlequinDuck\_Svy\_Streams: streams surveyed from the air for Harlequin Ducks
* WTRBRD\_Lakes\_1981: lakes surveyed in 2013–2014 and in the APA studies in the 1980s
* WTRBRD\_Lakes\_in\_1mi\_BroodSvy: lakes surveyed for broods in the aerial survey study
* WTRBRD\_Lakes\_in\_BreedingLakeGrps: lakes surveyed for breeding waterbirds birds in lake-to-lake aerial surveys
* WTRBRD\_Lakes\_in\_BreedingTransSvy: lakes surveyed in breeding bird transect aerial surveys
* WTBRD\_Lakes\_in\_MigrationLakeGrps: lakes surveyed during migration aerial surveys
* WTRBRD\_Migration\_LakeGroups: groupings of lakes surveyed during migration aerial surveys
* WTRBRD\_MigrLakeGrps\_GoldCrCut: Chulitna 2013 lake groups split where they intersect the Gold Creek border to display lake groups surveyed in 2014
* WTRBRD\_Migration\_Svy\_Streams: streams surveyed during migration aerial surveys
* LSBRD\_WBRD\_2013\_RadarSampleArea: radius of area sampled by radar during the ground-based migration study
* LSBRD\_WBRD\_2013\_RadarSampleSite: site of the ground-based migration study
* WBRD\_2013\_2014\_Breeding\_Trans1miWpts: point grid delineating the breeding bird transect aerial survey
* WBRD\_2013\_2014\_Breeding\_TransectLines: transects flown during the breeding bird transect survey
* WBRD\_2013\_BroodStudyArea: study area for aerial brood surveys in 2013
* WBRD\_2013StudyArea: 2013 waterbird study area
* WBRD\_2013StudyArea\_Corridors: study area corridors in 2013
* WBRD\_2014\_BroodStudyArea: 2014 waterbird study area
* WBRD\_2014\_DenaliE\_Addition: Denali East study area, added in 2014
* WBRD\_2014StudyArea: 2014 waterbird study area
* WBRD\_2014StudyArea\_Corridors: study area corridors in 2014
* WBRD\_Broods\_on\_Lakes\_2013: Number of broods on lakes during two 2013 brood-rearing surveys
* WBRD\_Broods\_on\_Lakes\_2014: Number of broods on lakes during three 2014 brood-rearing surveys
* WBRD\_FallMigr\_SumLakeMax\_2013: Summary of maximum birds at each lake during 2013 fall migration surveys
* WBRD\_FallMigr\_SumLakeMax\_2014: Summary of maximum birds at each lake during 2014 fall migration surveys
* WBRD\_Harlequin\_Breeding\_Data\_2013\_2014: Harlequin Ducks stream survey data from breeding surveys was extracted for maps
* WBRD\_SpringMigr\_SumLakeMax\_2013: Summary of maximum birds at each lake during 2013 spring migration surveys
* WBRD\_SpringMigr\_SumLakeMax\_2014: Summary of maximum birds at each lake during 2014 spring migration surveys
* WTRBRD\_Visual\_Fall\_2013: queries for map production of visual observations during the ground-based fall migration study
* WTRBRD\_Visual\_Spring\_2013: queries for map production of visual observations during the ground-based spring migration study

**Online Data Link:** [http://gis.suhydro.org/SuWa/10-WILD/10.15-WTRBRD/](http://gis.suhydro.org/SuWa/10-WILD/10.15-RAPT/)

**Online Report Link:** 10.15 Waterbird Migration, Breeding, and Habitat Use – Study Completion Report under 2017; Study Completion and Implementation Reports at <http://www.susitna-watanahydro.org/type/documents>

[[1]](#endnote-1)

1. **Data Distributor Contact Information:**

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