
Appendix 3

**Cascade Environmental
Resources Group (CERG)
Preconstruction Raptor Nest and
Spotted Owl Survey Results
Summer/fall 2005**



CASCADE ENVIRONMENTAL RESOURCE GROUP LTD.

MEMORANDUM

DATE: August 3, 2005
TO: Andrew Allan/Cristian Puga, Hatfield Group
CC:
FROM: Byron Andres, Mike Nelson, CERG
RE: Environmental Inventory Series Part 1: Raptor Surveys
FILE #: 297-01-02

Cascade Environmental Resource Group (CERG) has been retained through Hatfield Consultants to provide environmental consulting services in several areas related to the Sea to Sky Highway Improvement Project. As part of these services, CERG conducted day-time raptor nest and night time spotted owl (*Strix occidentalis*) surveys on four of the 13 sections of highway (DB1, DB5, DB7, and DB13). Within each of these sections, CERG surveyed those portions of highway that will be immediately affected by highway construction activities (DB1 Stn. 103+200 – 104+100, DB5 Stn. 125+700 – 128+000, DB7 Stn. 138+200 – 138+450, DB13 Stn. all). As suitable habitat for both spotted owls and other raptors occurs along many portions of the Sea to Sky Highway, the objectives of these surveys are to:

- Determine the location of any raptor species nest within, or in proximity to, the proposed highway alignment. In particular, nests of bald eagle (*Haliaeetus leucocephalus*), great blue heron (*Ardea herodias*), peregrine falcon (*Falco peregrinus*), and osprey (*Pandion hiliaetus*) as these require protection regardless of occupation status (*Section 34, Wildlife Act*).
- Determine whether spotted owls are using those portions of suitable habitats within and adjacent to the proposed alignment.

Field personnel for spotted owl surveys consisted of Byron Andres, R.P.Bio., CERG Senior Biologist and Brenda Andres, B.I.T. Field personnel for raptor nest surveys consisted of Byron Andres, and Brenda Andres or Jon Turner, B.I.T. For the purposes of this study, methods and results for the raptor nest surveys and spotted owl surveys are discussed separately.

Raptor and Heron Nest Surveys

The proposed highway construction has the potential to disturb nesting raptors through various effects such as noise, vibration, light pollution, and an increase in human presence. A more direct concern is the loss of nest trees and the nests within them as a result of tree removal.

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Typically, the larger raptors build nests in large coniferous or deciduous trees (as available) and reuse them from one year to the next, adding to them in each subsequent year (Campbell et al. 1990). Herons tend to nest colonially with several to many birds nesting in the same general area at one time. As a result of these factors, these nests tend to be conspicuous and relatively easily located during nest surveys. Smaller raptors often build or use nests lower in the canopy and nests of these species are more difficult to locate.

Methods

Field surveys for raptor nests within and adjacent to the future highway alignment were conducted on two consecutive days (July 25-26, 2005). During surveys, observers walked along the existing highway, searching the adjacent trees for raptor nests. In some locations, where the proposed alignment deviated significantly from the existing alignment, observers also walked in the forested portions off the highway to ensure that all trees within the proposed alignment were observed (Photo 1). Weather conditions throughout surveys were clear and sunny with daytime temperatures of >30 Degrees. All members of the survey teams have previous experience conducting nest surveys.

For each observed nest location, surveyors recorded the species and size of tree in which the nest was located as well as the size of nest (estimated), the height of nest above ground, the construction material of the nest, and, within the breeding season, the species of bird seen occupying the nest.

Results

One nest was observed within the current survey area (Photo 2), located adjacent to Pole # 2307 5001 00514, 107 321 69 J 01, (NAD 83 10 0491369 Northing, 5541507 Easting): on the west side of the existing highway, immediately west of Daisy Lake. The nest was located in a Douglas fir and was situated approximately 23 m above ground. The nest was estimated at between 40 and 60 cm in diameter and was constructed of mosses, lichens, and twigs (as observed from the ground using 8x binoculars). The nest tree is located approximately 11 m from road centre line and it is likely that this tree will be lost to the proposed alignment (See Recommendations below). No adult raptors were observed associated with the nest.

Conclusions and Recommendations

The observed nest was not occupied at the time of survey (July 26, 2005) and no adult birds were observed associated with the nest. This is not unusual as most birds in coastal BC would have completed fledging prior to survey. The nest is much smaller than would be typical for any of the larger raptors such as osprey and bald eagle and more likely was used by ravens or a smaller raptor species. The *Wildlife Act* (S.34) specifically protects the nest of any bird species while occupied and the nests of the bald eagle, osprey, peregrine falcon, and blue heron, regardless of occupation. As such, the nest tree observed is not specifically protected by the *Wildlife Act*; however, it is recommended that the tree be retained if possible. It should be noted that several species of raptor utilize platform type nests but will not construct one of their own, instead relying on other species to construct them. For this reason, retention of the nest

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tree is the preferred outcome. However, it should also be noted that if the nest tree were removed, the area surrounding this nest supports many mature Douglas fir and nesting opportunities are locally abundant.

Spotted Owl Surveys

Spotted owls tend to be associated with mature and old growth forest types, consisting of multi-storied canopy layers that provide abundant habitat for forage species and allow for nocturnal hunting (Campbell et al. 1990, Fraser et al. 1999). Suitable habitat contains multiple ages of multiple species and is characterized by abundant broken off or deformed branches and tree tops and cavities (Thomas et al. 1990).

Mapping provided by the British Columbia Ministry of Transportation (MoT) indicates several stands within DB1, DB5, and DB13 have the potential to contain habitat attributes preferred by the spotted owl. Surveys were conducted to ensure that any suitable habitat that is likely to be impacted by the proposed construction would be surveyed for spotted owl.

Methods

Spotted owl survey methodology was divided into two parts. First, suitable spotted owl habitat was identified in the office through consultation with habitat mapping provided by MoT. Habitat mapping, provided by the Ministry of Transportation, details forest cover information for forested polygons within and adjacent to the proposed alignment was used to determine area of suitable spotted owl habitat. Forest classifications in coastal BC characterize "Old Growth" as 250 years in age or older; however, mature forest can be between 80 and 249 years in age (MOELP, 1998), allowing for a significantly advanced forest structure. For this reason, all stands that were assessed as Old Growth or Mature and likely to be impacted by the proposed construction were included in Spotted Owl Surveys.

Second, observers conducted spotted owl surveys to assess "Occupancy Status" according to the protocols set out in the *Survey Protocol Standards for the Northern Spotted Owl (Strix occidentalis caurina) in British Columbia* (Hobbs et al. 2005). To determine "Vacancy", a minimum of 13 hours must be spent in surveys during the breeding period (April 1 – September 30) over three or more nights, each separated by a minimum of five days. Three surveys were conducted overnight beginning on the evenings of July 23rd, 28th, and August 2nd. Surveyors played three bouts of calls of 1.5 minutes duration with a minimum 3.5 minutes listening time between bouts for a total of 15 minutes per station (minimum). A 20Watt portable Sony stereo CD player was used to broadcast calls. For detailed protocols, please see section 3.2 Occupancy Surveys in *Survey Protocol Standards for the Northern Spotted Owl (Strix occidentalis caurina) in British Columbia* (Hobbs et al. 2005).

18 survey stations were established along the highway alignment to ensure that all potential spotted owl habitat was included in surveys.

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Equipment Used:

- ▲ 20Watt Stereo CD Player (Audible at distances > 400 m).
- ▲ Compass
- ▲ Handheld GPS Unit
- ▲ Binoculars
- ▲ 1.5 Million Candle Power Spotlight
- ▲ Notebook
- ▲ Safety equipment

Results

No spotted owls were recorded during any of the surveys (13.5 hours over 18 survey stations in three survey bouts). Barred owls were recorded on three occasions in separate locations and from the same survey station twice. In this instance, a barred owl was first heard on the west side of the highway less than 50 m from the road during the first survey and 200+ m away to the east during the second survey and immediately adjacent to the highway (east side) on the third survey. All locations were within 500 m of each other and it is likely that these three records represent the same owl. A single barred owl call was heard from long distance at station 11, immediately east of the Brandywine River bridge during the second survey but was not repeated. Barred owls are known to move considerable distances to respond to broadcast calls (Hobbs et al. 2005). No other species of interest to this project were recorded during surveys. Table 1 summarizes spotted owl survey data for these surveys.

Table 1: Summary of spotted owl survey data for portions of the Sea to Sky improvement project in DB1, DB5, and DB13 conducted in July and August of 2005).

Date	Station #	UTM Northing	UTM Easting	Survey Station #	Wind (Beaufort Scale)	Start Time	End Time	Species Detected
23/07/2005	103+343	481431	5470820	1	0	2158	2213	N
23/07/2005	103+921	481754	5471364	2	0	2135	2150	N
23/07/2005	127+800	484138	5492894	3	0	2233	2248	N
23/07/2005	237+700	490345	5539128	4	1	2322	2337	N
23/07/2005	238+350	490973	553963	5	1	2342	2357	N
23/07/2005	239+000	491103	5540091	6	1	0004	0024	N
23/07/2005	239+800	491245	5540947	7	1	0029	0044	BAOW
23/07/2005	240+050	491241	5542364	8	1	0048	0104	N
23/07/2005	241+100	491223	5543002	9	1	0108	0123	N
23/07/2005	241+750	490975	5543656	10	1	0129	0144	N
23/07/2005	242+640	491325	5544416	11	2	0150	0205	N
23/07/2005	243+350	491817	5544850	12	1	0210	0225	N
23/07/2005	244+000	492181	5545362	13	2	0231	0246	N
23/07/2005	244+700	492799	5545980	14	3	0251	0306	N
23/07/2005	245+545	493270	5546498	15	1	0310	0325	N
23/07/2005	246+150	493622	5547006	16	0	0330	0345	N
23/07/2005	249+025	496168	5547970	17	1	0356	0411	N

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23/07/2005	249+460	496555	5548242	18	0	0415	0430	N
28/07/2005	249+460	496555	5548242	18	2	2130	2145	N
28/07/2005	249+025	496168	5547970	17	1	2150	2205	N
28/07/2005	246+150	493622	5547006	16	0	2211	2226	N
28/07/2005	245+545	493270	5546498	15	0	2231	2246	N
28/07/2005	244+700	492799	5545980	14	0	2252	2307	N
28/07/2005	244+000	492181	5545362	13	0	2312	2327	N
28/07/2005	243+350	491817	5544850	12	0	2332	2348	N
28/07/2005	242+640	491325	5544416	11	0	2353	0022	BAOW
28/07/2005	241+750	490975	5543656	10	0	0026	0041	N
28/07/2005	241+100	491223	5543002	9	0	0046	0101	N
28/07/2005	240+050	491241	5542364	8	1	0104	0120	N
28/07/2005	239+800	491245	5540947	7	2	0124	0139	BAOW
28/07/2005	239+600	491303	5541147	Spot Check	3	0140	0150	N
28/07/2005	239+000	491103	5540091	6	2	0153	0208	N
28/07/2005	238+350	490973	553963	5	0	0211	0226	N
28/07/2005	237+700	490345	5539128	4	0	0230	0245	N
28/07/2005	103+343	481431	5470820	1	0	0342	0357	N
28/07/2005	103+921	481754	5471364	2	0	0401	0416	N
28/07/2005	127+800	484138	5492894	3	0	0431	0446	N
02/08/2005	246+150	493622	5547006	16	1	2124	2139	N
02/08/2005	249+025	496168	5547970	17	0	2144	2159	N
02/08/2005	249+460	496555	5548242	18	0	2205	2220	N
02/08/2005	245+545	493270	5546498	15	0	2229	2244	N
02/08/2005	244+700	492799	5545980	14	2	2250	2305	N
02/08/2005	244+000	492181	5545362	13	3	2311	2326	N
02/08/2005	243+350	491817	5544850	12	1	2332	2347	N
02/08/2005	242+640	491325	5544416	11	0	2352	0007	N
02/08/2005	241+750	490975	5543656	10	1	0012	0027	N
02/08/2005	241+100	491223	5543002	9	3	0032	0047	N
02/08/2005	240+050	491241	5542364	8	1	0053	0108	N
02/08/2005	239+800	491245	5540947	7	1	0112	0127	BAOW
02/08/2005	239+000	491103	5540091	6	1	0135	0150	N
02/08/2005	238+350	490973	553963	5	1	0154	0209	N
02/08/2005	237+700	490345	5539128	4	2	0214	0229	N
02/08/2005	103+343	481431	5470820	1	0	0316	0331	N
02/08/2005	103+921	481754	5471364	2	1	0336	0351	N
02/08/2005	127+800	484138	5492894	3	1	0424	0439	N

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Conclusions and Recommendations

By applying the criteria detailed in the Spotted Owl survey Protocol (>13 hours surveyed over three or more nights at least 5 days apart) we can conclude with 90% confidence that the suitable habitat located within 500 m of the proposed alignment is not "Occupied" by spotted owl. To satisfy the additional 10%, repeat surveys in subsequent years must be conducted. It is understood that this is not possible in this case due to construction beginning. Further, Hobbs et al. (2005) suggest the possibility that barred owls can have spotted owl or "Sparred owl" mates and detections of barred owl should be followed up in subsequent years.

Proposed construction activities in these areas conducted in 2005 are unlikely to have significant impact on any spotted owl within the construction area as all juveniles will have fledged by this time and there is no further dependence on the nest tree. It should be noted however that, in accordance with *Survey Protocol Standards for the Northern Spotted Owl (Strix occidentalis caurina) in British Columbia* (Hobbs et al. 2005) the results of these surveys are only valid for the remainder of 2005 and that portion of 2006 prior to the breeding season (before March 31 (Campbell et al., 1990)).

Please do not hesitate to contact us at our Whistler office should you have any questions or concerns regarding this report.

Sincerely,

Byron Andres, R.P.Bio., CERG Senior Biologist

This document was reviewed by Mike Nelson, R.P.Bio., CERG Principal

Mike Nelson, R.P.Bio., Principal, CERG

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Memo To: Andrew Allan, Cristian Puga, Hatfield Group
Subject: Spotted Owl and Raptor Nest



File #: 297-01-02

04/08/05

Page: 7

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Photo 1:

Observer searching forested portion adjacent to highway 99 for raptor nests.



Photo 2:

Potential raptor nest located in Douglas fir, immediately adjacent to Hwy 99 approximately 23 m above ground.

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CASCADE ENVIRONMENTAL RESOURCE GROUP LTD.

MEMORANDUM

DATE: August 23, 2005
TO: Andrew Allan/Cristian Puga, Hatfield Group
CC:
FROM: Byron Andres, Mike Nelson, CERG
RE: Environmental Inventory Series Part 2: Raptor Surveys
FILE #: 297-01-02

Cascade Environmental Resource Group (CERG) has been retained through the Hatfield Group of consultants to provide Spotted Owl and Raptor Nest surveys along the new alignment for the Sea to Sky Highway Improvement Project. As part of these services, CERG conducted day-time raptor nest surveys on DB1 and DB12. CERG also conducted nighttime spotted owl surveys throughout DB12. Spotted owl surveys of DB1 have been previously conducted by another agency. Within each of these sections, CERG surveyed those portions of highway that will be immediately affected by highway construction activities (DB1 Stn. 098+450 – 103+250, DB12 Stn. 227+090 to Stn. 235+950) Suitable habitat for both spotted owls and other raptors occurs along many portions of the Sea to Sky Highway; therefore, the objectives of these surveys are to:

- ▲ Determine the location of any raptor species nest within, or in proximity to, the proposed highway alignment. In particular, nests of bald eagle (*Haliaeetus leucocephalus*), great blue heron (*Ardea herodias*), peregrine falcon (*Falco peregrinus*), and osprey (*Pandion hiliaetus*) as these require protection regardless of occupation status (*Section 34, Wildlife Act*).
- ▲ Determine whether spotted owls are using those portions of suitable habitats within and adjacent to the proposed alignment.

Field personnel for spotted owl surveys consisted of Byron Andres, R.P.Bio., CERG Senior Biologist and one of either Brenda Andres, B.I.T., Cheryl Bullock, B.I.T., or Hilary Lindh, MSc (All CERG). Field personnel for raptor nest surveys consisted of Byron Andres and Hilary Lindh.

Raptor and Heron Nest Surveys

The proposed highway construction has the potential to disturb nesting raptors through various effects such as noise, vibration, light pollution, and an increase in human presence. A more direct concern is the loss of nest trees and the nests within them as a result of tree removal.

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Typically, the larger raptors build nests in large coniferous or deciduous trees (as available) and reuse them from one year to the next, adding to them in each subsequent year (Campbell et al. 1990). Herons tend to nest colonially with several to many birds nesting in the same general area at one time. As a result of these factors, these nests tend to be conspicuous and relatively easily located during nest surveys. Smaller raptors often build or use nests lower in the canopy and nests of these species are more difficult to locate.

Methods

For the purposes of this study, survey methods were identical to those used previously. Please see CERG report entitled: *Environmental Inventory Series Part 1: Raptor Surveys, Dated August 3, 2005*. Field surveys for raptor nests within and adjacent to the future highway alignment were conducted on August 16th (DB12) and August 18th, 2005 (DB1).

Weather conditions throughout surveys were clear and sunny with daytime temperatures of >25 Degrees. All members of the survey teams have previous experience conducting nest surveys.

Results

One nest was observed within the alignment for DB1, located in a small western hemlock at Stn. 101+100. The nest was located approximately 9 m above the ground and was approximately 30-40 cm in diameter (estimated). No bird activity was noted around the nest; however, this nest exceeds the normal average size of most passerine species. Thus, it is likely that this nest was constructed and used by a species of raptor. Given the relatively small size of the nest and its position well below the canopy, potential species include the sharp-shinned hawk (*Accipiter striatus*) and Cooper's hawk (*Accipiter cooperii*).

A large osprey nest was observed in DB12 at Stn. 229+350. The nest is located on top of a BC Hydro transmission tower on the west side of the Cheakamus River, opposite highway 99. The nest appears to be primarily made up of sticks and twigs, consistent with large raptor nest construction. An osprey was observed landing in and perching near the nest during the survey of August 16th. This nest is known to the Highway Project and has been accounted for.

Conclusions and Recommendations

The observed nest in DB1 was not occupied at the time of survey (Aug 18, 2005) and no adult birds were observed associated with the nest. This is not unusual as most birds in coastal BC would have completed fledging prior to survey. The nest is much smaller than would be typical for any of the larger raptors such as osprey and bald eagle and more likely was used by ravens, crows, or a smaller raptor species. The *Wildlife Act* (S.34) specifically protects the nest of any bird species while occupied and the nests of the bald eagle, osprey, peregrine falcon, and blue heron, regardless of occupation. As such, the nest tree observed is not specifically protected by the *Wildlife Act*; however, it is recommended that the tree be retained if possible. It should be noted that several species of raptor utilize platform type nests but will not construct one of their own,

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instead relying on other species to construct them. For this reason, retention of the nest tree is the preferred outcome. CERG acknowledges that as this tree is located within a few metres of the alignment centre line and that retention of this tree is likely not possible.

Spotted Owl Surveys

Spotted owls tend to be associated with mature and old growth forest types, consisting of multi-storied canopy layers that provide abundant habitat for forage species and allow for nocturnal hunting (Campbell et al. 1990, Fraser et al. 1999). Suitable habitat contains multiple ages of multiple species and is characterized by abundant broken off or deformed branches and tree tops and cavities (Thomas et al. 1990).

Mapping provided by the British Columbia Ministry of Transportation (MoT) indicates several stands within DB12 have the potential to contain habitat attributes preferred by the spotted owl. Surveys were conducted to ensure that any suitable habitat that is likely to be impacted by the proposed construction would be surveyed for spotted owl.

Those portions of DB1 with the potential to support spotted owl were surveyed earlier this year (May, 2005) by a separate consultant (Robertson Environmental Services Ltd). The results of this study, as summarized in their survey report, indicate that the areas surrounding DB1 are not occupied by spotted owl (Hilton and McIntosh, 2005). The methods used are consistent with those detailed in the *Survey Protocol Standards for the Northern Spotted Owl (Strix occidentalis caurina) in British Columbia* (Hobbs et al. 2005). Therefore, a repeat of these surveys was not conducted and DB1 has been assumed to be free of spotted owls for the 2005 season.

Methods

For the purposes of this study, survey methods were identical to those used previously. Please see CERG report entitled: *Environmental Inventory Series Part 1: Raptor Surveys, Dated August 3, 2005*. Night surveys for spotted owls within DB12 were conducted on August 8th, 17th, and 22nd.

11 survey stations were established along the highway alignment to ensure that all potential spotted owl habitat was included in surveys. Note: the first survey included 10 stations. An 11th station was added for the second and third surveys. Station 7 was not surveyed during the third survey because the pull-out was occupied by several people conducting roadside vehicle repairs.

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Equipment Used:

- ▲ 20Watt Megaphone and Portable CD Player (Audible at distances > 500 m).
- ▲ Compass
- ▲ Handheld GPS Unit
- ▲ Binoculars
- ▲ 1.5 Million Candle Power Spotlight
- ▲ Notebook
- ▲ Safety equipment

Results

No spotted owls were recorded during any of the surveys (8.25 hours over 11 survey stations in three survey bouts). A single great horned owl (*Bubo virginianus*) was recorded at survey station # 2 during the first of the three surveys. The call was incompletely heard, consisting only of the "Me Too" portion of the typical "Who's Awake?, Me Too" call series. The owl was recorded on the opposite side of the Cheakamus River and was not heard again at any time during subsequent surveys.

It is understood that the 8.25 hours spent on this survey set fall short of the recommended 13.5 hours to achieve 90% confidence in survey data; however, it is felt that the areas that are likely to be impacted by construction activity were surveyed thoroughly and to the extent possible given the conditions of the survey points being located along an existing highway. Highway surveys as conducted represent neither transect nor spot check survey types as the "Study area" is linear and very narrow. Table 1 summarizes spotted owl survey data for these surveys.

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Table 1: Summary of spotted owl survey data for portions of the Sea to Sky improvement project in DB12 conducted in August of 2005).

Date	Station #	Easting	Northing	Survey Station	Wind	Temp	Satart Time	End Time	Observation
08/08/2005	227+600	488304	5530982	1	2	21	2140	2155	.
08/08/2005	228+010	488080	5531428	2	2	21	2202	2217	GHOW
08/08/2005	228+550	487973	5531971	3	2	20	2225	2240	.
08/08/2005	229+160	488053	5532547	4	1	21	2247	2302	.
08/08/2005	230+100	488381	5533324	5	1	20	2310	2325	.
08/08/2005	230+900	488638	5534106	6	1	20	2334	2349	.
08/08/2005	231+190	488792	5534327	7	1	19	2358	0013	.
08/08/2005	233+300	489642	5536100	8	1	18	0021	0036	.
08/08/2005	234+140	489718	5536794	9	1	18	0042	0057	.
08/08/2005	234+770	489839	5537430	10	1	18	0106	0121	.
08/17/2005	235+290	489932	5537926	11	1	23	2143	2159	.
08/17/2005	234+770	488080	5531428	10	1	23	2202	2217	.
08/17/2005	234+140	487973	5531971	9	1	21	2221	2236	.
08/17/2005	233+300	488053	5532547	8	1	21	2239	2254	.
08/17/2005	231+190	488381	5533324	7	1	21	2259	2315	.
08/17/2005	230+900	488638	5534106	6	1	20	2319	2334	.
08/17/2005	230+100	488792	5534327	5	1	20	2342	2357	.
08/17/2005	229+160	489642	5536100	4	1	19	0002	0017	.
08/17/2005	228+550	489718	5536794	3	1	16	0025	0040	.
08/17/2005	228+010	489839	5537430	2	1	16	0045	0100	.
08/17/2005	227+600	488304	5530982	1	2	16	0103	0118	.
08/22/2005	235+290	489932	5537926	11	2	16	2054	2109	.
08/22/2005	234+770	488080	5531428	10	1	17	2113	2128	.
08/22/2005	234+140	487973	5531971	9	2	17	2131	2146	.
08/22/2005	233+300	488053	5532547	8	3	16	2150	2205	.
08/22/2005	231+190	488381	5533324	7
08/22/2005	230+900	488638	5534106	6	3	17	2212	2227	.
08/22/2005	230+100	488792	5534327	5	3	16	2233	2248	.
08/22/2005	229+160	489642	5536100	4	2	16	2254	2309	.
08/22/2005	228+550	489718	5536794	3	3	15	2312	2327	.
08/22/2005	228+010	489839	5537430	2	2	14	2332	2347	.
08/22/2005	227+600	488304	5530982	1	2	14	2352	0007	.

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Conclusions and Recommendations

No new large raptor (bald eagle, osprey, peregrine falcon) or heron nests were observed during day time raptor nest surveys. A single osprey nest was confirmed in DB12 at Station 229+350.

Spotted owl surveys in DB12 followed all criteria detailed in the *Survey Protocol Standards for the Northern Spotted Owl (Strix occidentalis caurina) in British Columbia* (Hobbs et al. 2005) with the exception of total survey time. Surveys for this section of highway totaled 8.25 hours, falling short of the 13.5 hours required to conclude that the suitable habitat located within 500 m of the proposed alignment is not "Occupied" by spotted owl with 90% confidence. However, proposed construction activities in these areas conducted in 2005 are unlikely to have significant impact on any spotted owl within the construction area as all juveniles will have fledged by this time and there is no further dependence on the nest tree.

To further solidify survey results, repeat surveys in subsequent years must be conducted. It is understood that this may not be necessary, depending on the completion date of work in this section. It should also be noted that, in accordance with *Survey Protocol Standards for the Northern Spotted Owl (Strix occidentalis caurina) in British Columbia* (Hobbs et al. 2005) the results of these surveys are only valid for the remainder of 2005 and that portion of 2006 prior to the breeding season (before March 31 (Campbell et al., 1990)). Should work be required in these areas in 2006, repeat surveys should be conducted.

Please do not hesitate to contact us at our Whistler office should you have any questions or concerns regarding this report.

Sincerely,

Byron Andres, R.P.Bio., CERG Senior Biologist

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Memo To: Andrew Allan, Cristian Puga, Hatfield Group
Subject: Spotted Owl and Raptor Nest



File #: 297-01-02

23/08/05

Page: 7

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