

Appendix C Turbine Listing

Turbine BH #	Turbine #	UTM ZONE 12 NAD 83		NAD 83 DATUM				Decimal Degrees		MW	Rotor Diameter (m)	Hub Height (m)	Foundation Thickness (m)	Center Ground Elev. (m)	Lowest Ground Elev. (m)	Lowest Suggested Top of Foundation Elev. (m) = Lowest Ground Elev +150mm	Highest Possible Top of Foundation Elev. (m) = Lowest Ground Elev +450mm	Top of Foundation Elev. (m)	Total Height (m) Hub + Blade	Hub Tip Elev. (m)	Base of Foundation <below mudslab> Elev. (m)	Bouyant	Non Bouyant	Foundation Drain	Rock Excavation	Over-Excavation (m.)	Turbine Pad Type	Comments		
		EASTING	NORTHING	LATITUDE	LONGITUDE	LATITUDE	LONGITUDE																							
1	A-1	288233.000	5492805.000	49	33	5.361449	-113	55	31.025177	49.550776	-113.927883	4.2	136	82	2.75	1161.24	1160.90	1161.05	1161.35	1161.35	150.00	1311.35	1158.50	Yes	No	No	No	No		
2	B-1	288231.000	5492471.000	49	32	51.989076	-113	55	39.832998	49.547775	-113.927731	4.2	136	82	2.75	1165.48	1165.20	1165.35	1165.65	1165.65	150.00	1315.65	1162.80	Yes	No	No	No	No		
3	B-2	288231.000	5492141.000	49	32	41.317262	-113	55	39.194742	49.544810	-113.927554	4.2	136	82	2.75	1176.53	1176.25	1176.40	1176.70	1176.40	150.00	1326.40	1173.55	Yes	No	No	No	No		
4	B-3	288394.000	5491872.000	49	32	32.823130	-113	55	30.573997	49.542451	-113.925159	4.2	136	82	2.75	1186.16	1185.30	1185.45	1185.75	1185.45	150.00	1335.45	1182.60	Yes	No	No	No	No		
5	B-4	288490.000	5491579.000	49	32	23.468495	-113	55	25.237270	49.539852	-113.923677	4.2	136	82	2.75	1174.24	1173.65	1173.80	1174.10	1174.10	150.00	1324.10	1171.25	Yes	No	No	No	No		
6	B-5	288235.000	5491181.000	49	32	10.276978	-113	55	37.139837	49.536188	-113.926983	4.2	136	82	2.75	1167.05	1166.30	1166.45	1166.75	1166.75	150.00	1316.75	1163.90	Yes	No	No	No	No		
9	B-6	288057.000	5490085.000	49	31	34.609558	-113	55	43.864949	49.526280	-113.928851	4.2	136	82	2.75	1161.13	1161.00	1161.15	1161.45	1161.45	150.00	1311.45	1158.60	Yes	No	No	No	No		
10	A-6	289186.000	5494653.000	49	34	3.752242	-113	54	56.571088	49.567709	-113.915714	4.2	136	82	2.75	1169.84	1168.30	1168.45	1168.75	1168.45	150.00	1318.45	1165.60	Yes	No	No	No	No		
11	A-5	289250.000	5494390.000	49	33	55.327297	-113	54	52.882034	49.565369	-113.914689	4.2	136	82	2.75	1162.51	1162.30	1162.45	1162.75	1162.75	150.00	1312.75	1159.90	Yes	No	No	No	No		
12	A-4	289412.000	5494093.000	49	33	45.925514	-113	54	44.255519	49.562757	-113.912293	4.2	136	82	2.75	1157.10	1156.75	1156.90	1157.20	1157.20	150.00	1307.20	1154.35	Yes	No	No	No	No		
13	A-3	289238.000	5493586.000	49	33	29.311607	-113	54	51.929713	49.558142	-113.914425	4.2	136	82	2.75	1147.59	1147.15	1147.30	1147.60	1147.30	150.00	1297.30	1144.45	Yes	No	No	No	2.70		
14	A-2	289173.000	5493254.000	49	33	18.493558	-113	54	54.521424	49.555137	-113.915145	4.2	136	82	2.75	1144.89	1144.25	1144.40	1144.70	1144.70	150.00	1294.70	1141.85	Yes	No	No	No	No		
16	E-1	289043.000	5492549.000	49	32	55.531510	-113	54	59.624970	49.548759	-113.916562	4.2	136	82	2.75	1155.00	1154.50	1154.65	1154.95	1154.95	150.00	1304.95	1152.10	Yes	No	No	No	No		
17	C-1	289137.000	5492257.000	49	32	46.206289	-113	54	54.390456	49.546168	-113.915108	4.2	136	82	2.75	1170.27	1169.75	1169.90	1170.20	1169.90	150.00	1319.90	1167.05	Yes	No	No	No	No		
18	C-2	289216.000	5491953.000	49	32	36.474145	-113	54	49.878894	49.543465	-113.913855	4.2	136	82	2.75	1167.18	1166.90	1167.05	1167.35	1167.05	150.00	1317.05	1164.20	Yes	No	No	No	No		
19	C-3	289303.000	5491652.000	49	32	26.848965	-113	54	44.976057	49.540791	-113.912493	4.2	136	82	2.75	1151.36	1150.85	1151.00	1151.30	1151.30	150.00	1301.30	1148.45	Yes	No	No	No	No		
20	C-4	289780.000	5491165.000	49	32	11.696095	-113	54	20.336525	49.536582	-113.905649	4.2	136	82	2.75	1130.69	1130.60	1130.75	1131.05	1130.75	150.00	1280.75	1127.90	Yes	No	No	No	2.90		
22	C-5	289729.000	5490468.000	49	31	49.091751	-113	54	21.533210	49.530303	-113.905981	4.2	136	82	2.75	1121.71	1121.50	1121.65	1121.95	1121.95	150.00	1271.95	1119.10	Yes	No	No	No	No		
25	E-2	289945.000	5492523.000	49	32	55.819165	-113	54	14.742156	49.548839	-113.904095	4.2	136	82	2.75	1150.70	1149.95	1150.10	1150.40	1150.10	150.00	1300.10	1147.25	Yes	No	No	No	No		
26	E-3	290028.000	5492226.000	49	32	46.317914	-113	54	10.047113	49.546199	-113.9027908	4.2	136	82	2.75	1141.54	1141.35	1141.50	1141.80	1141.80	150.00	1291.80	1138.95	Yes	No	No	No	No		
27	E-4	290131.000	5491946.000	49	32	37.391326	-113	54	4.391200	49.543720	-113.901220	4.2	136	82	2.75	1133.39	1133.15	1133.30	1133.60	1133.60	150.00	1283.60	1130.75	Yes	No	No	No	No		
28	E-5	290201.000	5491646.000	49	32	27.776715	-113	54	0.337551	49.541049	-113.900094	4.2	136	82	2.75	1133.39	1133.15	1133.30	1133.60	1133.60	150.00	1283.60	1130.75	Yes	No	No	No	No		
29	D-1	290382.000	5491216.000	49	32	14.096150	-113	53	50.519591	49.537249	-113.897367	4.2	136	82	2.75	1118.93	1118.70	1118.85	1119.15	1119.15	150.00	1269.15	1116.30	Yes	No	No	No	No		
30	D-2	290386.000	5490895.000	49	32	3.720074	-113	53	49.706644	49.534367	-113.897141	4.2	136	82	2.75	1116.34	1116.05	1116.20	1116.50	1116.50	150.00	1266.50	1113.65	Yes	No	Yes	No	No		
35	D-3	290987.082	5492080.272	49	32	42.799099	-113	53	22.100689	49.545222	-113.889472	4.2	136	82	2.75	1129.50	1129.45	1129.60	1129.90	1129.65	150.00	1279.65	1126.80	Yes	No	No	No	No		
37	D-4	291106.000	5491568.000	49	32	26.379893	-113	53	15.213163	49.540661	-113.887559	4.2	136	82	2.75	1119.29	1118.65	1118.80	1119.10	1119.10	150.00	1269.10	1116.25	Yes	No	No	No	No		
38	D-5	291174.640	5491185.811	49	32	14.105054	-113	53	11.073361	49.537251	-113.886409	4.2	136	82	2.75	1106.80	1106.60	1106.75	1107.05	1107.05	150.00	1257.05	1104.20	Yes	No	Yes	No	No		
39	D-6	291268.000	5490882.000	49	32	4.395570	-113	53	5.855158	49.534554	-113.884960	4.2	136	82	2.75	1103.48	1103.20	1103.35	1103.65	1103.65	150.00	1253.65	1100.80	Yes	No	No	No	No		

May 17, 2018

Ashley Smith
Environmental & Permitting Specialist
Enel Alberta Wind Inc.
1755 East Plumb Lane, Suite 155
Reno, NV 89502 USA
ashley.smith@enel.com

Transmitted via email

Dear Ms. Smith,

**RE: Renewable Energy Referral Report for the Riverview Wind Power Project proposed by
Enel Alberta Wind Inc.**

This letter is to advise that Alberta Environment and Parks - Wildlife Management (AEP-WM) staff have completed the review of the Riverview Wind Project as proposed by Enel Alberta Wind Inc. (Enel). Attached is a copy of the AEP-WM Renewable Energy Referral Report, which reviews the potential impacts of the project on wildlife and wildlife habitat for inclusion with your application to other regulatory agencies. This review is only for the project as it has been presented by the proponent and any changes to the project (footprint, layout, mitigation measures, etc.), requires further review and written acknowledgement from AEP-WM to ensure wildlife and habitat are protected.

Sincerely,



Brandy Downey
Senior Species at Risk Biologist,
Alberta Environment and Parks - Wildlife Management
brandy.downey@gov.ab.ca

cc:
Kristin Cline, AEP-WM

Renewable Energy Referral Report - Alberta Environment and Parks- Operations Division, Wildlife Management

A. Alberta Environment and Parks – Wildlife Management - Wildlife Review:

The Riverview Wind Project was reviewed by the Alberta Environment and Parks - Wildlife Management (AEP-WM) regional wildlife contact for renewable energy projects. AEP-WM has reviewed the proposed location, mitigation strategies, including associated infrastructure and construction plans, and post-construction monitoring and mitigation program, as presented by the proponent in a submission on February 28th 2018 and finalized with all information provided on May 11th, 2018.

Submitted documents include:

- *Stantec Letter: Request for Renewable Referral Report for Riverview Wind Project, February 28, 2018*
- *AEP- Signoff Letter on Riverview Wind Project, July 6, 2015*
- *Wildlife Considerations for AEP Renewable Referral Report, February 28, 2018*
- *Environmental Protection Plan, February 28, 2018, updated March 23, 2018*
- *Excel sheet: AEP Initial Review Questions_ Riverview March 14 2018_responses 20180326, April 5, 2018*
- *Figures 3_4_5, April 3, 2018*
- *Turbine location amendment for Riverview Wind Power Project, May 11, 2018*

Note: various clarifications and edits of the original documents are discussed in the Excel sheet: *AEP Initial Review Questions_ Riverview March 14 2018_responses 20180326* (April 5, 2018) and *Turbine location amendment for Riverview Wind Power Project* (May 11, 2018). These changes in the subsequent documents are to supersede the original documents.

The Riverview Wind Project had received an AEP-WM signoff on July 6, 2015. However the project layout, infrastructure, and construction and operation plan have been significantly changed, which requires an updated AEP-WM risk assessment. An updated Renewable Energy Referral Report is required in order to facilitate the AUC review and approvals of the proposed Riverview Wind Project.

This current AEP-WM review of the Riverview Wind Project siting and pre-construction surveys was guided by the *Wildlife Guidelines for Alberta Wind Energy Projects* (2011; hereafter called the *Guidelines*). The review of the construction, operation, and post-construction monitoring and mitigation was guided by the *Wildlife Directive for Alberta Wind Projects* (April 2017; hereafter called the *Directive*). This follows the AEP-WM process outlined in the administrative procedure, *Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects* (2017; hereafter called the *Administrative Procedure*).

This referral report summarizes the potential risks to wildlife based on the information provided to AEP-WM. The review was restricted to reviewing information provided in the

submitted documents, completed by the proponent (Enel Green Power North America, Inc.) and the consultant (Stantec Consulting Ltd.), and applying the wildlife standards and best management practices for the siting, construction and operation of the wind facility. This office undertook no independent onsite assessment. This referral report is not intended to relieve any party from any liability if there are detrimental effects to wildlife or wildlife habitat during construction or operation that were not identified and mitigated for in the documents submitted.

Summary: This summary is a condensed version of the entire referral report. For details on specific topics, please see the body of this report. The overall risk ranking of this project is provided in the last paragraph of this summary.

The project infrastructure is primarily sited on previously disturbed land, which AEP-WM has determined to be a low risk to wildlife habitat. In the areas where native grassland is proposed to be impacted, the proponent has committed to adequate alternative mitigation. The alternative mitigation reduces the risk to wildlife and wildlife habitat and meets the intent of AEP-WM policy.

Setback distances were abided for all valley breaks and coulees. Setbacks of six wetlands have been infringed upon by project infrastructure. Alternative mitigation to meet the intent of AEP-WM policy has been identified. AEP-WM policy states that setbacks and timing restrictions are standard mitigation for wildlife features. All turbines and associated infrastructure have been sited outside all key wildlife feature setbacks which is consistent with AEP-WM policy.

AEP-WM has determined the risk to birds as moderate due to the sensitive species identified in the project area, the proximity of the project to raptor nests and proximity of the project to the Oldman Reservoir. AEP-WM has determined the pre-assessment risk to bat mortality is high based on the bat survey results from the project area. The proponent has committed to post-construction monitoring and implementation of appropriate post-construction mitigation, as required by AEP-WM, which reduces the bat mortality risk to a moderate level.

AEP-WM has determined the wind energy project proposed by Enel Green Power North America, Inc. called the Riverview Wind Project, as proposed, poses an overall moderate risk to wildlife and wildlife habitat.

Primary AEP-WM Reviewer Signature:

Signature:  Date: May 17, 2018

Printed Name, Position, and Office: Kristin Cline, Wildlife Biologist, South Saskatchewan Region Operations Division, Grassland District, Lethbridge, Alberta

Secondary AEP-WM Reviewer Signature:

Signature:  Date: May 17, 2018

Printed Name, Position and Office: Brandy Downey, Senior Species at Risk Biologist, South Saskatchewan Region Operations Division, Grassland District, Lethbridge, Alberta



B. Project Details

Project Name: Riverview Wind Project

Proponent Name(s): Enel Green Power North America, Inc.

Project Location: locations within Township 7-Range 29- West of the 4th Meridian

Project Area:

- disturbance footprint for construction phase (temporary) is 456.5 ha
- disturbance footprint for operation phase (permanent) is 41 ha

Nameplate Capacity (total megawatts): 115 MW

Turbine Details:

Megawatts = 4.2 MW/turbine (Vesta V136)

Number = 28 turbines

Rotor diameter = 136 m

Blade Length (rotor radius): 68 m

Hub height = 82 m

Rotor diameter = 136 m

Turbine Locations:

Table 1: Turbine identification number with UTM location (NAD 83 Zone 12).

Turbine ID	Preferred or alternate turbine	Original Easting		
	Preferred location		5492877	
	Preferred location			288231
	Preferred location			288231
	Preferred location			288394
	Preferred location		5491579	288490
		288235	5491181	
		289177.968	5494775.457	
				5494390
				289043
18	Preferred location			
	Preferred location			289303
	Preferred location		5491165	289780
22	Preferred location			5490468
27		290131		
				290382

- Breeding grassland birds (including species at risk, sensitive species and species with aerial flight displays, such as long-billed curlew, Sprague's pipit, lark bunting, and chestnut-collared longspur)
- Greater sage grouse and sharp-tailed grouse
- Migrating songbirds
- Shorebirds
- Species of management concern listed under the Alberta *Wildlife Act* or the Federal *Species at Risk Act*

Habitat Loss, Degradation and Fragmentation:

Wind energy facilities may result in the direct loss of habitat for wildlife. Negative effects may include, but are not limited to habitat fragmentation, site abandonment, loss of movement corridors and loss of foraging/breeding/brood rearing habitat. There are potential negative effects to wildlife, especially species at risk, by siting wind energy facilities in areas of native grasslands. AEP-WM recommends siting the wind energy facility and associated infrastructure on cultivated or other previously disturbed lands to significantly reduce the negative effects on wildlife habitat.

Wildlife Disturbance:

AEP-WM identified concerns over the potential of negative effects on wildlife and wildlife habitat caused by wind facilities (including related infrastructure such as access roads and collection lines, etc.) and increased human activity, which may result in decreased productivity and wildlife avoidance of the area. AEP-WM requires that predevelopment wildlife surveys, as per AEP-WM Policy (*Guidelines and Directive*), be conducted prior to applying to the Alberta Utilities Commission (AUC). If a wildlife feature or species of management concern is identified, AEP-WM requires that areas immediately adjacent to key wildlife habitats be avoided by appropriate setbacks as outlined in the *Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* <http://aep.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/WildlifeLandUse-SpeciesHabitatGrasslandParkland-Apr28-2011.pdf>

AEP-WM initially identified the following issues specific to the Riverview Wind Project area:

- Native habitat – Siting project infrastructure on native habitat, which has the potential for increased mortality risk and disturbance to critical habitat for sensitive species.
- Valley Breaks - Proximity of project infrastructure to valley (or coulee) breaks, which are associated with increased bird and bat activity during migrations and the breeding season as well as ungulate habitat.
- Lakes and Large Waterbodies - Proximity of project infrastructure to lakes or large waterbodies, which are associated with increased bird and bat activity as well as migration stopover points.
- Wetlands - Proximity of project infrastructure to wetlands, which are high quality habitat for many species.
- Amphibians - Proximity of project infrastructure to wetlands supporting breeding populations of sensitive amphibian species.

- Ferruginous Hawk - Proximity of project infrastructure to ferruginous hawk nests, potential for increased mortality risk and concerns regarding movement between the nest and hunting grounds.
- Prairie Falcon- Proximity of project infrastructure to prairie falcon nests, potential for increased mortality risk and concerns regarding movement between the nest and hunting grounds.
- Other Raptors - Proximity of project infrastructure to nests of other species and potential for increased mortality risk.
- Sharp-tailed Grouse - Proximity of project infrastructure to sharp-tailed grouse leks, potential for mortality, loss or avoidance of breeding ground.
- Breeding Birds - Disturbance of breeding bird nests during the breeding season and increased mortality risk to breeding birds, particularly sensitive species.
- Bats - Proximity of project to foraging areas and hibernacula/roosts, which has the potential to increase the risk of mortality and impact to sensitive species.

D. Wildlife Monitoring Program: Completion of predevelopment surveys and submission of information to the Fisheries and Wildlife Management Information System (FWMIS).

Pre-assessment survey data completed within 2 years of submission to AEP-WM:

Pre-assessment wildlife survey data was provided in reports entitled: *Wildlife Considerations for AEP Renewable Referral Report* (February 28, 2018). Refer to Table 2 in this Referral Report for full details of wildlife surveys conducted.

Table 2: Summary of wildlife surveys completed for the Riverview Wind Project.

Survey	2007	2011	2012	2013	2015	2016	2017
Breeding birds	May 19, 26, 27 (early) Jun 7, 8, 16, 18 (late)	Not completed due to late project initiation	N/A	N/A	N/A	N/A	May 27, 29 (early) June 10, 14 (late) dates adjusted to reflect seasonal conditions
Spring bird migration	Apr 3, 14, 22 (early), April 27, May 1, 8 (mid), May 16, 23, 29 (late)	Not completed due to late project initiation	N/A	N/A	N/A	N/A	Mar 30 (early) Apr 4, 22 (mid) May 4, 14 (late)
Fall bird migration	Sep 10, 23, Oct 2 (early),	Aug 23 Sep 9, 23	N/A	N/A	N/A	N/A	Aug 30 (early) Sep 21, Oct

Survey	2007	2011	2012	2013	2015	2016	2017
	Oct 9, 15, 22 (mid), Oct 29, Nov 6, 26 (late)	Oct 6, 19 Nov 9, 20					12, 26 (mid) Nov 10 (late)
Wintering birds	Dec 16 Jan 18 (2008)	Dec 17 Jan 20 (2012)	N/A	N/A	N/A	N/A	Dec 28 (early) Jan 22 (2018) (late)
Sharp-tailed grouse leks	N/A	N/A	N/A	N/A	Apr 8, 14,	N/A	Apr 3, 17, 23, 25 May 10
Raptor nest occupancy	May 19, 26 Jun 16, 18	June 10, 12	Jun 19, 20	May 15 Jun 19, 20	Jun 12, 13,14	Jun 1, 2, 3, 30	Apr 10 May 3, 13 (nesting) Jun 15 productivity of successful nests
Fall acoustic bat	Jul 20 – Oct 4	Jul 15 – Sep 30	N/A	N/A	N/A	N/A	Jul 15 – Sep 10

The proponent has committed to keeping wildlife surveys current by completing additional site specific wildlife surveys every two years until the project is commissioned as per standard 100.2.3 of the *Directive*. Results are to be submitted to the Fish and Wildlife Management Information System (FWMIS). The proponent has committed to implementing additional mitigation measures if any new sensitivities or features are detected, as determined by AEP-WM. This is consistent with the intent of AEP-WM policy (*Guidelines and Directive*).

If the project has not constructed within 5 years of this AEP-WM Renewable Energy Referral Report, wildlife surveys will need to be updated and a new Renewable Energy Referral Report will be required as per standard 100.2.10 of the *Directive*. Wildlife surveys that would be required include, but may not be limited to raptor nest surveys, breeding bird surveys, bird migration surveys, sharp-tailed grouse lek surveys and bat acoustic surveys.

E. Wind Energy Facility Submission - Avoidance and Mitigation of Wildlife Risks: Review of the proposed wildlife avoidance and mitigation strategies identified in the submission, in comparison with the Guidelines and Directive.

Habitat Loss, Degradation and Fragmentation Concerns:

The Project Area is located in the Foothills Fescue Natural Sub-region of the Grassland Natural Region along the edge of the Oldman Reservoir. The overall footprint of the project has been

reduced from the 2015 AEP-WM signoff letter. The original project layout identified 50 turbines, but with the change in turbine type, this has been reduced to 28 turbines. The project plan identifies 28 “preferred” turbine locations and 4 “alternate” turbine locations. In the updated layout from the May 11th, 2018 submission, all turbines are sited on previously disturbed land (cultivation). The majority of supporting infrastructure, including access roads and collection lines, are sited in areas of previous disturbance, however, a few collection lines and access roads are sited on native grassland. In total, 1.16 ha of native grassland will be impacted by the Riverview Wind Project.

The proponent has identified the following alternative mitigations for the project infrastructure sited on native grasslands as per page 44 of the *Environmental Protection Plan* (March 23, 2018). In addition to the identified mitigations in the *Environmental Protection Plan*, the proponent has identified the following alternative mitigations:

- For access road and collector lines that will infringe with native grassland areas, construction activities shall not occur during the restricted activity periods for species of management concern, from March 15th to July 31st.
- Construction will occur under dry or frozen conditions. Activity on native prairie shall be suspended during times of adverse ground conditions (i.e. too wet) if the activity has potential to cause damage to soils and vegetation.
- The collector lines will be installed using narrow-width trenching and directional drilling techniques. The minimal disturbance ploughing method is not being used due to site constraints including; shallow bedrock conditions, low moisture content in grasslands and low quality soils in the area that are not conducive to ploughing techniques.
- Disturbed areas will be reseeded by drill seeding with a suitable native seed mix (similar to the mix used for Castle Rock Ridge 1, another Enel project that is currently operating), and then hydro-mulched to protect the seed bed for germination, sloped areas over 10% that were prone to erosion will receive additional cover of bio-degradable matting.

The alternative mitigations will likely reduce the overall impact on native grassland and subsequently the impacts on wildlife and wildlife habitat from the construction of the project. Based on the current siting of the Riverview Wind Project, the project has been assessed by AEP-WM as a low risk for wildlife and wildlife habitat.

Wildlife Mortality and Disturbance Impacts:

Valley Breaks: The proponent has ensured all turbines and associated infrastructure are sited a minimum of 100 m from valley breaks. This is consistent with the intent of AEP-WM policy (*Guidelines and Directive*).

Lakes and Large Waterbodies: The project is sited adjacent to the Oldman Reservoir. As per the Guidelines, landscape features that attract birds/bats should be avoided. This includes ridges and water features that attract birds and bats where there is a high potential for collision-related mortality of wildlife and little opportunity for mitigation another location should be chosen. Based on the proximity of the project, especially Turbine 10, 11 and 12, to the

Wetland ID	Wetland Class	Nearest Turbine/component
199	Anthropogenic waterbody/Reservoir	T1 and its access road
288	Class III	T9 and its access road
163	Class V	T35 and its access
173	Class III	T38, and T37, T38 access road
168 and 166		T39, and T 39 Access Road
188		

- Construction activities within the 100 meter setback of a Class III or higher wetlands will be limited to dry or frozen ground conditions.
- To limit ground compaction and impacts on hibernating amphibians underground, rig matting or other suitable techniques to reduce ground compaction will be used within 100 meters of Class III or higher wetlands.
- Silt fencing will be erected within 100 meter setback of a Class III or higher wetlands to reduce contaminates, siltation or other deleterious impacts.

The alternative mitigations identified above are in addition to all previously committed to mitigations identified in the 2015 AEP-WM Referral Report. Additionally, AEP-WM recommends that the proponent utilizes a wildlife monitor with stop-work authorities, and extension of restricted activity periods if amphibians are found to be active in the area. The alternative mitigations identified by the proponent, with the adoption of the AEP-WM recommendations, will align with the intent of AEP-WM policy (*Guidelines* and *Directive*). A finalized mitigation plan for wetlands including location of setback infringements, amphibian survey results and all alternative mitigations detailed in the AEP-WM referral reports (2015 and 2018) must be submitted and agreed to by AEP-WM prior to the initiation of construction.

Raptor Nests: AEP-WM requires a 1000 m setback from all sensitive raptor nests (ferruginous hawk, prairie falcon, peregrine falcon, golden eagle, and bald eagle). The original project layout identified two turbines (T47 and T 43) within the 1000 m setback for the ferruginous hawk nest, 974 m and 966 m respectively. The updated layout has removed these two turbines and their associated infrastructure from the project application. Therefore there is no longer any infringement of the ferruginous hawk setback from the Riverview Wind Project. This is consistent with the requirements identified in AEP-WM policy.

Two prairie falcon nests were also identified within the proposed project area and the 1000 m setback for each of these nests has been implemented, which is consistent with the requirements identified in AEP-WM policy. The placement of turbines 10, 11 and 12 abides by the required setback for prairie falcon nests and is consistent with the intent of the AEP-WM policy. The setback distance is designed to reduce nest disturbance, but may not be adequate to reduce mortality risk of the individual birds using the nest. AEP-WM recommends that Turbines 10, 11 and 12 not be constructed as proposed, due to the specific risks associated with these turbines. There is an increased risk of mortality associated with these two nests and the three turbines that are sited between the two nest setbacks.

As per the previous requirements outlined in the 2015 AEP-WM Renewable Referral Report, a raptor nest survey will be required to be conducted annually until the project is constructed starting to determine if any additional nesting sites have been established. The results of the monitoring will be reported to AEP-WM and appropriate mitigations measures will have to be agreed upon prior to any construction of the project.

Based on the alterations to the project layout the disturbance risk to the ferruginous hawk and prairie falcon nests have been adequately addressed and therefore the Riverview Wind Project is considered consistent with policy for disturbance impacts to the sensitive raptor nests.

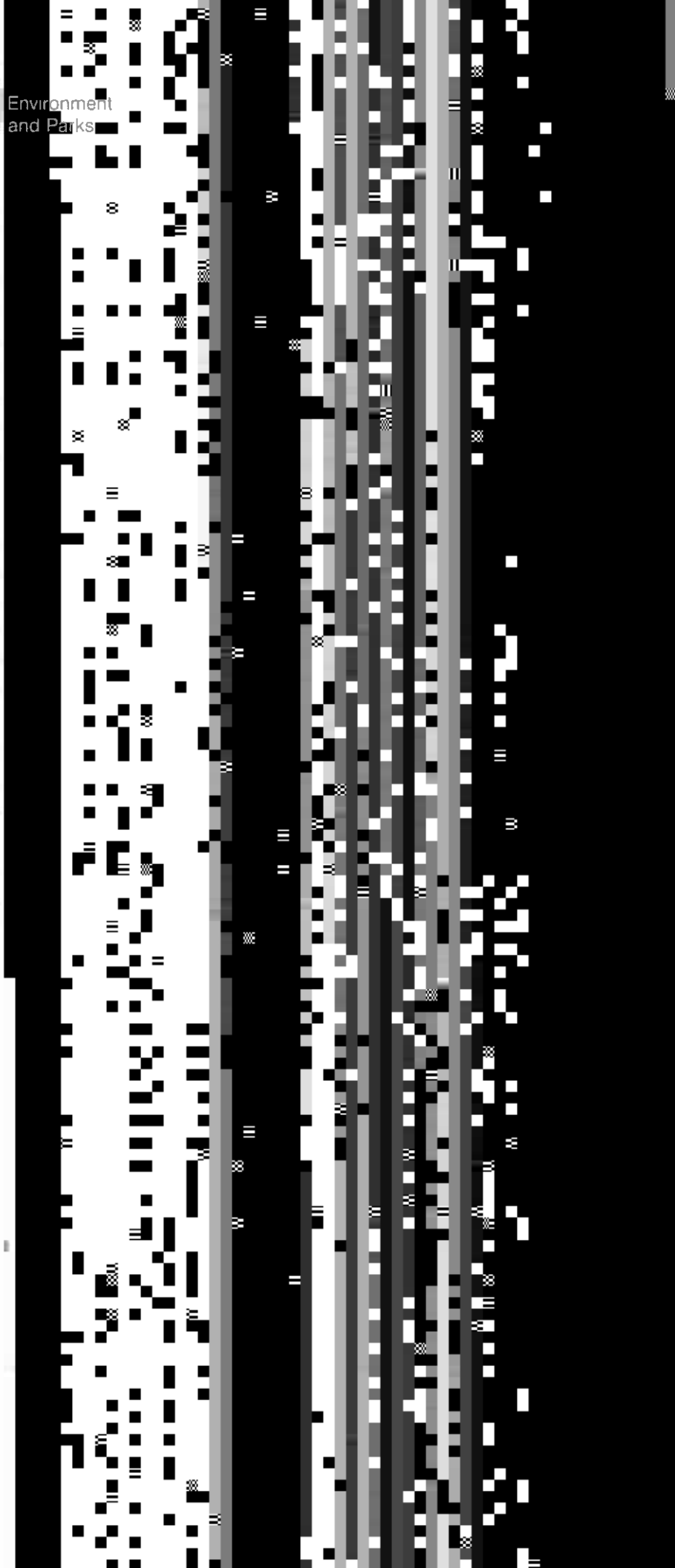
Sharp-tailed Grouse: Sharp-tailed Grouse surveys were conducted following AEP-WM survey protocols and requirements within the AEP-WM policy (*Guidelines and Directive*) in 2017. No sharp-tailed grouse leks were identified during the pre-assessment sharp-tailed grouse lek surveys. The proponent has committed to repeating sharp-tailed grouse surveys every two years until the project is commissioned. If sharp-tailed grouse leks are identified during these surveys a mitigation plan will be developed in consultation with AEP-WM to meet the intent of AEP-WM policy (*Guidelines and Directive*). The siting of the Riverview Wind Project is consistent with the intent AEP-WM Policy (*Guidelines and Directive*).

Breeding Birds: Species of management concern, which are at higher risk from wind facilities, recorded during the pre-assessment breeding bird surveys include long-billed curlew, sharp-tailed grouse, prairie falcon, and golden eagle. The project infrastructure has been primarily sited on previously disturbed land, which significantly reduces the impacts on grassland breeding birds; except for those areas detailed in the above section titled *Habitat Loss, Degradation and Fragmentation Concerns*. The proponent has identified the following mitigations for working on native grassland to limit impacts on breeding birds:

- Construction activities have been scheduled outside the breeding bird restricted activity period (April 1st-July 15th). Due to the limited time period available to meet the required commissioning date (December 31st, 2019) in the Renewable Electricity Program (REP) agreement, alternative mitigation is detailed below.
- If construction activities do occur within the breeding bird restricted activity period:
 - Surveys for grassland bird species will be conducted on a 7 day rotation during the April 1st to July 15th restricted activity period. Any nest found will be buffered by the appropriate setback and until the end of the restricted activity period or until young fledge from any of the nests.
 - Surveys will proceed construction development by surveying a day or two before construction starts in an area. Survey methods will follow standard nest sweep methods (i.e. chain drags).
 - Surveys and nest sweeps will be conducted by an experienced biologist as described in AEP-WM policy.

The project infrastructure (including temporary disturbance and permanent footprint) has been primarily sited to avoid native grassland and other high quality habitat types and the proponent has committed to implementing the above alternative mitigation; therefore this plan meets with the intent of AEP-WM Policy (*Guidelines and Directive*).

Bats: Fall acoustic bat migration surveys were conducted following AEP-WM survey protocols and requirements within the AEP-WM policy (*Guidelines and Directive*) in 2017. A total of 7.9 migratory bat passes per detector night were identified. As per the *Bat Mitigation Framework for Wind Power Development*, activity rates of greater than 2 bat passes/detector night equates



practical so the proposed mitigation is expected to reduce overall mortality to acceptable levels, but it may not be possible to reduce mortality of species of management concern. Therefore the mortality risk has been assessed as moderate, but the plan is consistent with AEP-WM policy (*Guidelines and Directive*).

Construction and Operation Mitigation: AEP-WM requires the construction and operation mitigation plan, which outlines construction techniques, mitigation and standard operating procedures, will meet the requirements outlined in Stage 3 of the *Directive*. The mitigation outlined in submitted plans for the Riverview Wind Project will be implemented with the goal to reduce disturbance to wildlife and wildlife features (house, nest, den, etc.). This does not preclude any liability under the *Wildlife Act*, the *Species at Risk Act*, or other legislation. AEP-WM considers all injured or dead wildlife found in the project area during construction or operation of the facility to be caused by the facility. This is consistent with AEP-WM policy (*Directive*).

Post-Construction Monitoring and Mitigation: AEP-WM requires the post-construction monitoring and mitigation plan will meet the requirements outlined in Stage 4 of the *Directive*. Post-construction monitoring for the Riverview Wind Project will include:

- Three years of post-construction mortality monitoring;
- Surveys will be conducted weekly between March 1st and October 30th;
- Surveys will be conducted at 20 of the 28 turbines. Exact turbine locations will be determined following the requirements outlined in the *Directives*, due to the potential mortality risk associated with turbines 10, 11 and 12, these turbines will be part of monitored turbines;
- Surveys will be conducted around the entire turbine out to a radius of at least the maximum height of the turbine (measured from tip of blade to ground) or a radius of 50m, whichever is larger;
- Search areas will be maintained for visibility and accessibility;
- Three searcher efficiency trials each season (i.e., spring, summer and fall) for each searcher (i.e. minimum 20 carcasses/season/searcher/year or acceptable alternative to reduce variability in the searcher efficiency estimate);
- Three carcass persistence trials, equally spaced out (i.e., early, middle and late), each season, (i.e. minimum 20 carcasses/season/year or acceptable alternative to reduce variability in the carcass persistence estimate);
- Duplication of select pre-construction wildlife inventory surveys including spring (July 1-31) and fall (July 15-October 15) acoustic bat surveys, breeding bird surveys, raptor nest re-occupancy and productivity surveys. Post-construction wildlife inventory surveys will follow the same protocols used for the pre-construction surveys.
- All wildlife related work will be conducted by experienced biologists as per the *Directive*. This includes, but is not limited to carcass searches, searcher efficiency trials, scavenger trials, acoustic bat monitoring, breeding birds, raptor nest re-occupancy/productivity surveys and analysis.

Annual reports will be submitted to AEP-WM as per the schedule in the *Riverview Post-construction Monitoring Plan*, each year on January 31st or acceptable alternative. The annual report will meet with the requirements outlined in standard 100.4.10 of the *Directive*. AEP-WM will use the annual reports to determine if post-construction mitigation will be required. In the event of high mortality, as determined by AEP-WM, post-construction mitigation will be required. The proponent has identified the following post-construction operational mitigation that could be implemented:

- Curtailment;
- Altered cut-in speeds;
- Feathering of turbine blades and
- Alternative acceptable mitigation that is deemed appropriate based upon the site specific circumstances or incidents following consultation with AEP-WM, including seasonal/periodic turbine shut-down.

Mitigation plans will be submitted for review and agreement by AEP-WM. The proponent has committed to an additional 2 years of post-construction monitoring if post-construction mitigation is required. The outlined post-construction monitoring and mitigation plan is consistent with AEP-WM policy (*Directive*).

Heritage Division
Old St. Stephen's College
8820 – 112 Street
Edmonton, Alberta T6G 2P8
Canada
Telephone: 780-431-2300
www.alberta.ca

Via e-mail: michael.kehle@enel.com

February 13, 2015

Project File: 4941-11-0103-005
Permit File: 2014-252
OPaC Application: 006379396

Mr. Michael Kehle
Enel Alberta Wind Inc.
1225 rue University, Suite 1204
Montreal QC
H3B 3W9

Dear Mr. Kehle:

**SUBJECT: *HISTORICAL RESOURCES ACT (HRA) APPROVAL*
ENEL ALBERTA WIND INC.
RIVERVIEW POWER PLANT TURBINES, 10, 11, 46, 47 AND 48,
COLLECTOR LINES AND ACCESS TRAILS
*WIND POWER***

Acting on behalf of Enel Alberta Wind Inc. (Proponent) and in accordance with Section 37(2)(a)(b) of the *Historical Resources Act*, Stantec Consulting Ltd.:

- carried out a Historic Resources Impact Assessment (HRIA) for the Riverview Power Plant Turbines, 10, 11, 46, 47 and 48, Collector Lines and Access Trails (Project); and,
- provided Alberta Culture and Tourism with copies of the final report summarizing the HRIA, *Historical Resources Impact Assessment, Riverview Power Plant Turbines 10, 11, 46, 47 and 48, Collector Lines and Access Trails, Enel Alberta Wind Inc.* (Archaeology Permit: 2014-252).

HISTORIC RESOURCES IMPACT ASSESSMENT

Terms of Reference

The terms of reference for the HRIA were outlined in Schedule "B" of my letter dated August 5, 2014. These requirements included an HRIA for Turbines 10, 11, 46, 47 and 48 and their associated collector lines and access trails.

ARCHAEOLOGICAL RESEARCH PERMIT NO. 2014-252

Under Archaeological Research Permit No. 2014-252, Stantec Consulting Ltd. conducted the assessment of the identified turbines and related infrastructure.

HISTORICAL RESOURCES ACT (HRA) APPROVAL

Based upon the results of the HRIA studies, *Historical Resources Act* approval is granted to the Proponent for the Project, as illustrated on the attached plan.

Terms and Conditions of Approval

The Proponent must comply with standard conditions applicable to all land surface disturbance activities in the Province.

Section 31 of the *Historical Resources Act* requires the Proponent and their agent to report the discovery of any archaeological resources, palaeontological resources, historic period sites and/or Aboriginal traditional use site(s) of a type considered to be historic resources under the *Historical Resources Act*, the Proponent may be ordered to undertake further salvage, preservative or protective measures or take any other actions that the Minister responsible for the *Historical Resources Act* considers necessary.

Should you require additional information or have any questions concerning this approval, contact Barry Newton, Land Use Planner at 780-431-2330 (toll-free 310-0000) or barry.newton@gov.ab.ca.

I would like to thank representatives of Enel Alberta Wind Inc. for their cooperation in our endeavour to document the Province's historic resources.

Sincerely,

David Link, PhD
Assistant Deputy Minister

Attachments

REVISION HISTORY

Rev. #	Description	Author	Date
R1 B1	Draft issued for comments	Sharon Zhang	February 3, 2011
R1	Final issue	Sharon Zhang	February 14, 2011
R2	Final issue. Major changes include: x Updated SLDs and SCADA requirements x Updated the list of standards x Updated RAS requirements x Updated short circuit levels x Updated the equipment maximum continuous operating voltage and voltage levels in Sec. 6.2, etc.	Ralph Liu	January 13, 2012
R3	Major changes include: x Updated Table 2 x Updated SLD in 7.1.2 x Updated P&C sections x Updated facility codes	Ligong Gan	June 18, 2012
R4	Major changes include: x Updated Tables 3, 4 & 5 – Short Circuit levels x Updated Section 6.4 – Operational constraints and special protection schemes Updated SLD in Section 7.1.2 to remove HWY785 117S	Ligong Gan	May 13, 2013
R5	Major changes include: x Updated Section 6.4 – removed RAS requirement. x Updated the Section 8.2 - removes the RAS from SCADA requirement x For issuance	Henry Ng	June 20, 2016

V 6 1	<ul style="list-style-type: none"> x Updated Project ISD x Updated Section 5.2 x Updated Short circuit current tables x General updates x For review 	Henry Ng	2018-02-06
V 6 D 2	<ul style="list-style-type: none"> x For external review 	Henry Ng	2018-02-23
V 6	<ul style="list-style-type: none"> x For Issuance 	Henry Ng	2018-03-23
V 7	<ul style="list-style-type: none"> x General updates. x Updated system map x For Issuance 	Henry Ng	2018-04-18

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1 . I N T R O D U C T I O N

(1) The purpose of this document (the “Functional Specification”) is to set out the technical specifications, requirements and approved variances related to the design, construction, development and commissioning of certain new or modified facilities (the “Project”) that have been proposed for or are related to a physical facilities connection with the Alberta **i n t e r c o n n e c t e d (AIES)**. This Functional Specification is issued by the Alberta Electric System Operator (AESO) to:

- (i) AltaLink Management Ltd., in its capacity as general partner of AltaLink, L.P., (“AltaLink”), as the **l e g a l o w n e r a n d t r a n s m i s s i o n o p e r a t o r** described in the Functional Specification.
- (ii) Enel Alberta Wind Inc., (Enel), as the **m a r k e t p a r t y** that has submitted a request for **s y s t e m a c c e s s s e r v i c e**.

(2) This Functional Specification is issued for the Project only. The **l e g a l o w n e r t r a n s m i s s i o n o p e r a t o r a n d t h e m a r k e t p a r t y** must comply with the Functional Specification provisions.

(3) The AESO is not responsible for any facilities designed by or for any third party, or installed on a third party’s behalf, to accomplish the connection of the Project facilities.

(4) This Functional Specification includes:

- (i) certain specific engineering, technical and functional requirements for the Project;
- (ii) the requirements to comply with **I S O s t a n d a r d s**, **o p e r a t i n g p o l i c i e s & p r o c e d u r e s (O P P s)**, **r e l i a b i l i t y s t a n d a r d s**, **t e c h n i c a l s t a n d a r d s**, and **h a z a r d o u s m a t e r i a l s s t a n d a r d s** (collectively called the “Authoritative Documents”);
- (iii) the electrical system environment in which the connecting facilities must be designed and operated; and
- (iv) any approved variances from requirements set out in any applicable AESO Authoritative Documents.

2 . I N T E R P R E T A T I O N A N D V A R I A N C E S

(1) Subject to Section 2(2), any revision or variance to any of the Functional Specification provisions by the parties named in Section 1(1) is prohibited.

(2) Any party named in Section 1(1) may make application, jointly or individually, in writing to the AESO requesting a variance to this Functional Specification, and the AESO may in writing approve of the variance after the AESO has completed an analysis of the implications to the AIES with respect to the requested variance.

(3) Words or phrases appearing in bold have the meanings set out in the Consolidated Authoritative Document Glossary.

3 . P R O J E C T O V E R V I E W

The **m a r k e t p a r t y** has submitted a request for **s y s t e m a c c e s s** to the AESO to connect the **m a r k e t p a r t y**’s proposed **w i n d a g g r e g a t e d g e n e r a t i o n f a c i l i t y** (WAGF), called the Riverview Wind Power Plant (Facility), to the AIES. The Facility includes the **m a r k e t p a r t y**’s proposed expansion of the existing Castle Rock Ridge 205S substation. This expansion will be separated by a fence and will serve as the **m a r k e t p a r t y**’s **c o l l e c t o r p a r t**

substation. The Facility is located in the AESO transmission planning area of Fort MacLeod (Area 53).

The **market** **pa** request includes a Rate STS, Supply Transmission Service, contract capacity of 115 MW and a Rate DTS, Demand Transmission Service, contract capacity of 1 MW at the existing Castle Rock Ridge 205S substation, and a request for transmission development. The **maximum authorized (MARF)** of the Facility is 115 MW¹ and the **maximum capacity** is 115 MW.

The **market** **pa** request is permitted by the following transmission solution:

- x Modify the existing Castle Rock Ridge 205S substation, including adding one 240 kV circuit breaker.
- x Connect the Facility back-to-back to the Castle Rock Ridge 205S substation.
- x Add or modify associated equipment as required for the above transmission developments.

The scheduled in-service date (ISD) for this project is June 30, 2019.

4. FORECAST OF FUTURE DEVELOPMENT IN THE AREA

Proposed long term developments in the Fort Macleod area (Area 53) are described in the AESO 2017 Long-term Transmission Plan. Please refer to the AESO's website (www.aeso.ca) for more details of the long term transmission developments in the area.

5 COMPLIANCE WITH REGULATORY REQUIREMENTS

5.1 GENERAL

The **legal** **obligations** **of the** **transmission** **owner** **and** **the** **facilities** **operator** **are** **to** **ensure** **that** **the** **transmission** **system** **is** **operated** **in** **accordance** **with** **the** **requirements** **of** **the** **regulatory** **framework** **and** **the** **requirements** **of** **the** **transmission** **owner** **and** **the** **facilities** **operator**.

(1) complete all engineering, design, land or land-use acquisition, siting, public consultation, applicable regulatory approvals and permits, material procurement, construction, commissioning, and associated permitting requirements for the Project facilities.

(2) coordinate with each other, as required, on all Project facility design details, including protection and control, grounding, insulation, **point of connection** **with** **proper** **consideration** **of** **maintenance** **coordination**.

(3) develop joint operating procedures and any connection agreements, as required, such that all connecting **transmission** **will** **operate** **safely** **and** **reliably**.

¹ Note that the nameplate rating of the transmission step-up transformer in the collector station proposed by the **market** **pa** is 115 MVA which is insufficient for the full capacity of the WAGF when the reactive power is taken into consideration. However, the **market** **pa** provided an engineering assessment letter to confirm that the rating of the transformer is 128MVA based on maximum ambient temperature in Pincher Creek area. The AESO has accepted the engineering assessment letter and agreed that the step-up transformer is sufficient for a MARP of 115 MW.

(4) deliver to the AESO all final design and as-built Project facility information and records in the format and content required by the AESO, to enable the AESO to update and maintain its transmission technical records and system models.

(5) submit the Project information and records referred to in subsection (4) above, under the professional stamp and signature of a registered professional engineer in Alberta who assumes responsibility for the preparation and accuracy of the content of the information and records.

(6) mutually agree on each party's roles and responsibilities regarding inspection of all facilities of the Project prior to energization of the facilities.

(7) ensure prior to energization of any or all of their respective Project facilities, that the facilities to be energized have been inspected by qualified personnel, so that the facilities are declared to be:

- (a) safe for operation; and
- (b) in compliance with this Functional Specification and any Authoritative Documents for which the Project must comply.

(8) Not energize any Project facilities until an energization authorization has been issued by the AESO in accordance with the **I S O I e s**

5 . C O M P L I A N C E A E S O A U T H O R I T A D O C U M E N T S

Any party named in Section 1(1) must comply with the Authoritative Documents provisions which are applicable to the Project and which must be satisfied and incorporated into the design, construction, commissioning and operation of the connecting facilities and other connection Project work, including but not limited to these provisions contained herein:

- x AESO Operating Policies and Procedures
- x Alberta Reliability Standards
- x AESO Measurement System Standard Rev. 1 (dated September 18, 2007)²

- Section 502.2, Bulk Transmission Line Technical Requirements (effective January 1, 2012);
- Section 502.3, Interconnected Electric System Protection Requirements (effective September 1, 2018)³;
- Section 502.4, Automated Dispatch and Messaging System and Voice Communication System Requirements (effective March 27, 2015);
- Section 502.8, SCADA Technical and Operating Requirements (effective September 1, 2018)³;
- Section 502.9, Synchrophasor Measurement Unit Technical Requirements (effective March 27, 2015);
- Section 502.16, Aggregated Generating Facilities Operating Requirements (effective September 1, 2018)³;
- Section 505.3, Coordinating Synchronization, commissioning, WECC Testing and Ancillary Services Testing (effective December 31, 2012);
- Section 505.4, Coordinating Operational Testing (effective December 31, 2012)

5. ~~MODELING~~ **MODELING REQUIREMENTS**

All modelling data shall be provided as per the Information Document ID# 2010-001R Facility Modelling Data (issued March 23, 2017), which relates to Section 502.15 of the **ISO rules** Reporting Facility Modelling.

5.4 ~~WIND SOLAR POWER FORECASTING METEOROLOGICAL DATA~~ **WIND AND SOLAR POWER FORECASTING METEOROLOGICAL REQUIREMENT**

All forecasting data and meteorological data requirements shall be provided as per proposed Section 304.9 of **ISO rules** Wind and Solar Aggregated Generating Facility Forecasting. Refer to the Table 1 of Section 304.9 of **ISO rules** for detailed meteorological data requirements.

5. ~~SUBSTATION~~ **SUBSTATION EQUIPMENT SPECIFICATIONS**

All new transmission equipment⁴ must meet the following minimum specifications:

- x Temperature rating of -40°C for all outdoor equipment
- x Equipment maximum and minimum continuous voltage ratings as indicated in Table 6.
- x Minimum continuous equipment current ratings as indicated in Table 1.
- x Maximum Fault Level: 40 kA at 240 kV

⁴ Equipment includes such items as the power transformer, circuit breaker, capacitor bank, shunt reactor, high voltage current transformer, potential transformer, bus work, air break, and switchgear.

Table 1. Minimum Continuous Equipment Current Rating

Component	240 kV Castle Rock Ridge 205S
Main Bus ^{Note 1}	4000
Cross Bus ^{Note 2, 3}	3000
Equipment or line terminal ^{Note 4}	2000

Notes for Table 1:

Note 1: Main bus includes all sections of ring bus scheme or single bus of simple bus or breaker and a half scheme except the portion of the bus connecting to a transformer.

Note 2: Cross bus includes diameter sections of breaker and a half or breaker and a third schemes.

Note 3: Cross bus can have higher minimum current rating based on bus configuration and equipment connectivity.

Note 4: Line terminal includes all equipment and conductor from the transmission line to the line breakers.

Note 5: Current rating of the equipment below 69 kV within the substation shall be determined by the legal owner in consultation with market participants.

5. SCOPE WORK

5.6 Specific Scope of Work for Transmission Facility

General Requirements

- x Complete all site preparation, foundations, grounding, support structures, termination structures, bus work and cabling as required for the proposed additions at Castle Rock Ridge 205S substation.
- x Coordinate with the market participant of the market participant owned facilities to the legal owner's 240 kV bus facility.
- x Installation of all other required protection equipment as per the applicable protection standards for the safe and reliable operation of the AIES in the surrounding area.
- x Ensure project safety is appropriately managed from design through energization.
- x Undertake all required grounding studies, testing and mitigation, as required, for electrical safety and any mitigation for electrical effects on communication systems.
- x Complete insulation coordination studies and coordinate with the market participant required, to establish appropriate insulation levels.
- x Coordinate with the market participant to develop necessary connection agreements and a Joint Operating Procedures.
- x The legal owner shall provide access to the telecommunication system for communication services (SCADA, Operational Voice, Operational Data, and Synchrophasor Measurement Unit) if requested by the market participant as required by the AESO for the operation of the AIES.

Castle Rock Ridge-205S Substation

Substation Equipment Requirements

- x Add one (1) 240 kV circuit breaker with associated disconnect switches
- x Add one (1) 240 kV motorized disconnect switch
- x S240 kV bus extension as required

Protection Requirements

- x Add breaker failure protection and sync-check functionality for the new 240 kV circuit breaker.
- x Modify the existing bus protection as required to account for the addition of **market participant facility**.
- x Install all other required protection equipment as per the applicable protection standards for the safe and reliable operation of the AIES.

SCADA Requirements

- x Establish communications interface point such that SCADA data can be transmitted back to the AESO's SCC and BUCC.
- x All new RTU shall have GPS signaling for time synchronization.
- x Implement control center data mapping and verification of SCADA information for the proposed transmission facility additions and modifications, and any associated changes required at other area substations as per Section 502.8 of **ISO Rule**. A complete listing of energy data requirements can be found in Appendices 7.3.1 and 7.3.2 of this document.

Telecommunication Requirements

- x Integrate the protection, control and data acquisition traffic related to the new additions at Castle Rock Ridge 205S substation into the existing communication facilities on site.
- x Establish a mutually acceptable communication scheme with the **market participant** required, to manage the protection, control and data acquisition traffic between the **legal owner of a transmission facility** and the **market participant**.
- x Upgrade the existing voice and radio communications as required to meet Section 502.4 of **ISO Rule**.

5.6 Specific Work for Market Participant

General Requirements

- x Coordinate all alignments with the **legal owner of a transmission facility** market participant owned facilities to the **legal owner of a transmission facility** 240 kV bus.
- x Complete protection coordination studies and coordinate with the **legal owner of a transmission facility** to establish settings appropriate for the operation of the market participant facility and the AIES.

- x Coordinate with the **l e g a l o w n e r t r a n s m i s s i o n** to develop a JOP ifot the safe and reliable operation of the AIES in the project area.
- x Ensure project safety is appropriately managed through all stages of the project life cycle.
- x The **m a r k e t p a r t i c i p a n t** facility input not increase the phase to phase voltage unbalance on the transmission system as measured at the Point of Connection to more than one percent (1.0%).

M a r k e t P a r t P o p G a s t l e R o c k S u i d g t e a t i p o r s S e a - Appendix 7 .

E q u i p m e n t R e q u o p e n e d M a y R e t r e t i c i p a n t

- x One 240/34.5 kV 69/92/115 MVA LTC transformer
- x One (1) 240 kV motorized disconnect switch
- x Collector bus rated at 34.5 kV with associated breakers and isolation switches
- x Other equipment to be added as shown in Appendix 7.2

P r o t e a n d o C o R e q u i r e m e n t s

- x Complete protection coordination studies and coordinate with the **l e g a l o w n e r t r a n s m i s s i o n**, as required, to establish settings appropriate for the **m a r k e t p a r t i c i p a n t** facility additions and AIES operations.
- x Coordinate with the **l e g a l o w n e r t r a n s m i s s i o n** required to install line protection to protect the four terminal line configuration as a result of the Project.
- x Install all other required protection equipment as per the applicable protection standards for the safe and reliable operation of the new facilities and the AIES in the surrounding area.

S y n c h r o p h a s o r M e a s u r e m e n t U n i t R e q u i r e m e n t s

- x Install Synchrophasor Measurement Unit at the proposed **m a r k e t p a r t i c i p a n t**
- x The data requirement and format of Synchrophasor Measurement Unit data must meet AESO's requirements. A complete listing of Synchrophasor Measurement Unit data requirements can be found in Appendix 7.3.2.

S C A D A R e q u i r e m e n t s

- x Establish communications interface point such that SCADA data can be transmitted back to the AESO's SCC and BUCC.
- x All new RTU shall have GPS signaling for time synchronization.
- x Implement control center data mapping and verification of SCADA information for the proposed transmission facility additions and modifications, and any associated changes required at other area substations as per Section 502.8 of **I S O** r a complete listing of energy data requirements can be found in Appendices 7.3.1 and 7.3.2 of this document.

T e c o m m u n i c a t i o n R e q u i r e m e n t s

- x Coordinate and work cooperatively with the **l e g a l o w n e a n s m i s s i o n f a c i** install new or modify/upgrade the existing communication system as required and establish appropriate communication interface such that tele-protection, SCADA, operational voice, operational data and mobile radio requirements are met.

R e v e n u e M e t e r i n g R e q u i r e m e n t s

- x The location of the revenue metering point will be on the 240 kV side of the transmission system step-up transformer or 34.5 kV side compensated to the 240 kV side. All new Point of Supply metering points shall be established in accordance with the AESO's Measurement System Standard as described in Section 5.2 of this Specification.
- x Provide the AESO with metering single line diagram to show physical revenue meter location.

6 T R A N S M I S S I O N O P E R A T I N G C H A R A C T E R I S T I C S

The **l e g a l o w n e a n s m i s s i o n a n d t h e a n c i e n t i n f r a s t r u c t u r e** facilities are capable of operating in the following electrical environment.

6 . 1 S H O R T C I R C U I T C U R R E N T L E V E L S

The following short circuit current levels in Tables 2, 3 and 4 were developed by the AESO based on information provided by the **l e g a l o w n e a n s m i s s i o n a n d G e n e r a t i o n I n f r a s t r u c t u r e** Facility Owners operating in the adjacent areas. Available fault current levels will continue to increase as generation, transmission, and system inter-ties are added to the AIES. Although future estimated values have been provided, it is the facility owner's responsibility to regularly verify the fault levels and review their equipment ratings for adequacy. Any future upgrades are the responsibility of the facility owner.

The following assumptions were incorporated into AESO short circuit models:

- x All expected Alberta generation is dispatched.
- x All transmission elements are in service.
- x The proposed facility is connected as per this document.
- x $V_{base} = V_{bus}$, $MVA_{base} = 100$ MVA

T a b l e 2 : E s t i m a t e d M a x i m C i r c u i t C u r r e n t L e v e l s -

Substation Name	Base Volt (kV)	Pre Fault Volt (kV)	Pre Fault Volt (pu)	3 - Fau (kA)	Posit Sequer Thevel Sourc Impeda (R1+j)	Posit Sequer Thevel Sourc Impeda (R1+j (pu)	1 - Fau (kA)	Zero Sequer Thevel Sourc Impeda (R0+j)	Zero Sequer Thevel Sourc Impeda (R0+j (pu)
Peigan 59S	138	142.08	1.03	7.5	1.70+11.45j	0.009+0.060j	6.6	2.14+16.06j	0.011+0.084j
Castle Rock Ridge 205S	240	242.32	1.01	7.4	2.95+19.80j	0.005+0.034j	6.1	5.86+32.97j	0.010+0.057j
Goose Lake 103S	240	241.92	1.01	7.3	2.89+19.82j	0.005+0.034j	6.4	4.37+29.18j	0.008+0.051j
	138	141.5	1.03	7.8	0.89+10.95j	0.005+0.057j	7.8	1.38+11.07j	0.007+0.058j

Substation Name	Base Volt (kV)	Pre Fault Volt (kV)	Pre Fault Volt (pu)	3 - Fau (kA)	Posit Sequer Thevel Sourc Impeda (R1+j)	Posit Sequer Thevel Sourc Impeda (R1+j) (pu)	1 - Fau (kA)	Zero Sequer Thevel Sourc Impeda (R0+j)	Zero Sequer Thevel Sourc Impeda (R0+j) (pu)
Fidler 312S	138	142.08	1.03	7.5	1.70+11.45j	0.009+0.060j	6.6	2.14+16.06j	0.011+0.084j
	240	242.32	1.01	7.4	2.95+19.80j	0.005+0.034j	6.1	5.86+32.97j	0.010+0.057j

Table 3: Estimated Maximum Short 2019 PSIP Contribution Levels

Substation Name	Base Volt (kV)	Pre Fault Volt (kV)	Pre Fault Volt (pu)	3 - Fau (kA)	Posit Sequer Thevel Sourc Impeda (R1+j)	Posit Sequer Thevel Sourc Impeda (R1+j) (pu)	1 - Fau (kA)	Zero Sequer Thevel Sourc Impeda (R0+j)	Zero Sequer Thevel Sourc Impeda (R0+j) (pu)
Peigan 59S	138	141.33	1.02	7.5	1.67+11.33j	0.009+0.060j	6.7	2.28+15.62j	0.012+0.082j
Castle Rock Ridge 205S	240	241.2	1.01	7.6	2.79+19.14j	0.005+0.033j	6.8	7.01+25.99j	0.012+0.045j
Goose Lake 103S	240	240.85	1	7.5	2.75+19.26j	0.005+0.033j	6.8	5.29+25.44j	0.009+0.044j
	138	141.01	1.02	7.9	0.86+10.80j	0.005+0.057j	8	1.54+10.24j	0.008+0.054j
Fidler 312S	138	141.33	1.02	7.5	1.67+11.33j	0.009+0.060j	6.7	2.28+15.62j	0.012+0.082j
	240	241.2	1.01	7.6	2.79+19.14j	0.005+0.033j	6.8	7.01+25.99j	0.012+0.045j

Table 4: Estimated Future Maximum Short 2022 WPP Project Contribution Levels

Substation Name	Base Volt (kV)	Pre Fault Volt (kV)	Pre Fault Volt (pu)	3 - Fau (kA)	Posit Sequer Thevel Sourc Impeda (R1+j)	Posit Sequer Thevel Sourc Impeda (R1+j) (pu)	1 - Fau (kA)	Zero Sequer Thevel Sourc Impeda (R0+j)	Zero Sequer Thevel Sourc Impeda (R0+j) (pu)
Peigan 59S	138	138.72	1.01	7.6	1.39+10.44j	0.007+0.055j	7	1.60+13.22j	0.008+0.069j
Castle Rock Ridge 205S	240	246.71	1.03	8.3	2.16+16.98j	0.004+0.029j	8.4	3.36+16.98j	0.006+0.029j
Goos Lake 103S	240	247.03	1.03	8.2	2.17+17.38j	0.004+0.030j	7.7	3.83+20.59j	0.007+0.036j
	138	138.76	1.01	8.2	0.64+9.81j	0.003+0.052j	8.5	1.05+8.64j	0.006+0.045j
Fidler 312S	138	138.72	1.01	7.6	1.39+10.44j	0.007+0.055j	7	1.60+13.22j	0.008+0.069j
	240	246.71	1.03	8.3	2.16+16.98j	0.004+0.029j	8.4	3.36+16.98j	0.006+0.029j

6. VOLTAGE LEVELS

Table 5 provides the steady state voltage range in the area of the proposed facility.

Table 5: Steady State Voltage Range (kV) during Normal and Contingency Events

Substation Name and Number	Nominal Voltage (kV)	Emergency Minimum Voltage (kV)	Desired Normal Minimum Voltage (kV)	Desired Normal Maximum Voltage (kV)	Emergency Maximum Voltage (kV)
Castle Rock Ridge 205S	240	216	234	252	264

Notes:

1. The Desired Normal Operating Minimum and Desired Normal Operating Maximum are generally associated with Category A events and system normal.
2. The Emergency Minimum Voltage and Emergency Maximum Voltage are generally associated with Category B and C events and system abnormal.
3. The facilities must be capable of continuous operation at voltages up to and including the Emergency Maximum Voltage.

6 . INSULATION LEVELS

Table 6 provides the minimum required Basic Insulation Levels (“BIL”) for the ATS. Station equipment with lower BIL levels can be used provided protection and coordination can be maintained with judicious insulation design and use of appropriate surge arresting equipment.

Table 6: Minimum Basic Impulse Levels (kV)

Nominal Voltage Classification	240
Station Post Insulators and Airbreaks	900
Circuit Breakers	1,050
Current and Potential Transformers	1,050
Transformer Windings (Protected by Surge Arresters)	850

6 . REMEDIATION SCHEMES (RAS)

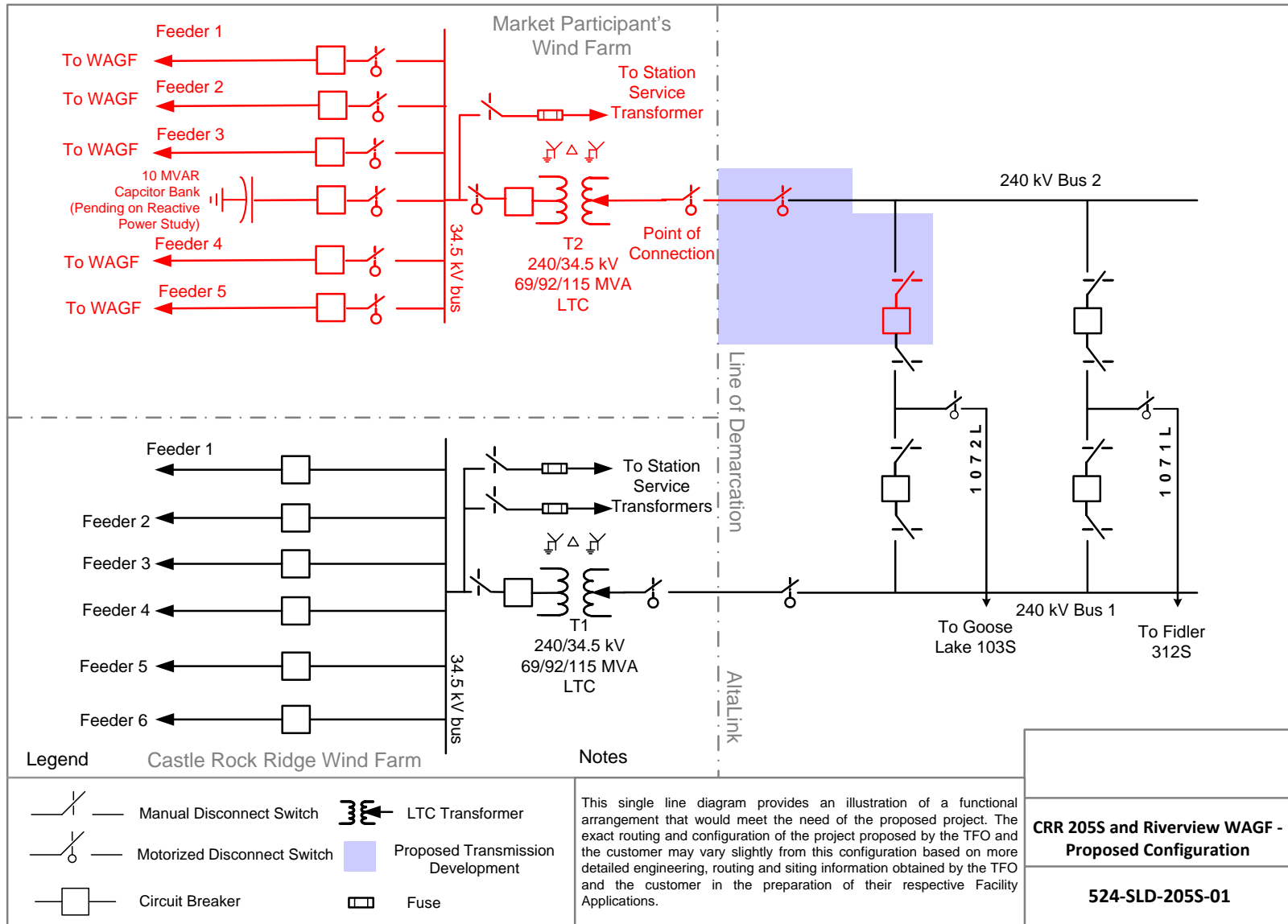
The Engineering Study Report (ESR) for this Project has indicated that no new or modification to existing / planned RAS(s) or System Control Procedures (SCPs) were identified for this Project, under Category B contingency conditions, based on assumptions used in the study.

Prior to the ISD of the Project, additional operations planning studies will be performed to determine and/or confirm the required mitigation measures, RAS(s), or procedures, by taking into account other connection and system projects, as appropriate. System conditions under additional contingency categories will also be assessed as part of operations planning studies. This will ensure that appropriate mitigation will be in place prior to the ISD of the Project. The AESO will consult with the legal counsel and the transmission and the franchisee before specifying revised and/or new mitigation measures.

7 APPENDICES

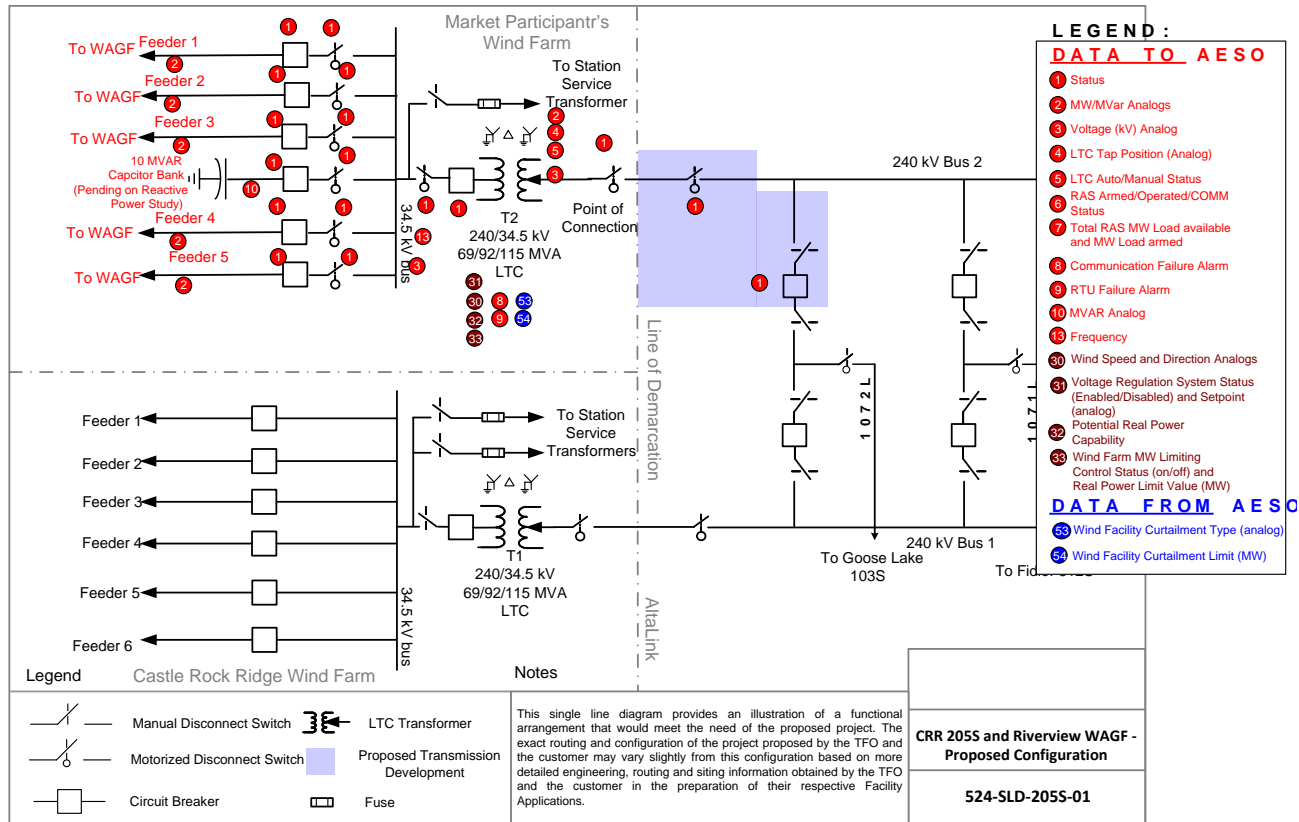
7.1 ~~AE~~ TRANSMISSION SYSTEM PROPOSED DEVELOPMENT

7 . SINGLE LINE DRAWING - PROPOSED DEVELOPMENTS AT THE CASTLE ROCK RIDGE 205S



7 .SCAD~~A~~FORMAT R~~E~~QUIREMENT

7 . 3 SCAD~~A~~o int Requir ement s



7.3 SCHEDULE A Table

Facility	Device	Element	Indicator	Latency Mode	Notes
Castle Rock Ridge 205S substation and Riverview WAGF	Breaker		Status	On Event	Breaker associated with Feeder 1
	Breaker		Status	On Event	Breaker associated with Feeder 2
	Breaker		Status	On Event	Breaker associated with Feeder 3
	Breaker		Status	On Event	Breaker associated with Feeder 4
	Breaker		Status	On Event	Breaker associated with Feeder 5
	Breaker		Status	On Event	Breaker associated with Capacitor Bank
	Breaker		Status	On Event	Breaker between 34.5kV Bus and T2 low side
	Breaker		Status	On Event	240kV breaker between 240kV bus 2 and 1072L installed at Altalink's side
	MOS		Status	On Event	MOS on 240kV Bus 2 at Altalink's side
	MOS		Status	On Event	MOS at high side of T2 at Riverview
	MOS		Status	On Event	MOS at Low side of T2 at Riverview
	MOS		Status	On Event	MOS associated with Feeder 1
	MOS		Status	On Event	MOS associated with Feeder 2
	MOS		Status	On Event	MOS associated with Feeder 3
	MOS		Status	On Event	MOS associated with Feeder 4
	MOS		Status	On Event	MOS associated with Feeder 5
	MOS		Status	On Event	MOS associated with Capacitor Bank
	MOS		Status	On Event	MOS between 34.5kV Bus and T2 low side
	240kV Bus		Voltage	15s	
	34.5kV Bus		Voltage	15s	

	34.5kV Bus		Frequency	15s	Plant Frequency in Hz
	Transformer	T2	MW	15s	MW reading at high side, towards the transformer
	Transformer	T2	MVAR	15s	MVAr reading at high side, towards the transformer
	Transformer	T2	Control Status	On Event	Tap controller auto/manual status (only when applicable)
	Transformer	T2	Tap	15s	Transformer tap position (only when applicable)
	34.5kV feeder	Feeder 1	MW	15s	MW (positive from feeder into collector bus)
	34.5kV feeder	Feeder 2	MW	15s	MW (positive from feeder into collector bus)
	34.5kV feeder	Feeder 3	MW	15s	MW (positive from feeder into collector bus)
	34.5kV feeder	Feeder 4	MW	15s	MW (positive from feeder into collector bus)
	34.5kV feeder	Feeder 5	MW	15s	MW (positive from feeder into collector bus)
	34.5kV feeder	Feeder 1	MVAR	15s	MVAR (positive from feeder into collector bus)
	34.5kV feeder	Feeder 2	MVAR	15s	MVAR (positive from feeder into collector bus)
	34.5kV feeder	Feeder 3	MVAR	15s	MVAR (positive from feeder into collector bus)
	34.5kV feeder	Feeder 4	MVAR	15s	MVAR (positive from feeder into collector bus)
	34.5kV feeder	Feeder 5	MVAR	15s	MVAR (positive from feeder into collector bus)
	34.5kV feeder	Capacitor Bank	MVAR	15s	MVAR (positive from feeder into collector bus)
	Auxiliary Load	Station Service	MW	15s	Applicable if station service >0.5MVA
	Auxiliary Load	Station Service	MVAR	15s	Applicable if station service >0.5MVA

	Wind Farm Voltage Regulator	AVR	Status	On Event	Voltage regulation Enabled/Disabled status(one status point per regulator)
	Wind Farm Voltage Regulator	AVR	Voltage	15s	Voltage regulation setpoint, one analog per controlling device
	Wind monitoring device	Meteorological Data	speed (km/h)	15s	Wind Speed in km/h at hub height
	Wind monitoring device	Meteorological Data	direction (degrees)	15s	Wind direction in degrees from true north at hub height, e.g. East is 90, West is 270.
	Wind Farm Facility	Potential Real Power Capability	MW	15s	Real power that would have been produced at the point of connection without wind aggregated generating facilities curtailment and based on real time meteorological conditions at each available wind turbine generator;
	Wind Farm Facility	Real Power Limit	Status	On Event	On/Off status for the wind power limiting control system at the wind aggregated generating facilities
	Wind Farm Facility	Real Power Limit	MW	15s	MW limit used in the power limiting control system at the wind aggregated generating facilities
	Communications	Communications Failure	Alarm	On Event	Ganged alarm indicating that 1 or more devices supplying data is in alarm.
	Communications	RTU Failure	Alarm	On Event	AESO Internal notification that site is non-responsive

Synchro P Measurem	Device	Element	Forma	Measure	Update Rate
Riverview	140/34.5KV LTC Transformer	All three phase-to-ground Voltage Phasor at the low side of transformer T2	Streaming C37.118	Voltage Positive Sequence	30 frames/ second
	140/34.5KV LTC Transformer	All three phase-to-ground Current Phasor at the low side of transformer T2	Streaming C37.118	Current Positive Sequence	30 frames/ second
	140/34.5KV LTC Transformer	All three phase-to-ground Voltage Phasor at the high side of transformer T2	Streaming C37.118	Voltage Positive Sequence	30 frames/ second
	140/34.5KV LTC Transformer	All three phase-to-ground Current Phasor at the high side of transformer T2	Streaming C37.118	Current Positive Sequence	30 frames/ second
From AESO	AGF	Wind Curtailment type	Analog	On Event	Analog control indicating the type of curtailment the facility is under
	AGF	Wind Curtailment limit	Analog	On Event	Analog control indicating the curtailment limit in MW
Note	1. MW and MVar SCADA data shall be gathered independently of				
	2. This list was prepared based on the best available information. Final SCADA SCADA Standard (502.8)				

Appendix G NAV Canada

File No. 18-2810 has been created for Riverview Wind Project application.

LAND USE PROPOSAL SUBMISSION FORM

Date Received by NAV CANADA	NC file N° / Ref N°	TC File N° / Ref N°
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GENERAL INFORMATION:

Company/Owner Name: Enel Alberta Wind Inc.			Contact Person: Ashley Smith		
Address: 1111 Deer Avenue			City: Pincher Creek	Prov: AB	Postal Code: T0K-1W0
Tel: 775-622-5526	Cell: 775-622-5526	Email: ashley.smith@enel.com			
Applicant: Enel Alberta Wind Inc			Contact Person: Ashley Smith		
Address: 1111 Deer Avenue			City: Pincher Creek	Prov: AB	Postal Code: T0K-1W0
Tel: 775-622-5526	Cell: 775-622-5526	Email: ashley.smith@enel.com			
Airport Authority : CZPC (If within 6 km of a lighted aerodrome)			Airport Manager: L.J. Leo Reedyk, Director of Operations, Municipal District of Pincher Creek #9		
Address: P.O. Box 279			City: Pincher Creek	Prov: AB	
Postal Code: T0k-1W0	Tel: 403-627-3130	Cell:	Email: lreedyk@mdpincercreek.ab.ca		

DETAILS OF PROPOSAL:

- Please provide the data in the highest resolution as it was obtained.
- For geographic coordinates, provide up to four (4) decimal places of a second.
- For ground elevation and tower height, provide up to four (4) decimal places of a metre or foot.

Project #, Street Address, etc.: Riverview Wind Project	Nearest Town, Province: Pincher Creek, Alberta
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Geographic Coordinates of Site in NAD 83:	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Linear Structures:	Lat. N 49	/ 34	/ 3.75	Long. W -113	/ 54	/ 56.57
Indicate Starting Point on 1 st line and End Point 2 nd line:	Lat. N 49	/ 32	/ 04.40	Long. W -113	/ 53	/ 05.86

Type of Structure: Wind Turbines & Meteorological Towers	New Structure? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Height Added (If Existing)		<input type="checkbox"/> ft <input type="checkbox"/> m
Cranes to be used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If Yes, see instructions</i>	Ground Elevation (Above Sea Level)		1186	<input type="checkbox"/> ft <input checked="" type="checkbox"/> m
Dimensions: 82m hub height, 66.7m blade length, 148.7m tip height	Structure Height (Above Ground Level) Including all Appurtenances		150m	<input type="checkbox"/> ft <input checked="" type="checkbox"/> m
Materials & Roof Shape (If Building):	Total Height (Above Sea Level) Structure Height + Ground Elevation		1336.2	<input type="checkbox"/> ft <input checked="" type="checkbox"/> m
Proposed Construction Start Date: August 2018	Approximate Duration of Construction: 18 months			
If Temporary Structure, indicate Removal Date:	From: hrs	To: hrs		

Comments: This application is for 28 wind turbine generators and 2 permanent meteorological towers for the Riverview Wind Project. These locations were previously authorized under 14-0952 and 17-0639, which have since expired. Please see attached table for coordinates, height and ground elevations. The project will be located approximately 450 meters east of the existing Castle Rock Ridge Wind Project (NC file 09-2361).

ELECTRONIC / TELECOMMUNICATION INTERFERENCE (Check off the items which may cause interference and provide details)

High Voltage Equipment	<input checked="" type="checkbox"/> Details Above ground there will be a new metering, a new 240kV main transformer, and up to 6 circuit breakers installed at the existing Castle Rock Ridge substation. Additionally, each turbine location will have a pad mounted 34.5kV transformer. Underground, there will be a 34.5kV collection system that will run between the turbine locations and the substation.
Arc Welding	<input checked="" type="checkbox"/> Details Intermittent arc welding may occur at the substation location intermittently during daytime hours between May and August. Minor arc welding for stairways at each turbine location may also occur during daylight hours between June and November.

Processing Times

NAV CANADA will endeavour to provide a response within 8 to 12 weeks of receipt of the proposal. The accuracy and completeness of the initial documentation provided to NAV CANADA, and consequently the cooperation of the proponent to quickly rectify any deficiencies/inaccuracies will go far to expedite the process and ensure a timely response. Electronic submissions will also decrease the time required to properly assess a submission.

Contact Us

NAV CANADA
Aeronautical Information Management
AIM Instrument Flight Procedure Service Delivery / Land Use Office
1601 Tom Roberts Ave
Ottawa, ON K1V 1E5

Website: www.navcanada.ca > PRODUCTS & SERVICES > [Land Use Program](#)

Toll Free: (866) 577-0247

Fax: (613) 248-4094

Email: landuse@navcanada.ca ****Preferred method for submission**

Obstruction Marking and Lighting

Transport Canada is required to perform an assessment on the requirement for obstruction marking and lighting of man-made structures per Canadian Aviation Regulations (CAR). Obstructions are assessed by Transport Canada through the Aeronautical Assessment Form Process. *Note: outages in obstruction lighting deemed a requirement by Transport Canada are to be reported to the appropriate NAV CANADA Flight Information Centre (FIC) as per CAR 601.28.*

Kamloops FIC 1-866-541-4101

Edmonton FIC 1-866-541-4102

Winnipeg FIC 1-866-541-4103

London FIC 1-866-541-4104

Quebec FIC 1-866-541-4105

Land Use Proposal Submission Form Instructions

This section provides additional instructions for each section of the Land Use Submission Form.

Airport Authority: If site location is within 6 km of a public aerodrome or airport and contact information is available.

Applicant: If not the same as owner, the name of consultant, contractor, or other who is applying on behalf of the owner. Note: all correspondence will be forwarded to the applicant.

Approximate Duration: Specify time of operation for temporary structures of short duration. This may be required for NOTAMing purposes.

Arc Welding: If any construction taking place on your site requires arc welding, please complete this field. Specify the anticipated duration of arc welding. Welders can potentially interfere with the reliability of the ILS systems of an airport and must therefore be brought to our attention.

Blasting Operations: The following additional information will be required for blasting activities for a Land Use Assessment and possible NOTAM / publication action:

Blast Area: Geographic coordinates (latitude & longitude in NAD83) of the blasting area corners or centre coordinates with a blasting radius.

Blasting Times: specify period during the day (for example, daylight hours or 0800 to 1600 local time Monday to Friday, one-time event, etc.).

Duration of Operation: estimated amount of time (months/years) expected to operate at specified location.

Elevations: Highest ground elevation (above sea level) within blasting zone, maximum height of fly rock or debris (above ground level), and shockwave/overpressure height (above ground level, if applicable). Indicate use of blast mats (if applicable).

Topographical map: (1:50 000 scale) depicting the blasting area.

Company / Owner: Name of the proposed structure or development.

C r a n e For construction projects (such as a new building, placement of roof top structures, flare stack, etc.) where a crane will be required and where the maximum operating height will be higher than the overall height of the proposed structure, the applicant is to provide details for both mobile and temporary cranes on a separate submission form **a t l e a s t 3 0 w o r k i n g d a y s i n** that crane application(s) be cross referenced to the associated construction project and provide detailed crane specifications such as maximum height, boom length and swing radius. A drawing detailing the crane specifications and type would be beneficial, please reference the NAV CANADA Land Use Program web page for more details. *Note: A drawing showing the required specifications indicated below will be beneficial.*

Maximum Swing Radius: In a manner similar to a large structure, a crane with a large swing radius can create a severe horizontal angle with respect to Navigation/Communication/Surveillance equipment, thereby compromising coverage. The maximum swing radius shall be provided so we can properly assess the situation and determine whether or not the swing radius is within an acceptable level. Note: maximum swing radius refers to the maximum that will be achieved during construction and not the maximum achievable swing of the crane (unless that specific setting is being used in the construction).

Boom Length: This information is needed to determine the vertical angle of the crane with respect to any nearby NAV CANADA facilities.

Max Height Achieved During Construction: This information is needed to determine the worst case scenario for vertical angles between the crane and nearby NAV CANADA facilities.

Date Received: Represents the date the application was received by NAV CANADA Land Use.

Details of Project: Project Number, Street address, etc.: A project name, number or street address that can be traced should the owner/applicant require follow-up status on a project.

Dimensions: Indicate structure design specifications. Certain equipment used by NAV CANADA (the radar equipment in particular) can potentially be disrupted by those structures which possess large horizontal dimensions. Such scenarios are assessed by determining the structure's horizontal angle with respect to the NAV CANADA site. For Cranes, include maximum height to which the crane will be raised, boom length and swing radius. A drawing with the specs is desired.

From / To:

Indicate the time of the day when the structure will be raised. For example: 08:00, 13:00

Indicate the time of the day when the structure will be lowered. For example: 11:00, 17:00

Geographic Coordinates: The geographic location in latitude and longitude of the proposed structure/development. Coordinates must be provided in degrees, minutes, and seconds for NOTAM and database updating purposes. It is an ICAO (International Civil Aviation Organization) requirement to provide accuracy to within 1/100th of a second. For example, N46° 06' 44.67" W064° 40' 43.25".

Geodetic Coordinates: are to be provided in NAD83 only. NAD 27 or UTM coordinates must be converted into the required format; the following are Natural Resources Canada online transformation links (these may change without notice):

NAD 27/83 and Geographic/UTM conversions: <http://webapp.geod.nrcan.gc.ca/geod/tools-outils/ntv2.php?locale=en>

NAD 27/83 and Geographic/UTM conversions: <http://webapp.geod.nrcan.gc.ca/geod/tools-outils/trx.php>

Reference the [Natural Resources Canada webpage](#) for information on this topic.

Ground Elevation: Should be consistent with the contour interval details shown on the 1:50,000 topographical chart. *Note: GPS readings (when not surveyed) or Google Earth readings are not considered reliable information. Please refer to topographical maps containing contour information or surveyed data. Where ground elevation has been surveyed, the finished grade is to be provided.*

Height Added: The structure currently exists in ~~space~~ in height due to an addition.

High Powered Transmissions: Such transmissions include AM, FM, or television broadcast signals. Such equipment should typically be located at least 8 km from NAV CANADA facilities. However, any equipment at the proposed site which falls under this category must be mentioned here.

High Voltage: Any equipment which carries a voltage of at least 2 kV must be mentioned here as such equipment can create electrical interference with NAV CANADA's radar systems. Voltages over 100 kV are especially worthy of mention, as they will potentially interfere with, not only the radar systems, but the ILS systems as well.

Linear Group Cables: Crossing, telephone or power line, should have a beginning and end point of the line. Should there be intersection points along the route, applicant to provide a spreadsheet containing the geographic coordinates and ground elevation.

Note: Groups of Structures (Linear or Non-Linear): Groups of structures that are sufficiently close together can disrupt line of sight radio frequency (RF) coverage in a manner similar to a single, large structure. Therefore, a drawing of the group's layout is required in order to determine its bearing with respect to a NAV CANADA facility. From here, a horizontal angle between the site and the group of structures can be determined in order to assess the risk of coverage shadowing. Note: this requirement will be in addition to the map requirements listed on page 2 of the Land Use Proposal Submission Form.

1:50,000 topographical map 8.5"x11" sectional with the location of the proposed structure clearly marked. The map submission must contain a legend indicating the map datum (NAD27 or 83) and the contour interval: NAV CANADA will accept the equivalent to the topographical maps produced by Natural Resources Canada which can be obtained digitally (by various mapping software companies) or in paper copy at most map supply stores. This will allow the Land Use Office to confirm possible discrepancies between the location shown on the map and the ground and geographic coordinates provided on the form. It will assist us in referencing where the proposed structure is with respect to the nearest airport, as well as any nearby NAV CANADA sites, and to reference the structures location within an instrument procedure design to determine possible penetration of the obstacle limitation surface on published instrument flight procedures.

Site Plan Depicting Entire Airport and Location of proposed structures: In cases where the proposed structure is close to an airport, within 6 km, or on an airport with a localizer/ILS (Instrument Landing System) runway, it is important to determine where the structure is with respect to any ILS at the airport. For this reason, site plans should include the *entire airport* and have the airport zoomed in as close as possible while still showing the proposed site in its entirety.

Proposals adjacent within 2 km from an airport with FSS or Control Tower: Certain equipment used by NAV CANADA (the radar equipment in particular) can potentially be disrupted by structures that possess large horizontal dimensions. Such scenarios are assessed by determining the structure's horizontal angle with respect to the site in question. This angle cannot be determined unless all horizontal dimensions and orientation of the structure are provided as well as the structure's bearing (that is, the map should include a north arrow).

For localizer/ILS runways, site plan with distance bar at 1:2,000 scale measure distances based at 90° to nearest runway centerline/extended runway centerline, and distance to nearest runway threshold. *Note: reference TP1247 to determine requirement when along an extended centerline of a localizer runway up to 6 km.*

Materials and Indicate only the dominant materials of the structure, along with any metal which may exist. Indicate whether or not the roof (if applicable) of the structure is flat or sloped. *Note: Certain materials (such as metal) can cause undesirable reflections if they are sufficiently close to NAV CANADA equipment. Mentioning every material being used in the development is unnecessary, but metal in particular is worthy of mention, regardless of whether or not it is the dominant component of the structure. For example: A windmill made entirely of fibreglass with metal strips outlining the blades.*

Metres Please identify whether heights provided are in feet or metres. All values will be converted into feet in the Land Use assessment and Notice of Construction as this is the required format for aeronautical publications and database purposes.

All metric/imperial conversions will be calculated as follows:

- x Feet to Metres: To obtain metres, multiply the value (in feet) by 0.3048.
- x Metres to Feet: To obtain feet, divide the value (in metres) by 0.3048.

NC File Number : If this submission is an amendment or is associated submission, applicant to indicate NAV CANADA file number assigned to the associated land use submission. For example, Revision to 07-0001 or Reference 07-0001 (building application).

Nearest Closest town to where the development/project will take place.

New Structure Replacement of a structure is considered a new structure; however, details on the old location and original owner are to be provided in the comments section for NAV CANADA database management. If submitting for an existing structure, NAV CANADA will consider the structure as 'new' if it is not currently recorded in our obstacle database.

OBSTRUCTION TO VISION FROM AIRCRAFT WITH NAV CANADA SERVICES / C

Controller/Specialist visibility requirements are based on dimensions defined in TP312, Aerodrome Standards & Recommended Practices and TP308, Criteria for the Development of Instrument Procedures. These Transport Canada publications define the airspace around aerodromes that has to be maintained free from obstacles to protect aircraft during either "an entirely visual approach or during the visual segment of an instrument approach". An aircraft on approach should be somewhere within this defined airspace, thus, controllers and specialists require line-of-sight to the areas overlying (above) these obstacle limitation surfaces. It is important to note that structures which meet these obstacle limitation surfaces could still interfere with controller/specialist line-of-sight.

Line of Sight: All aerodrome manoeuvring surfaces, unobstructed line-of-sight from the Tower Cab to the mandatory viewing area shall be provided. Line-of-sight is defined as a straight line from the 'ideal' controller/specialist eye-level position, established at 122 cm (48 in or 4 ft) above the floor and 91 cm (36 in) back from the perpendicular glass line, to any object in the mandatory viewing area. Line-of-sight shall not be obstructed by structures, parked aircraft, large vehicles and surrounding terrain/landscaping. Line-of-sight over buildings or other structures shall have a suitable margin of clearance to allow for snow build-up.

Generation of Smoke/Vapour: Line-of-sight can be impaired by visible contaminants such as steam, or heat distortion patterns. Consideration shall also be given to local weather phenomena that would restrict visibility due to fog or industrial haze from off airport sources.

Reflectivity: Line-of-sight can be impaired by direct or indirect sun glare and external light sources such as apron lights, parking area lights, street lights, or reflective surfaces (water pooling).

Aircraft Parking: Line-of-sight can be obstructed by structures such as parked aircraft, large vehicles and surrounding terrain/landscaping.

Exterior Lighting: Line-of-sight can be impaired by external light sources such as apron lights, parking area lights, street lights.

O t h A Any high-powered electronic or telecommunications equipment that does not fall under the preceding categories should be brought to our attention if they can potentially interfere with equipment.

R a d a r E m High powered radio frequencies (in the GHz range) will potentially interfere with NAV CANADA radar performance. Any high powered frequencies originating from your proposed structure must be brought to the attention of NAV CANADA.

R e f e r e n c e TR1247 Land Use in the Vicinity of Airports

R u n w a y C e r t i f i c a t i o n To ensure Instrument Procedures meet design criteria requirements, NAV CANADA must be informed of any changes to runway certification (for example, precision to non-precision, non-precision to non-instrument, etc.). This includes temporary certification changes or changes occurring during a runway closure (the instrument procedure serving a closed runway may still be used for circling or other purposes).

S t r u c t u r e H e i g h t This is the overall height of the structure above ground level.

Buildings: Include roof top structures such as, antennas, advertising boards, architectural features or mechanical rooms above the building height.

Communication Towers: Include the tower structure itself plus all appurtenances such as antennas, lightning rods, equipment, and obstruction lights.

Wind turbines: Overall height of the structure including blade radius (blade in the 12 o'clock position); and to include height at the hub and blade length.

Cranes: Maximum heights to which the crane will be raised when on site include height of mobile crane if used to install a tower crane.

T C N u m Applicant to provide the Transport Canada file number if known.

T e m p o r a r y For structures with a planned removal date such as drilling rigs, cranes, meteorological towers, etc., please indicate the estimated removal date.

T o t a l Ground elevation plus the structure height at its highest point.

T y p e o f S t r u c t u r e The type of structure; for example, Hotel, Drilling Rig, Cranes, Hangar, Development, Wind Turbine, Communication Tower, Meteorological Tower, Flare Stack, Telephone/Transmission line, Cable Crossing, etc. *Note, where the structure is a flag pole, dimensions of maximum flag size is to be stipulated.* Should cranes be required during building construction, please refer to the [Cranes](#) section.

Tower or Support Structures: Applicant to indicate whether they are guyed or self-support structures

Guyed Towers: Applicant may be required to provide drawing with specifications on number of guyed lines, orientation of the structure (with north arrow) in both plan and profile view if available. Drawings may be required if the proposed structure is in close proximity to a NAV CANADA facility.

Self-Support Towers: Applicant to provide a profile view detailing the dimensions of the structure if available. *Note: may be required if the proposed structure is located within 2 km of a NAV CANADA facility.*

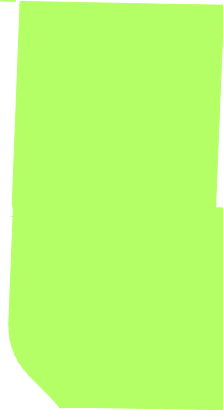
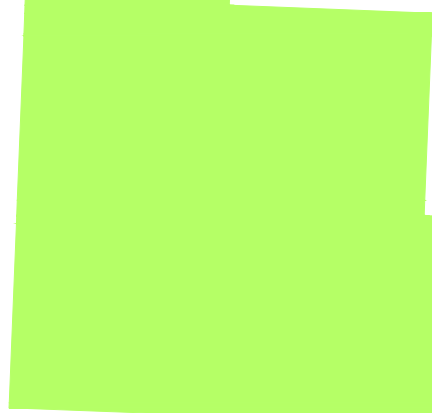
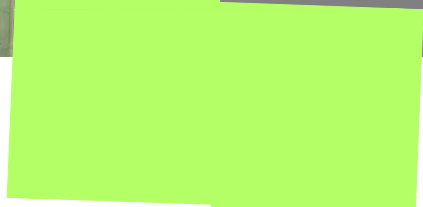
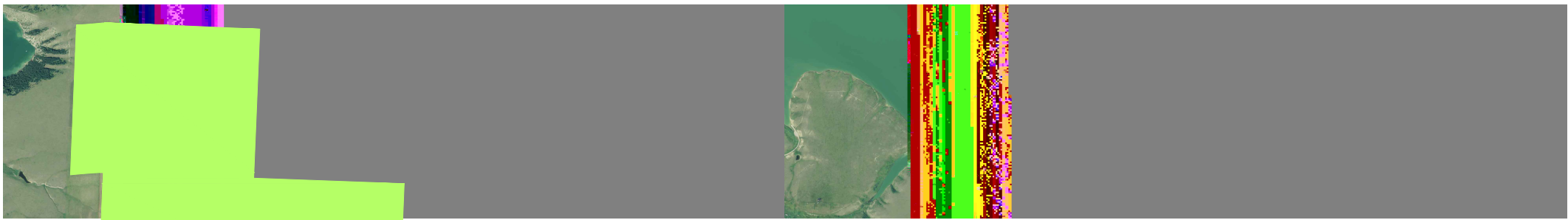
Buildings: Require architectural drawings in both plan view (with a north arrow indicator detailing the orientation of the building) and a profile (elevation) view (detailing maximum height of building including rooftop structures such as mechanical room, air conditioners, elevator shaft, etc. with the ground elevation at grade level). The North arrow indicator is particularly important in order to identify how the structure is oriented for azimuth calculations. *Note: should cranes be required during construction an additional land use submission will be required for assessment.*

V H F R a d i o Frequency and Transmitter Power

VHF consists of all frequencies between 30 MHz and 300 MHz. Such frequencies will potentially cause interference with NAV CANADA's communications equipment. Any frequencies originating from the proposed site which fall within this range must be mentioned here, in order to rule out the possibility of interference.

For situations in which VHF radio will exist at a proposed site, NAV CANADA engineers must perform intermodulation studies in order to ensure that the performance of NAV CANADA communication sites is not compromised. These studies cannot be performed unless the proponent indicates the *specific* VHF frequencies being used onsite. Specify the transmitter power, as this is required to determine whether or not an overlap in coverage will take place.

W i n d F a r m For clusters consisting of more than one turbine, the applicant can use one land use proposal submission form with a spreadsheet listing all turbines including turbine number, geographic coordinates (latitude/longitude) in NAD83, ground elevation and structure height. The 'Multiple Obstacle Template' spreadsheet sample is provided on the 'Proposal Submission Procedures' portion of the web site.



Riverview Wind Farm Obstacle information												Upon compl		
Single Line Diagram ID	Number	LAT dd mm ss.ss	LONG -ddd mm ss.ss	UTM NAD 83 Easting	UTM NAD 83 Northing	Ground Elevation (Meters)	Ground Elevation (Feet)	Structure Height (Meters)	Structure Height (Feet)	Total Height (Meters)	Total Height (Feet)	Lighted Y/N	Painted Y/N	Construction Date
A-1	1	49 33 05.36	-113 55 31.02	288233.000	5492805.000	1161.24	3809.84	150.00	492.00	1311.24	4301.84	Y	N	mm/dd/yyyy
B-1	2	49 32 51.99	-113 55 39.83	288231.000	5492471.000	1165.48	3823.75	150.00	492.00	1315.48	4315.75	Y	N	
B-2	3	49 32 41.32	-113 55 39.19	288231.000	5492141.000	1176.53	3860.01	150.00	492.00	1326.53	4352.01	N	N	
B-3	4	49 32 32.82	-113 55 30.57	288394.000	5491872.000	1186.16	3891.60	150.00	492.00	1336.16	4383.60	N	N	
B-4	5	49 32 23.47	-113 55 25.24	288490.000	5491579.000	1174.24	3852.49	150.00	492.00	1324.24	4344.49	N	N	
B-5	6	49 32 10.28	-113 55 37.14	288235.000	5491181.000	1167.05	3828.90	150.00	492.00	1317.05	4320.90	Y	N	
B-6	9	49 31 34.61	-113 55 43.86	288057.000	5490085.000	1161.13	3809.48	150.00	492.00	1311.13	4301.48	Y	N	
A-6	10	49 34 03.75	-113 54 56.57	289186.000	5494653.000	1169.84	3838.06	150.00	492.00	1319.84	4330.06	Y	N	
A-5	11	49 33 55.33	-113 54 52.88	289250.000	5494390.000	1162.51	3814.01	150.00	492.00	1312.51	4306.01	Y	N	
A-4	12	49 33 45.93	-113 54 44.26	289412.000	5494093.000	1157.10	3796.26	150.00	492.00	1307.10	4288.26	Y	N	
A-3	13	49 33 29.31	-113 54 51.93	289238.000	5493586.000	1147.59	3765.06	150.00	492.00	1297.59	4257.06	N	N	
A-2	14	49 33 18.49	-113 54 54.52	289173.000	5493254.000	1144.89	3756.20	150.00	492.00	1294.89	4248.20	N	N	
E-1	16	49 32 55.53	-113 54 59.62	289043.000	5492549.000	1155.00	3789.37	150.00	492.00	1305.00	4281.37	N	N	
C-1	17	49 32 46.21	-113 54 54.39	289137.000	5492257.000	1170.27	3839.47	150.00	492.00	1320.27	4331.47	N	N	
C-2	18	49 32 36.47	-113 54 49.88	289216.000	5491953.000	1167.18	3829.33	150.00	492.00	1317.18	4321.33	N	N	
C-3	19	49 32 26.85	-113 54 44.98	289303.000	5491652.000	1151.36	3777.43	150.00	492.00	1301.36	4269.43	Y	N	
C-4	20	49 32 11.70	-113 54 20.34	289780.000	5491165.000	1130.69	3709.61	150.00	492.00	1280.69	4201.61	N	N	
C-5	22	49 31 49.09	-113 54 21.53	289729.000	5490468.000	1121.71	3680.15	150.00	492.00	1271.71	4172.15	N	N	
E-2	25	49 32 55.82	-113 54 14.74	289945.000	5492523.000	1150.70	3775.26	150.00	492.00	1300.70	4267.26	N	N	
E-4	27	49 32 37.39	-113 54 04.39	290131.000	5491946.000	1141.54	3745.21	150.00	492.00	1291.54	4237.21	Y	N	
E-5	28	49 32 27.78	-113 54 00.34	290201.000	5491646.000	1133.39	3718.47	150.00	492.00	1283.39	4210.47	N	N	
D-1	29	49 32 14.10	-113 53 50.52	290382.000	5491216.000	1118.93	3671.03	150.00	492.00	1268.93	4163.03	N	N	
D-2	30	49 32 03.72	-113 53 49.71	290386.000	5490895.000	1116.34	3662.53	150.00	492.00	1266.34	4154.53	N	N	
E-2	32	49 33 09.77	-113 53 42.96	290600.000	5492929.000	1132.62	3715.94	150.00	492.00	1282.62	4207.94	N	N	
D-3	35	49 32 42.80	-113 53 22.10	290987.082	5492080.272	1129.50	3705.71	150.00	492.00	1279.50	4197.71	Y	N	
D-4	37	49 32 26.38	-113 53 15.21	291106.000	5491568.000	1119.29	3672.21	150.00	492.00	1269.29	4164.21	Y	N	
D-5	38	49 32 14.11	-113 53 11.07	291174.640	5491185.811	1106.80	3631.23	150.00	492.00	1256.80	4123.23	Y	N	
D-6	39	49 32 04.40	-113 53 05.86	291268.000	5490882.000	1103.48	3620.34	150.00	492.00	1253.48	4112.34	Y	N	
MET 1	NA	49 33 47.49	-113 55 00.43	289089.000	5494154.000	1158.26	3800.07	82.00	269.00	1240.26	4069.07	Y	N	
MET 2	NA	49 32 19.99	-113 55 42.20	288145.000	5491485.000	1197.92	3930.18	82.00	269.00	1279.92	4199.18	Y	N	

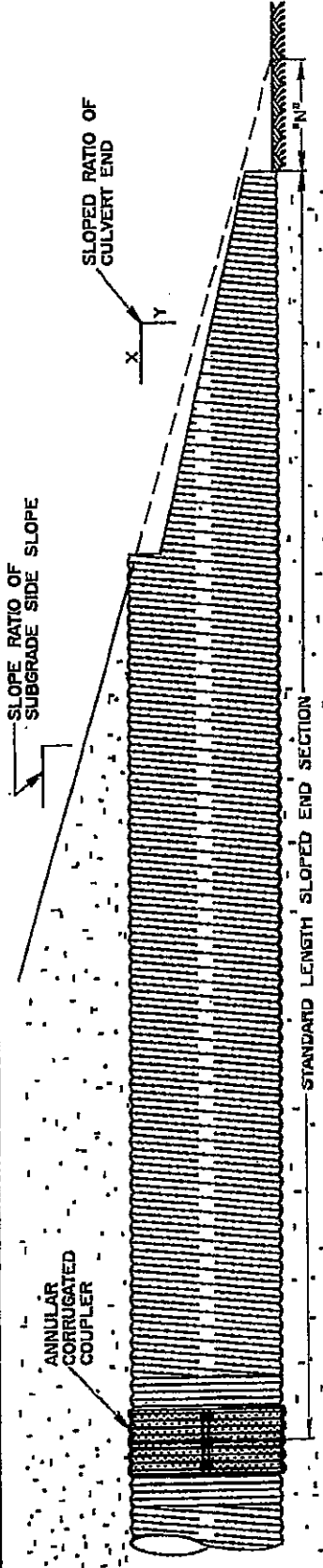
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Schedule "A"
General Conditions
Permit No. 5260-18

D. ADDITIONAL CONDITIONS and/or ADVISEMENTS:

1. This permit is approval for development of a wind turbine (19), removal of existing direct access, and construct new direct highway access only. The "Access Construction Conditions" are shown attached Schedule "B" and the "Access Removal Conditions" are shown attached Schedule "C".
2. Further to the "Access Note" of Condition A, the department will not accept any responsibility for compensation requests/claims dealing with loss of business, inconvenient access or any other disruption that may arise as result of the possible revision to the existing access arrangement. The possible revision to the existing access arrangement may be due to access management/operational, construction or planning activities carried out by the department or its consultants.



SELECTION OF SLOPE RATIO FOR SLOPED END SECTION:


A 4 : 1 SLOPED END SECTION SHALL BE USED IN CONJUNCTION WITH ALL SUBGRADE SIDE SLOPES WITH THE EXCEPTION OF 1200mm DIA. AND LARGER WHERE APPLICABLE.

DETERMINING INSTALLATION LENGTH

THE LENGTH OF PIPE CULVERT TO BE INSTALLED SHALL BE DETERMINED AS FOLLOWS:
 1) ESTABLISH THE THEORETICAL LENGTH BASED ON SLOPE STAKE REQUIREMENTS.
 2) ADJUST THE THEORETICAL LENGTH BY APPLYING THE END CORRECTION "N" AS DETERMINED FROM THE TABLE TO EACH END OF THE CULVERT.
 3) INSTALLATION LENGTH SHALL BE THE LENGTH DETERMINED IN "2" ABOVE, ROUNDED OFF TO THE NEAREST METRE.

C.S.P. DIAMETER - D mm	SLOPE RATIO OF CULVERT END X:Y	"N" - m				INVERT LENGTH OF SLOPE END SLOPE SEC. METRE
		WITH 3:1 SUBGRADE SLOPE RATIO	WITH 4:1 SUBGRADE SLOPE RATIO	WITH 5:1 SUBGRADE SLOPE RATIO	WITH 6:1 SUBGRADE SLOPE RATIO	
400	4 : 1	0.3	0.5	0.8	1.2	6.0
500	4 : 1	0.3	0.6	0.9	1.5	6.0
600	4 : 1	0.3	0.6	1.0	1.6	6.0
700	4 : 1	0.3	0.8	1.2	2.0	6.0
800	4 : 1	0.4	0.9	1.4	2.3	6.0
900	4 : 1	0.5	1.0	1.6	2.5	6.0
1000	4 : 1	0.5	1.2	1.8	2.8	6.0
1200	3 : 1	0.9	1.7	2.4	3.7	6.0
	4 : 1	0.6	1.4	2.2	3.5	6.0
1400	3 : 1	1.0	1.9	2.8	4.3	6.0
	4 : 1	0.6	1.6	2.5	3.9	6.0

No.	REVISIONS	BY	DATE

Approved: 
 Director,
 Design Engineering Branch

Date: FEBRUARY 27, 1992



SLOPED END INSTALLATIONS FOR ROUND SECTION CORRUGATED STEEL PIPE

Prepared By: B.R.C. Checked: S.K. N.I.S. Scale: N.T.S. Dwg No.: CB6-2-4M7

Call Toll-Free: 1-877-337-4242 or 780-427-4400
Toll-Free: 1-877-337-4242
New Edmonton RiverView Wind Power Park Project

June 5, 2015

Mr. Greg
greg@riverwindfarm.com
RiverView
1110-1256 Boulevard Robert Bourassa
Edmonton, AB T6B 2E7

Dear Mr. Greg:

RE: PROPOSED USE OF EXISTING ACCESS

Attached is a permit issued under the Highway Transportation and Protection Regulation using Alberta Regulation 328/2009 and amendments therein, authorizing the above noted development. This permit is subject to the conditions listed on page 1.

In consideration of Permit No. 5250115, the applicant shall immediately and fully harness Alberta Transportation's employees and assets from any and all claims, demands, actions, and costs whatsoever that may arise, directly or indirectly, from anything done or omitted to be done in the execution, maintenance, operation or otherwise of the work authorized.

As a condition of this permit, Alberta Transportation does not release the holder of the responsibility of complying with relevant municipal orders and 20% storm water runoff control system standards of any reported, fresh, brackish or salt water affect the project. Given the non-saline circumstances, use of the existing site access is expressly subject to compliance with the Traffic Safety Act.

Permit No. 5250115 is issued without the approval of the Municipal Order or Minister Order No. 3 if the Municipal Order or Minister Order No. 3 does not apply to this site. This permit becomes void and void.

Upon completion of the project, we ask that you notify West Creek Development Planning Technology, 7 Northgate, 10000, Edmonton, Alberta T6B 1K7, at 780-427-4400, with all issued the conditions of the permit. Your cooperation in this matter will be appreciated.

Yours truly,

John Chen
Development Planning Technology

CC:

- Solar Energy Consulting Inc. - jchen@seconenergyconsulting.ca
- Edmonton District of Economic Development - edmonton@edmonton.ca
- riverwind@riverwindfarm.com
- info@riverwindfarm.com
- West Creek - riverwind@westcreek.ca; info@westcreek.ca
- Risk Centre - info@riskcentre.ca
- West Humber - info@westhumber.ca

Alberta

ROADSIDE DEVELOPMENT APPLICATION FOR DEVELOPMENT NEAR A PROVINCIAL HIGHWAY

(continued)

Alberta Transportation Permit #: 2008-08

Applicant's Name: Robert Bourgeois

Working Address: 1115-1258 Boulevard Robert Bourgeois

City/Town/Village: Montreal Province: Quebec Postal Code: H3B 3W7

Phone #: 1 514 474-4031 Fax: _____ E-mail: bourbois@robertbourgeois.com

Landowner's Name: _____

If different than above, Working Address: Box 1037

City/Town/Village: Pincher Creek Province: Alberta Postal Code: T0K 1W0

Phone #: 403-527-4382 Fax: _____ E-mail: _____

APPLICATION IS HEREBY MADE for: Please provide a description of the proposed development including all proposed above and below ground installations. Attach a detailed report if necessary.
Asphalt Milling with 100 mm edge of AC and a shoulder width of 1.0m. It appears to be included as a part of Highway 154 (New York Road Power West (the Project)). The Project will consist of 20 lanes of asphalt milling and shoulder widening on Highway 154.
See sketch of plan showing location of milling and shoulder widening on Highway 154.

Property information:
 SW 8 of 25 1
 (NE, NW, SE, SW) Section Township Range

Highway No. 788 of 6 lanes unimproved of Pincher Creek
 (one, two, etc) (City, town or village)

Distance of the proposed development to the highway right-of-way boundary: _____ metres
 MO of Pincher Creek No. 6 Agricultural Power Generation
 Name of landowner: _____ Building / Proposed Land Use: _____ Estimated Year of proposed development: _____

It is understood that all rights will be unencumbered, leased, easement or otherwise at the sole discretion of the landowner, and that any and all such rights unless a permit has been issued by Alberta Transportation.

In consideration of any permit issued in regard to this application, the applicant shall indemnify and hold harmless Alberta Transportation, its employees and agents from any and all claims, demands, actions and costs whatsoever that may arise, directly or indirectly from anything done or omitted to be done in the construction, installation, alteration or maintenance of the works proposed. The applicant shall subscribe to a permit stipulation in Alberta Transportation's standard form used for the purpose of indemnification during the processing of this application.

The issuance of a permit by Alberta Transportation does not relieve the holder of the responsibility of complying with relevant municipal bylaws and this permit does not excuse violation of any municipal, provincial or federal laws or regulations.

I, _____ hereby certify that I am the registered owner
 I, _____ hereby certify that I am authorized to act on the owner's behalf

Signature: [Handwritten Signature]

RECEIVED

Document Reference: 251-2015-01-22-0446 (Final) - 1000
Permit No. E031-18

Case Reference: (Hwy 69 Wind Power Plant Project) Turbine #22

June 2, 2016

Victor Engel
VictorEngel@earthlink.net
Thorndale, L.P.
1110 - 255 Buchanan Road, Okotoks, Alberta
Okotoks, AB T2N 2W7

Dear Mr. Engel:

RE: PROPOSED WIND TURBINE TOWER

Attached is a permit issued under the Highway Transportation and Protection Regulation (Long Alberta Transportation 328/2009 and amendments thereto) to permit the proposed construction. This permit is subject to the conditions listed on page 1.

In consideration of Permit No. E031-18, the applicant shall indemnify and hold the Province of Alberta Transportation, its employees and agents, from any and all claims, demands, actions and costs whatsoever that may arise directly or indirectly from or by way of a claim to be made in the construction, maintenance, operation or repair of the above authorized.

In consideration of this permit by Alberta Transportation, the Province will release the holder of the responsibility of complying with relevant municipal bylaws and the permit does not excuse violation of any applicable bylaws or regulations that may affect this project.

Permit No. E031-18 is issued subject to the approval of the Municipal District of Pincher Creek No. 5. If the Municipal District of Pincher Creek No. 5 does not grant approval, the permit becomes null and void.

Upon completion of the project, we ask that you notify Victor Engel, Development Planning Coordinator, at work: (403) 297-3429 or home: (403) 297-3429, at 403-297-3429, and will inspect the conditions of the permit. Our cooperation in this matter will be appreciated.

Thank you!

[Signature]

Leah Chen
Development Planning Coordinator

cc:

- 4035 Creevy Consulting Inc - info@ccvi.ca
- Municipal District of Pincher Creek No. 5 - info@mdpcr.com
- Volke Electric - info@volkeelectric.com
- ACE Laminar - e-called
- ACE Construction - e-called

(To be completed by Alberta Transportation)

ROADSIDE DEVELOPMENT APPLICATION APPROVAL FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY

PERMIT

Development is being carried out by _____	at _____	at _____
in accordance with the plan and specifications attached hereto and subject to the conditions set out below.		
If the development has not been carried out on the _____ 2015 _____		
application, the applicant must comply for a new permit with the conditions.		
SIGNED: _____	PERMIT NO. _____	_____
_____	1. TITLE _____	_____
IF USE: _____	DATE _____	_____

PERMIT CONDITIONS: (Note: This permit is subject to the provisions of Section 1148 of the Highway Act, the Highway Development and Protection Act, Chapter 144.03 2004 amendments thereto, and Highway Development and Protection Regulation (AR 200-03) and amendments thereto.)

- A. ACCESS CONDITIONS: (Note: All highway accesses are to be considered temporary. No development shall be permitted to the point of the location of an access which the Applicant intends to replace the highway access or the highway access is removed and about the road service road.)
 - (a) No direct or indirect access will be permitted. Access shall include the road surface and shoulder.
 - (b) _____
 - (c) _____
- B. SETBACK CONDITIONS: (Note: Minimum setbacks shall apply to buildings, structures, signs and landscaping of a nature that would be a nuisance to the highway.)
 - 1. The proposed _____ (FEZ) is to be set back 191 meters (627 feet) from the highway frontage line as shown on the attached application plan.
 - 2. The applicant shall be responsible for the construction of highway traffic signs and other devices at the access point.
- C. OTHER CONDITIONS:
 - 1. _____
 - 2. _____
 - 3. _____
 - 4. _____
 - 5. _____
 - 6. _____
- D. ADDITIONAL CONDITIONS AND COMMITMENTS:
 - 1. _____
 - 2. _____
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 - 99. _____
 - 100. _____

The applicant shall be responsible for the construction of highway traffic signs and other devices at the access point. The applicant shall be responsible for the construction of highway traffic signs and other devices at the access point. The applicant shall be responsible for the construction of highway traffic signs and other devices at the access point.

ROADSIDE DEVELOPMENT APPLICATION FOR DEVELOPMENT NEAR A PROVINCIAL HIGHWAY

(for road)

Alberta Transportation Permit # _____

Applicant's Name: Pincher Creek Area Improvement Society

Working Address: 1115 - 255 Boulevard Robert Bourassa

City/Town/Village: Montreal Province: Quebec Country: _____ Postal Code: H3B 2S7
 Phone #: 1-468-469-5400 Fax #: _____ e-mail: info@pincherinfo.com

Landowner's Name (if different from above): The Town of Pincher Creek

Working Address: Box 158

City/Town/Village: Pincher Creek Province: Alberta Postal Code: T0K 1W0
 Phone #: 403-627-3140 Fax #: _____ e-mail: _____

APPLICATION IS HEREBY MADE TO: (Please provide a description of the proposed development including all proposed signs and below ground installation. Attach a detailed report if necessary.)

A valid public utility or other right-of-way easement or other easement to be installed as a part of the development must be shown on the proposed site plan. The project will consist of 20 concrete signposts.

Also attach a plan showing in detail the location of all existing and proposed development and signs.

Property Information

EW: 750 Section: 5 Township: 103 Range: 4 Nearest Highway: _____

_____ (Name of Applicant) _____ (Name of Landowner)

Highway No.: 750 Section: 5 Township: 103 Range: 4 Nearest Highway: Pincher Creek

Distance of the proposed development to the highest adjacent road boundary: 100 metres

ML of Pincher Creek, No. 2 Agricultural / Forest Governance
 (Name of Municipality) (Existing / Proposed Land Use) (Business Use of Proposed Development)

It is understood that all work will be completed, started, maintained or removed at the sole expense of the applicant, and that no work will be begun before a permit has been issued by Alberta Transportation.

In consideration of any permit issued in regard to this application, the applicant hereby and hereinafter irrevocably and exclusively assigns to the Province of Alberta Transportation, its employees and agents, for any and all future decisions, actions and costs whatsoever that they may, directly or indirectly, incur anything that is needed to be done in any connection, maintenance, alteration or removal of the work authorized. The Applicant also warrants to a survey required by Alberta Transportation to order signs, and to the proper installation and the providing of the signposts.

The issuance of a permit by Alberta Transportation does not release the holder of the responsibility or liability, with respect to direct injury and the goods and services, from the consequences of any restriction, delay or other work that affects the project.

I, _____ hereby certify that I am the proposed owner
 _____ hereby certify that I am authorized in writing by the owner to do so.
 _____ Signature



Not that the information given on this form is full and correct, and that the applicant is aware of the provisions of the Act relating to this application as provided in the Act.

JAN 3 2013

Alberta Transportation

Our Reference: 2511-NW 5-7-29-W4M (785)/P-385

Permit No. 5258-18

Your Reference: Riverview Wind Power Plant Project Turbine #20

June 6, 2018

Victor Engel

Riverview, L.P.
1110-1255 Boulevard Robert Bourassa
Montreal, QC H3B 3W7

Dear Mr. Engel:

RE: PROPOSED USE OF EXISTING ACCESS AND WIND TURBINE TOWER

Attached is a permit issued under the Highways Development and Protection Regulation, being Alberta Regulation 326/2009 and amendments thereto, authorizing the above noted development. This permit is subject to the conditions listed on page 2.

In consideration of Permit No. 5258-18, the applicant shall indemnify and hold harmless Alberta Transportation, its employees and agents, from any and all claims, demands, actions, and costs whatsoever that may arise, directly or indirectly, from anything done or omitted to be done in the construction, maintenance, alteration, or operation of the works authorized.

Issuance of this permit by Alberta Transportation does not relieve the holder of the responsibility of complying with relevant municipal bylaws and this permit once issued does not excuse violation of any regulation, bylaw, or act that may affect this project.

Permit No. 5258-18 is issued subject to the approval of the Municipal District of Pincher Creek No. 9. If the Municipal District of Pincher Creek No. 9 does not grant approval, this permit becomes null and void.

Upon completion of the project, we ask that you notify Leah Olsen, Development/Planning Technologist, or John Thomas, Development/Planning Technologist, at Lethbridge, 403/381-5426, who will inspect the conditions of the permit. Your cooperation in this matter will be appreciated.

Yours truly,

Leah Olsen
Development/Planning Technologist

LO/jb

cc: Solas Energy ()
Municipal Distr

Volker Stevin -
Rick Lemire - e-mailed
Jack Houtekamer - e-mailed

(To be completed by Alberta Transportation)

ROADSIDE DEVELOPMENT APPLICATION APPROVAL FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY PERMIT

Permitted activity/purpose is:	100% <u>Development</u>	Location of the development is:
with reference to the plan and location details attached hereto and subject to the conditions herein set forth.		
This development approval was issued on the Day: <u>28</u> of the Month: <u>June</u> 20 <u>16</u> and shall expire and the application shall terminate on the date herein if any other is required.		
SIGNATURE: _____	PERMIT NO. _____	
TITLE: <u>Development/Planning Specialist</u>	FILE NO. <u>100-2-2016-0001-004</u>	
	DATE: _____	

PERMIT CONDITIONS: Items that apply to this permit are listed in the schedule of Section 1 to include of the Highway Development and Protection Act, Chapter 148.5 (2014), Schedule 1 thereof, and Highway Development and Protection Regulation, Chapter 148.5 (2014), and associated orders.

- A. **ACCESS CONDITIONS:** Note: All highway accesses are to be considered temporary. No development shall be permitted to the applicant or the location of accesses when the Department removes or relocates the roadway access or if highway access is removed and access provided to a local road.
 - 1. For the above highway access and its location, access shall comply with **ASPM** Access and Signs.
 - 2. List of the existing highway access and its location on a site plan shall be provided to the Department.
 - 3. If a new access is proposed, the Department shall be provided with a plan showing the proposed location of the access (Figure 2.4.2a).
 - 4. No additional highway access will be permitted.
 - 5. The applicant shall conduct and maintain any highway access in Alberta Transportation jurisdiction.
 - 6. Agencies or contractors having buried utilities shall be notified and in access construction or relocation.
- B. **SETBACK CONDITIONS:** (Note: set-back setbacks shall allow for unobstructed sign placement and construction of a service road parallel and adjacent to the roadway)
 - 1. The minimum setback (**SSO**) is to be a minimum **375** meters (**666** feet) from the highway property line as shown on the attached approved site plan.
 - 2. The applicant shall not be responsible for the noise levels or highway traffic upon any development or roadway access.
- C. **OTHER CONDITIONS:**
 - 1. **All work is bound to the approval of the approved Highway Development Plan.**
 - 2. The permit requires only the development contained herein, and a further application is required for any change or addition.
 - 3. The applicant is under no obligation to renew a permit if the development is not completed before expiry of the permit.
 - 4. Drain Drain, Development/Planning Specialist or other systems, Development/Planning Specialist in Lethbridge, telephone 403-947-6470, shall be notified before construction commences.
 - 5. The applicant shall not place any signs contrary to Alberta Regulation 148.5 (2014), Chapter 148.5 (2014) or any other sign that is prohibited by any provincial sign.
- D. **ADDITIONAL CONDITIONS AND ADVERTISEMENTS:**
 - 1. **Signage or Content:** The Department will be advised of the availability of a sign with any development. The sign shall be located off road of easement, easement, access or any other easement that may apply to the proposed location of the existing access or easement. The approval is subject to the existing access or easement being the first to be removed or relocated. The applicant shall be notified of any such changes to the existing access or easement. The applicant shall be notified of any such changes to the existing access or easement. The applicant shall be notified of any such changes to the existing access or easement.

Alberta Transportation is not responsible for the accuracy of the information provided in this document. The user of this document shall be responsible for the accuracy of the information provided in this document. The user of this document shall be responsible for the accuracy of the information provided in this document. The user of this document shall be responsible for the accuracy of the information provided in this document.

Permit Reference: 5207-19-1 - 5-25-19AM 2327-305

Permit No. 5207-19

Area: Highway - Riverside Millal Drivey Road Project, Section 938

June 7, 2019

Vitor Inge
ivan@vitor.com
210-1250 Boulevard Robert Bourassa
Montreal, QC H3R 3M7

Dear Mr. Inge:

RE: PROPOSED WIND TURBINE TOWER

Alberta is a permit issued under the Highway Development and Construction Regulations, being Alberta Regulation 328/2008 and amendments thereto authorizing the above noted development. This permit is subject to the conditions listed on page 2.

In the attention of Permit No. 5207-19, the conditions shall include and shall require Alberta Transportation, its employees and agents, from any and all actions, omissions, neglect and costs whatsoever that may directly or indirectly, from any of its agents or employees to be done in the development, construction, operation or operation of the works authorized.

Issuance of this permit by Alberta Transportation does not relieve the holder of its responsibility of complying with relevant municipal bylaws and this permit and issued does not excuse violation of any regulation, bylaw or Act that may affect the project.

Permit No. 5207-19 is issued subject to the approval of the municipal Council of Procter Creek No. 2 (the Municipal Council of Procter Creek No. 2) and will become null and void.

Upon completion of the project we will liaise with Kelly Leah (New) Director of Planning, Technological & John (David) Development/Planning Technologist at 403-993-4030 who will assist you with the conditions of the permit. Your cooperation in this matter will be appreciated.

Very truly,

John Chen
Director of Planning, Technological

cc:

- John Chen - john.chen@atn.alberta.ca
- Procter Creek No. 2 - john.davis@proctercreek.ca
- Procter Creek No. 2 - john.human@proctercreek.ca
- Procter Creek No. 2 - info@proctercreek.ca
- Procter Creek - john.guy@proctercreek.ca
- Procter Creek - john.guy@proctercreek.ca
- Procter Creek - john.guy@proctercreek.ca



(To be completed by Alberta Transportation)

ROADSIDE DEVELOPMENT APPLICATION APPROVAL FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY PERMIT

Permittee's name printed in _____	at _____	is authorized by the Government in
conjunction with the plan(s) and any drawings attached _____ and subject to the conditions attached herein.		
The Government has not been notified in the _____ day of _____ 2019. The permit		
agrees and the applicant must comply with the conditions of this permit as provided.		
SCENE: _____	PERMIT NO: _____	
	FILE NO: _____	
DATE: _____	DATE: _____	

PERMIT CONDITIONS: This permit is subject to the provisions of Section 11 - 12 sections of the Highway Development and Protection Act, Chapter 249 SRS, sections 4, 5, 6, 7, and 8, and the Highway Development and Protection Regulation (Alberta Regulation 322/2008) and other applicable laws.

- 4. **ACCESS CONDITIONS:** (Note: All highway crossings are to be considered temporary. No construction shall be proposed at the location of the location of crossings when the Department receives or receives the temporary access or highway access is removed and access restored as required.)
 - a) No direct highway access will be permitted. Access shall be to the local road only.
 - b) _____
 - c) _____
- 5. **NO ADDITIONAL HIGHWAY ACCESS WILL BE PERMITTED.**
- 6. **The applicant shall construct and maintain any highway access to allow the permittee's collection.**
- 7. **Access to the permit area shall be obtained only to access construction or operations.**
- 8. **SETBACK CONDITIONS:** (Note: Minimum setbacks shall allow for undisturbed highway safety and construction as a minimum (not less) and subject to the permit.)
 - 1. **The compressed (width) shall be set back 2 (2) meters (6.6) feet from the adjacent highway. This is subject to the elected engineer's plan.**
 - 2. **The applicant shall be responsible for the road, bridge or highway safety upon any development or activities thereon.**
- 9. **OTHER CONDITIONS:**
 - This permit is based on the information provided by the applicant and is subject to the following conditions:**
 - 1. **This permit approves only the development contained herein, and a further application is required for any changes or additions.**
 - 2. **The permittee is under no obligation to request a permit if the development is not contained within the permit area.**
 - 3. **Local Development Planning (LDP) conditions, if any, shall be satisfied before any construction commences.**
 - 4. **The applicant shall not cause any noise violation in Alberta Regulation 322/2008. Any noise "SIGN" (CA) form shall be submitted at any time as required.**
- 10. **ADDITIONAL CONDITIONS AND/OR ADVISORIES:**
 - 1. **The permittee shall be responsible for the safety of the permittee and any other persons who are present on the permit area during the construction, operation, or any other activity that may arise as a result of the permittee's activities on the permit area. The permittee shall be responsible for the safety of the permittee and any other persons who are present on the permit area during the construction, operation, or any other activity that may arise as a result of the permittee's activities on the permit area.**

ROADSIDE DEVELOPMENT APPLICATION FOR DEVELOPMENT NEAR A PROVINCIAL HIGHWAY

(SRS 10004)

Alberta Transportation Form # 33-100

Applicant's Name: Mr. & Mrs. J. & M. Smith
 Mailing Address: 1100 - 1255 Boulevard Robert Bourassa
 City/Town/Village: Montreal Province: Quebec Postal Code: H3B 5Y7
 Phone #: 514-345-3001 Fax #: _____ e-mail: jean.dupont@montreal.com

Landowner's Name: _____
 (if different from above)
 Mailing Address: Box 1227
 City/Town/Village: Peace River Province: Alberta Postal Code: T0K 1S0
 Phone #: 403-807-6000 Fax #: _____ e-mail: _____

APPLICATION IS HEREBY MADE TO: request a variation of the proposed construction (including all phases) above and below ground installation. Attach a detailed report if necessary.
 I hereby declare, under penalty of perjury, that the information provided is true and correct to the best of my knowledge and belief. The proposed project is: as shown on the attached site plan.

I am aware of and agree to accept the liability of all existing and proposed development and access.

Property Information:
 NW/4: _____ E: _____ SE: _____ SW: _____
 (NE, SW, SE, NW) In Section: _____ Township: _____ Range: _____
 2 _____ 0012808 _____
 Plan Number: _____ (City, Town or Village)

Highway No. 1 _____ Kilometre 14.000 _____ Province: Quebec
 (North, South, etc.) (City, Town or Village)

Distance of the proposed development to the highway right-of-way boundary: 212 metres
 MD of Planter Creek No. 6 Agricultural - Power Station
 Nature of the activity: Existing / Proposed Land Use Nature of the proposed development: _____

It is understood that all rights will be surrendered, altered, relinquished or reserved in the sole response of the respondent, and that any and all such rights belong to the person who has been named in Alberta Transportation.
 In consideration of any sums named in respect to this application, the applicant and respondent and both hereby irrevocably, irrevocably, irrevocably and irrevocably agree to and warrant, defend, hold and hold harmless the respondent, its employees and agents from any and all claims, demands, actions and costs whatsoever that may later, directly or indirectly, arise or result in the future in the construction, maintenance, alteration or operation of the works indicated. The Applicant also consents to a notice being served by Alberta Transportation to either party for the purpose of providing a copy of the proceedings of the application.
 The acceptance of a permit by Alberta Transportation does not release the holder of any responsibility of complying with relevant provincial legislation and this permit shall have effect only upon condition of the respondent, before to which this permit is issued.

Signature of Applicant: _____
 Signature of Respondent: [Signature]
 I hereby certify that I am authorized to sign on behalf of the respondent.



JUN 21 2006
 Southern Region
 TRANSPORTATION

Our Reference: 2511-NE 18-7-29-W4M (785)/P-385

Permit No. 5256-18

Your Reference: Riverview Wind Power Plant Project Turbine #12

June 6, 2018

Victor Engel

Riverview, L.P.
1110-1255 Boulevard Robert Bourassa
Montreal, QC H3B 3W7

Dear Mr. Engel:

RE: PROPOSED WIND TURBINE TOWER

Attached is a permit issued under the Highways Development and Protection Regulation, being Alberta Regulation 326/2009 and amendments thereto, authorizing the above noted development. This permit is subject to the conditions listed on page 2.

In consideration of Permit No. 5256-18, the applicant shall indemnify and hold harmless Alberta Transportation, its employees and agents, from any and all claims, demands, actions, and costs whatsoever that may arise, directly or indirectly, from anything done or omitted to be done in the construction, maintenance, alteration, or operation of the works authorized.

Issuance of this permit by Alberta Transportation does not relieve the holder of the responsibility of complying with relevant municipal bylaws and this permit once issued does not excuse violation of any regulation, bylaw, or act that may affect this project.

Permit No. 5256-18 is issued subject to the approval of the Municipal District of Pincher Creek No. 9. If the Municipal District of Pincher Creek No. 9 does not grant approval, this permit becomes null and void.

Upon completion of the project, we ask that you notify Leah Olsen, Development/Planning Technologist, or John Thomas, Development/Planning Technologist, at Lethbridge, 403/381-5426, who will inspect the conditions of the permit. Your cooperation in this matter will be appreciated.

Yours truly,

Leah Olsen
Development/Planning Technologist

LO/jb

cc: Solas Eric
Municipal

Volker Ste
Rick Lemire – e-mailed
Jack Houtekamer – e-mailed

Alberta

.../2

**ROADSIDE DEVELOPMENT APPLICATION APPROVAL
FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY**

PERMIT

Permitted to develop property	Address	Reference to the development
occurs only if the conditions and specifications attached hereto are adhered to the conditions stated below.		
Is development has not been carried out by the	File No.	Year
owner and is not from such supply for a new service that will be provided		2019
	PERMIT NO.	3256-18
	FILE NO.	ME 16-138-046 (75517-208)
File: development/turning technology	DATE	2019-03-22

PERMIT CONDITIONS: Under the terms of approval of the provisions of Section 77 (1) of the Highway Development and Protection Act, Chapter 1-4-4-204, sub-section 1(a)(i) and Highway Development and Protection Regulation (Alberta Regulation 326/2005) and associated by-laws:

- A. **ACCESS CONDITIONS:** (Note: All highway accesses are to be considered, wherever, the consideration shall be possible in the vicinity of the access or structures along the Centreline services or relocate the temporary access or if highway access is provided and access provided on a new road)
 - 1. No direct highway access will be permitted. Access shall occur via the local road (see section 77(1)(a)(i) of the Highway Development and Protection Act, Chapter 1-4-4-204, sub-section 1(a)(i) and Highway Development and Protection Regulation (Alberta Regulation 326/2005) and associated by-laws).
 - 2. No additional highway access will be permitted.
 - 3. The applicant shall maintain the highway centre line in Alberta Transportation's possession.
 - 4. Approval of easements shall be limited unless and be approved by the local development authority.
- B. **SETBACK CONDITIONS:** (Note: All local setbacks, which allow for a degree of property widening and construction of)
 - 1. The proposed site building (BFR) is to be set back 395 meters (1,312 feet) from the highway property line as shown on the attached approved site plan.
 - 2. The applicant accepts be responsible for the noise impact of highway traffic and any neighbouring or adjacent roads.
- C. **OTHER CONDITIONS:**
 - 1. **This permit is issued** in accordance with the provisions of the Highway Development and Protection Act.
 - 2. This permit applies only to the development contained herein, and a further application is required for any changes to the plan.
 - 3. The applicant is liable to comply to receive a permit in the development and reviewed before work of the permit.
 - 4. The applicant is required to comply with the provisions of the Highway Development and Protection Act, Chapter 1-4-4-204, sub-section 1(a)(i) and Highway Development and Protection Regulation (Alberta Regulation 326/2005) and associated by-laws.
 - 5. The applicant shall be liable to comply with the provisions of the Highway Development and Protection Act, Chapter 1-4-4-204, sub-section 1(a)(i) and Highway Development and Protection Regulation (Alberta Regulation 326/2005) and associated by-laws.
- D. **ADDITIONAL CONDITIONS AND ADVERTISEMENTS:**
 - 1. The applicant shall be liable to comply with the provisions of the Highway Development and Protection Act, Chapter 1-4-4-204, sub-section 1(a)(i) and Highway Development and Protection Regulation (Alberta Regulation 326/2005) and associated by-laws.

ROADSIDE DEVELOPMENT APPLICATION FOR DEVELOPMENT NEAR A PROVINCIAL HIGHWAY

Form 3000

Alberta Transportation Form 3000

Applicant's Name: Robert Bourgeois
Billing Address: 1111 - 255 Boulevard Robert Bourgeois
City/Town/Village: Montreal Province: Quebec Postal Code: H3B 2W7
Phone # (418) 400-1001 Fax # e-mail:

Landowner's Name (if different from above):
Billing Address: Box 227
City/Town/Village: Pincher Creek Province: Alberta Postal Code: T0K 1W5
Phone # Fax # e-mail:

APPLICATION IS HEREBY MADE TO: (Please provide a description of the proposed development including all proposed above and below ground infrastructure. Attach a detailed floor plan if necessary.)
I/we hereby advise you that the proposed development is proposed to be located on land which is/has been classified being Class 200 (see Appendix 1, The Classes of Land Use of 2000) 2000 (see Appendix 1)
and is/are a subject of the Pincher Creek Municipality and Alberta Transportation.
This notice is being provided to you for the purpose of providing you with proposed development process.

Property Information
NE 18 25 8
SW, NW, SE, SW
Section Township Range
Other Name(s) Land Use Category or Use

Highway No. 785 # 8 Distance north of Highway Pincher Creek (km) 300 (City, Town or Village)

Distance of the proposed development to the highway right-of-way boundary: 300 metres
MD of Pincher Creek, No. 8 Agricultural / Forest Development
Name of Municipality: Energy / Dry power Lines use Estimated use of proposed development:

It is acknowledged that all works will be constructed, above, maintained or removed at the sole expense of the landowner, and that any work shall not begin until a permit has been issued by Alberta Transportation.
In consideration of any permit issued in respect to this application, the Applicant and landowner will hold harmless Alberta Transportation, its employees and agents from any and all claims, suits, actions and other proceedings that may arise, directly or indirectly from anything done or omitted to be done in the construction, maintenance, alteration or operation of the works authorized. The Applicant also warrants in a permit application to Alberta Transportation to enter their land for the purpose of installation during the processing of the application.
The issuance of a permit by Alberta Transportation does not release the holder of the responsibility of complying with relevant provincial, federal and the permit laws, rules and codes violation of any regulations, rules or standards, may affect the project.

(SEE BACK SHEET)
I hereby certify that I am authorized to sign on the owner's behalf.
RECEIVED
and that the information given on this form is true and correct to the best of my knowledge, a true statement of facts relating to the application for roadside development.
Date: 2015-01-01
2015
Southern Region TRANSPORTATION

(To be completed by Alberta Transportation)

ROADSIDE DEVELOPMENT APPLICATION APPROVAL FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY

PERMIT

Permit is hereby granted to	<u>Flowline Planning Technology</u>	to carry out the development of	<u>2015 2nd period</u>
approval with the design and specifications attached hereto and subject to the conditions shown when			
the development is carried out by the	<u>Flowline Planning Technology</u>		
applicant or applicant must comply in a case where they wish to request			
<u>Flowline Planning Technology</u>	PERMIT NO.	<u>177</u>	
	FILE NO.	<u>403387-0422</u>	
	DATE	<u>2015-05-15</u>	

PERMIT CONDITIONS: This permit is subject to the permit or Section 17 - 18 sections of the Highway Development and Maintenance Act, Chapter T-42 SOR, (Attachments 101-10, and Highway Development and Protection Requirements (SARs) (Chapter 220000), and otherwise as noted.

- ACCESS CONDITIONS:** (Note: All highway accesses are to be completed temporary. No permanent shall be granted to the applicant or his assigns or successors when the Department intends to revoke the temporary access or highway access is removed and access provided no service road.)
 - All access Highway Access (HSA) to Highway 1, Access shall be via the local municipal road.
 - Use of the existing highway access may consist of a temporary path.
 - When not used as a vehicle or pedestrian access to the road, the area shall be maintained in a natural condition.
 - Additional Highway Access will be permitted.
 - The applicant shall construct and maintain any highway access in Alberta Transportation's jurisdiction.
 - Account of construction being built utilities shall be checked prior to access construction or installation.
- SETBACK CONDITIONS:** (Local Highway Access - all Highway Access Highway Widening and Construction of a service road (width and adjacent to the Highway).
 - The proposed sign to be set back 10 meters (10' less 300' the highway width) from the edge of the proposed service road.
 - The applicant warrants no responsibility to the main travel of Highway traffic upon any service road or access ways.
- OTHER CONDITIONS:**
 - This permit is limited subject to the approval of the applicant's design and drawings (101-10).**
 - The permit applicant shall be responsible for maintaining the permit, and a further application is required for any extension or renewal.
 - The applicant is advised that the permit is valid only if the development is completed within a period of the permit.
 - After Open Development/Planning (commenced on 403387-0422) Roadside Development/Planning Technology in Calgary, Alberta 403387-0422, shall be notified before construction commences.
 - The applicant shall comply with the provisions of Alberta Regulation 220000 - Highway Development and Protection Requirements (SARs) and shall be advised of any additional sign.
- ADDITIONAL CONDITIONS and/or ADVISORIES:**

¹ Refer to Chapter 101-10, the applicant will be responsible for liability to ensure that the applicant complies with all relevant requirements, including access to any other highway that may be or as well as the applicant's access to the existing access arrangements. The permit holder is also advised access arrangements may be due to access requirements and/or construction or parking activities subject to the approval by the relevant authority.

² Note: Applicant/owner is responsible for the permit and shall be responsible for the maintenance of the permit.

Appendix J Alberta Tourism, Parks and Recreation

Approval not required.

Appendix K Noise Impact Assessment

Appendix M Visual Impact Assessment



**Castle Rock Ridge Phase 2 /
Riverview Wind Farm**

Visual Impact Assessment

May 11, 2018

Prepared for:

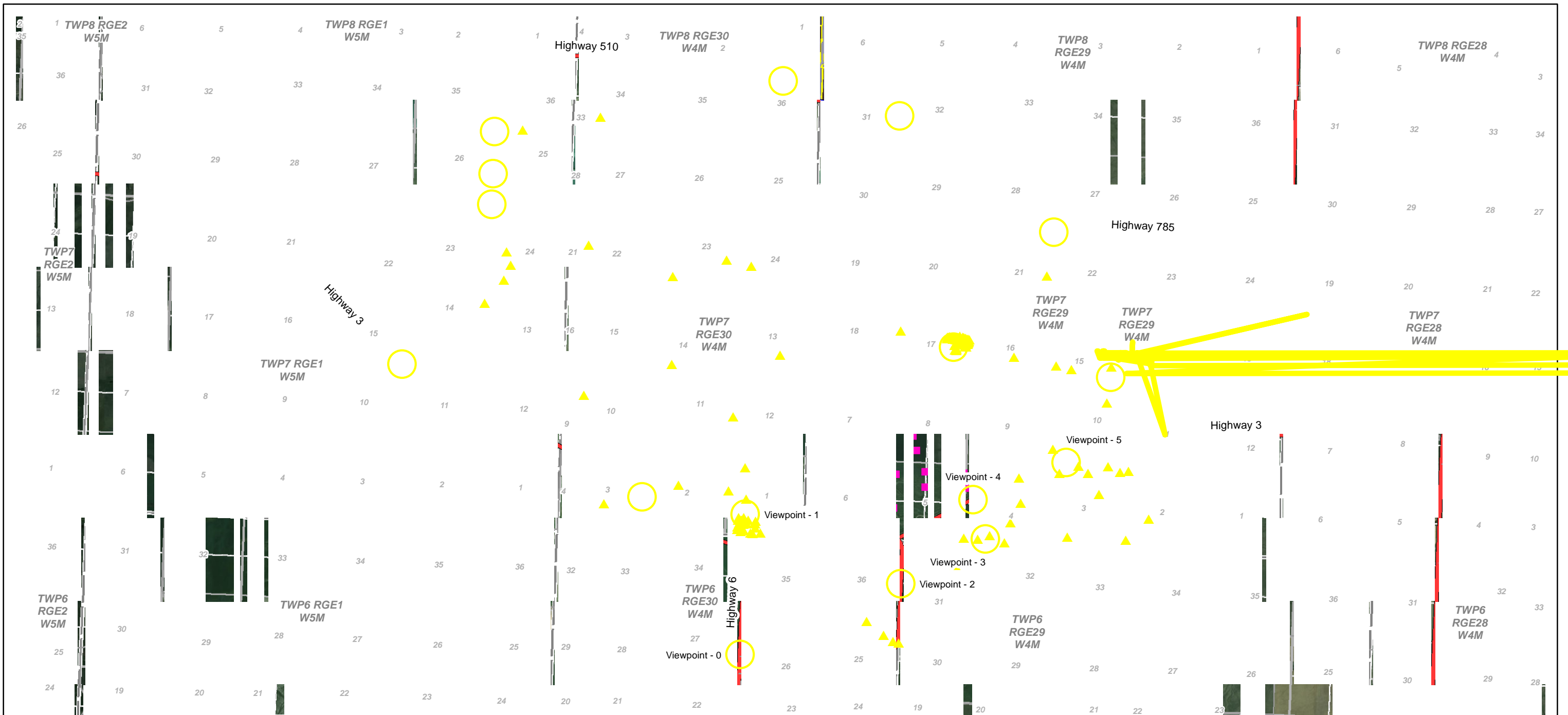
Enel Green Power

Prepared by:

Stantec Consulting Ltd.

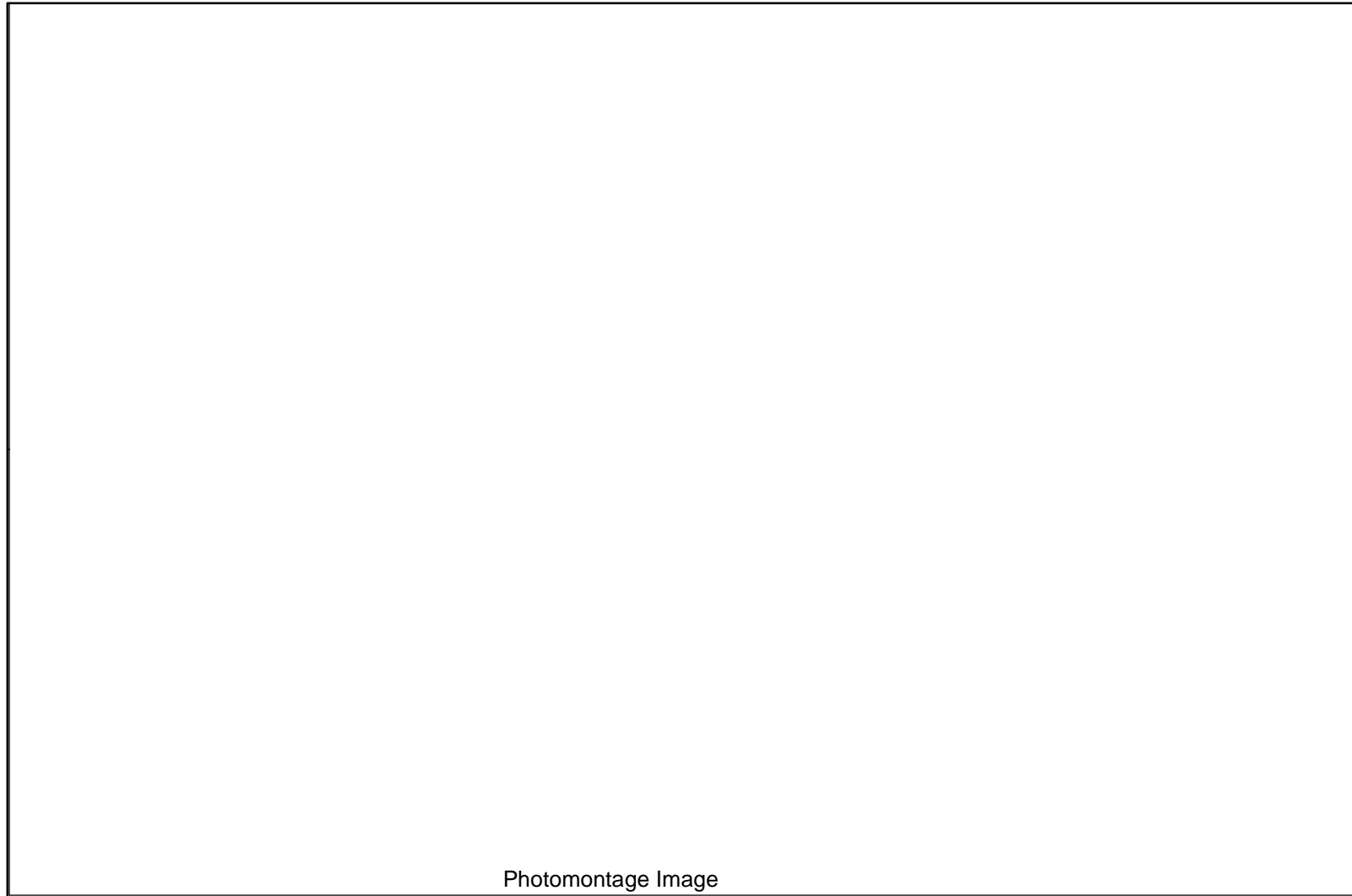
List of Figures

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- x Figure 2 – View from Viewpoint 0 – NE Sec 27 Twp 06 Rge 30 W4M – Looking Northeast
- x Figure 3 – View from Viewpoint 1 – SW Sec 01 Twp 07 Rge 30 W4M – Looking Northwest
- x Figure 4 – View from Viewpoint 1 – SW Sec 01 Twp 07 Rge 30 W4M – Looking Northeast
- x Figure 5 – View from Viewpoint 1 – SW Sec 01 Twp 07 Rge 30 W4M – Looking East
- x Figure 6 – View from Viewpoint 2 – NW Sec 31 Twp 06 Rge 29 W4M – Looking North
- x Figure 7 – View from Viewpoint 3 – SW Sec 04 Twp 07 Rge 29 W4M – Looking North
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- x Figure 24 – View from Viewpoint 15 – SE Sec 15 Twp 07 Rge 01 W5M – Looking Northeast
- x Figure 25 – View from Viewpoint 15 – SE Sec 15 Twp 07 Rge 01 W5M – Looking East
- x Figure 26 – View from Viewpoint 16 – NE Sec 03 Twp 07 Rge 30 W4M – Looking North
- x Figure 27 – View from Viewpoint 16 – NE Sec 03 Twp 07 Rge 30 W4M – Looking Northeast



Project Area

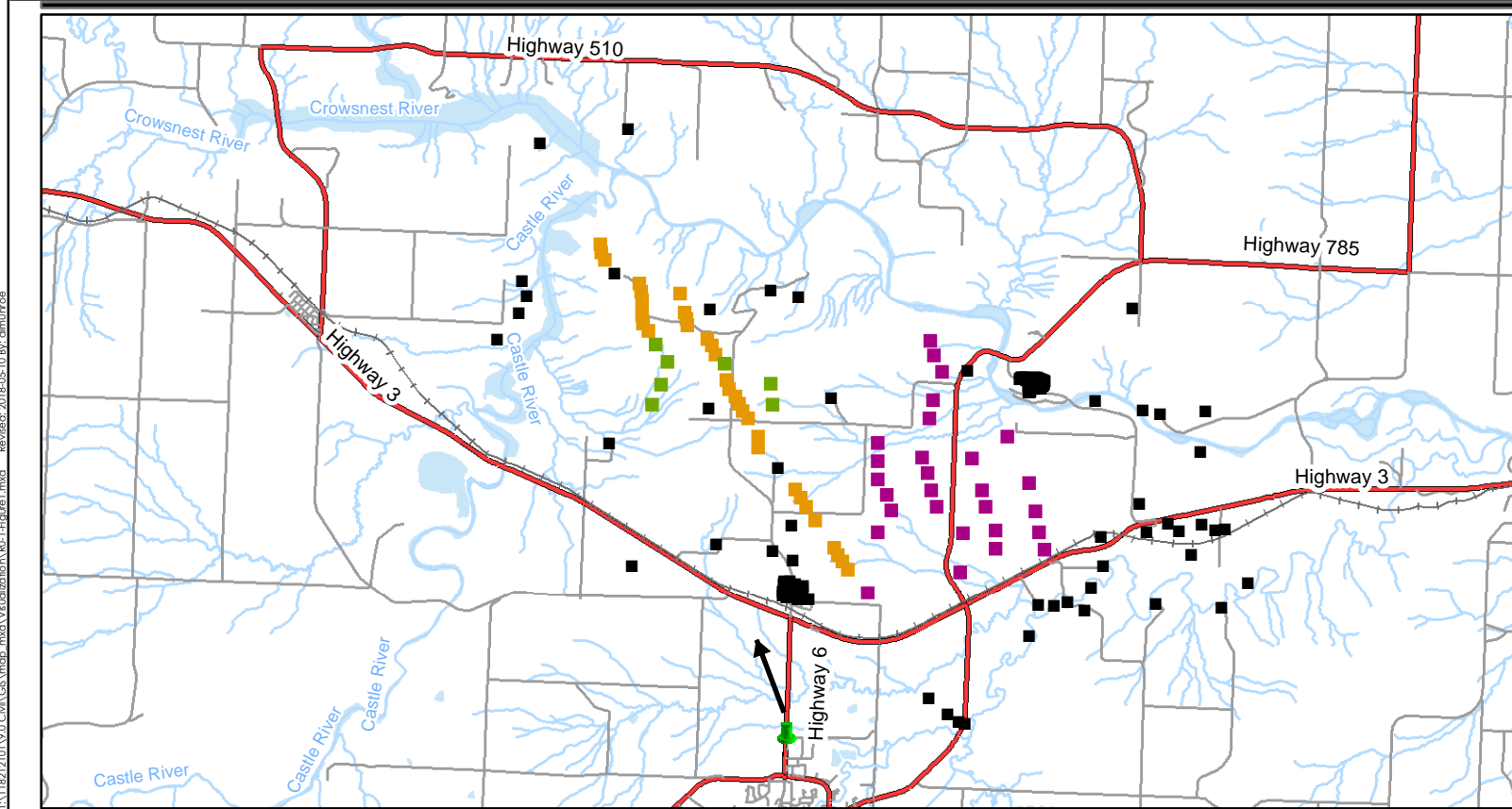
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,



Photomontage Image



Original Photo



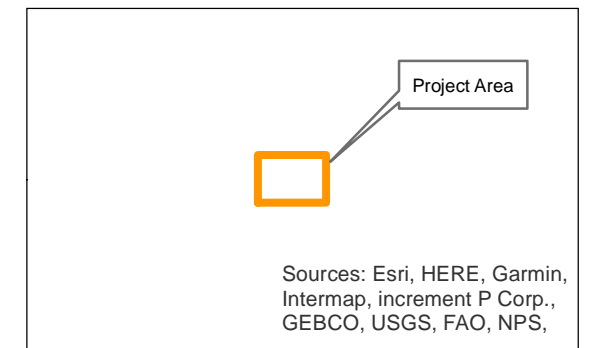
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
 118212101 REVA
 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

Client/Project

ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No.

1

Title

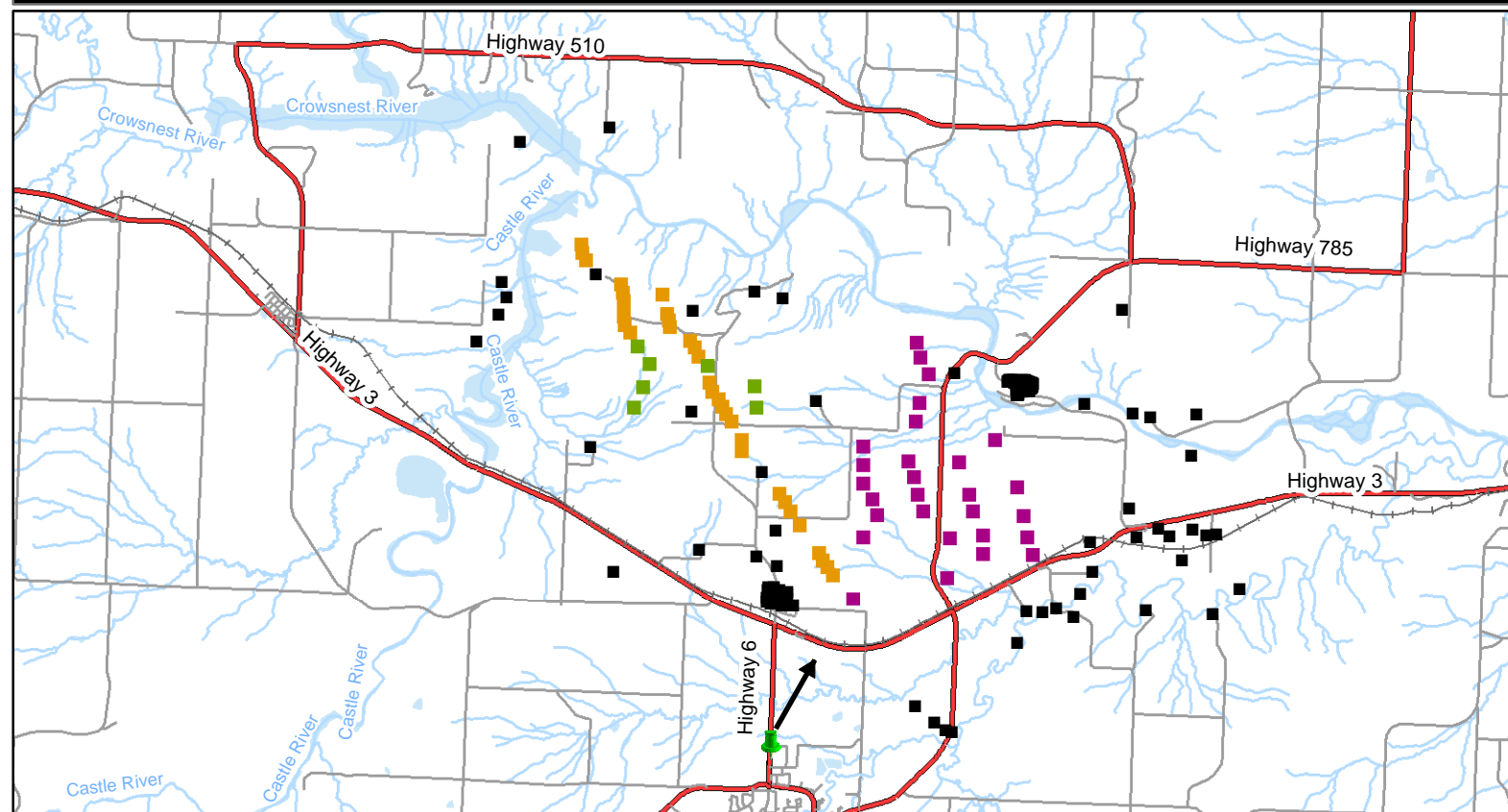
**View From Viewpoint 0
 NE Sec 27 Twp 06 Rge 30 W4M
 Looking Northwest**



Photomontage Image



Original Photo



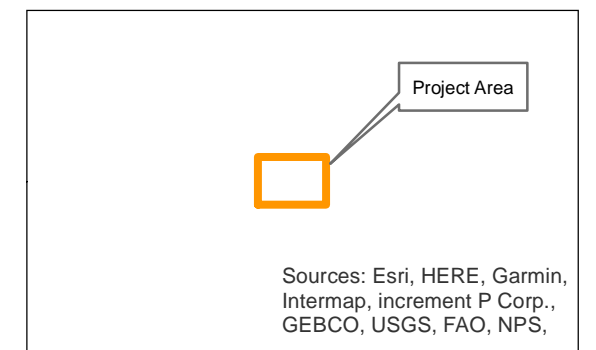
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location
M.D. of Pincher Creek
Alberta Canada

118212101 REVA
Prepared by DM on 2018-05-03
Technical Review by SK on 2018-05-03
Independent Review by JD on 2018-05-03

Client/Project
ENEL Green Power
CRR2/Riverview Wind Farm

Figure No.

2

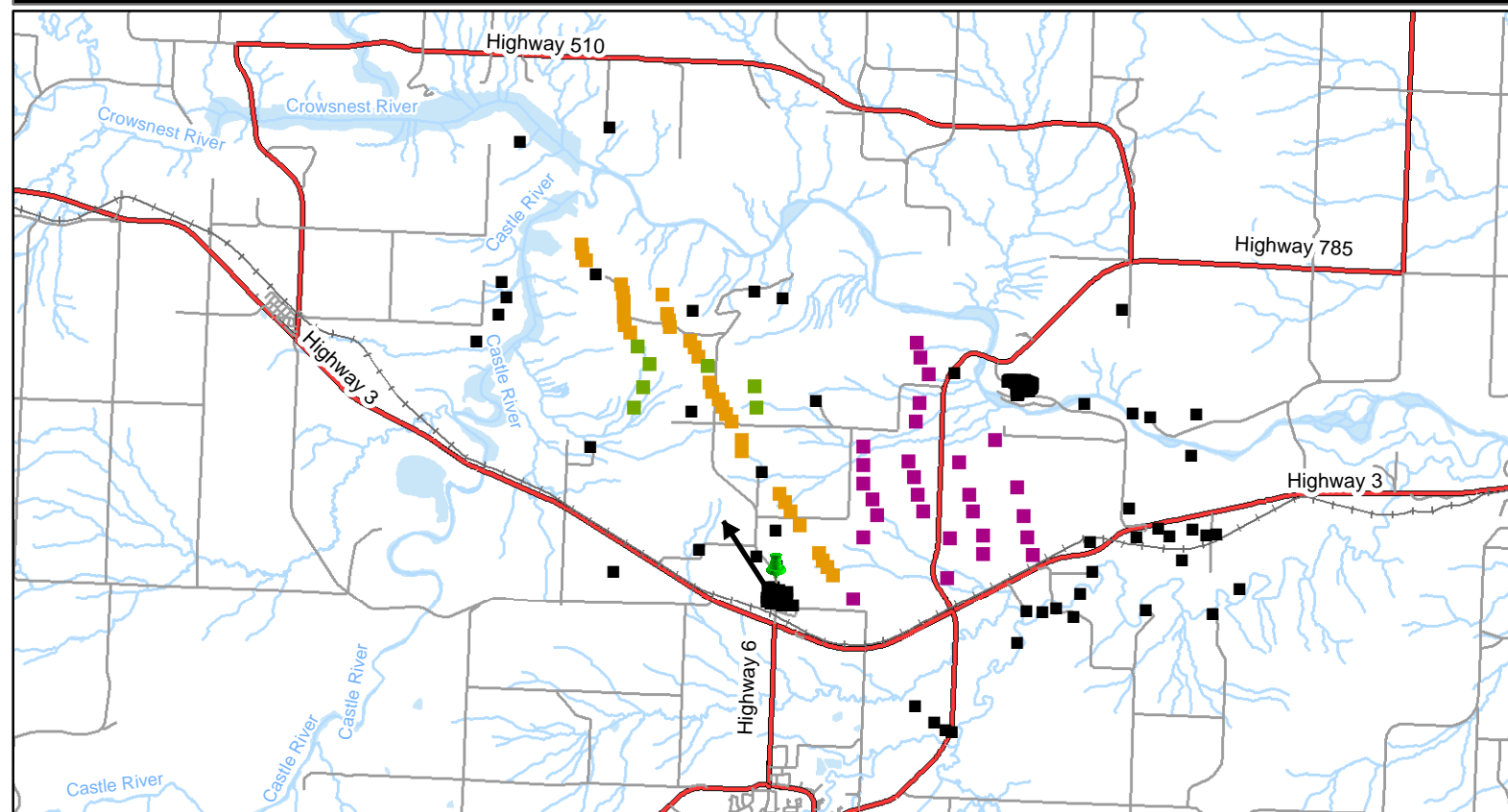
Title
**View From Viewpoint 0
NE Sec 27 Twp 06 Rge 30 W4M
Looking Northeast**



Photomontage Image



Original Photo



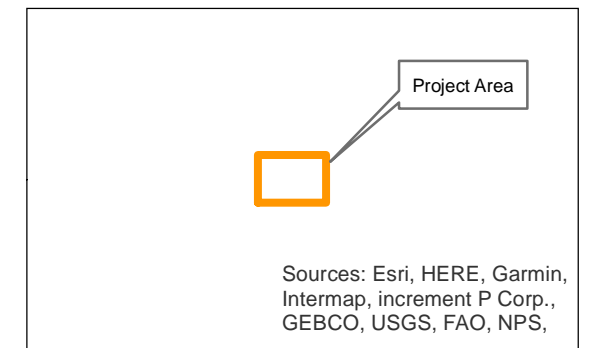
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

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Client/Project

ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No.

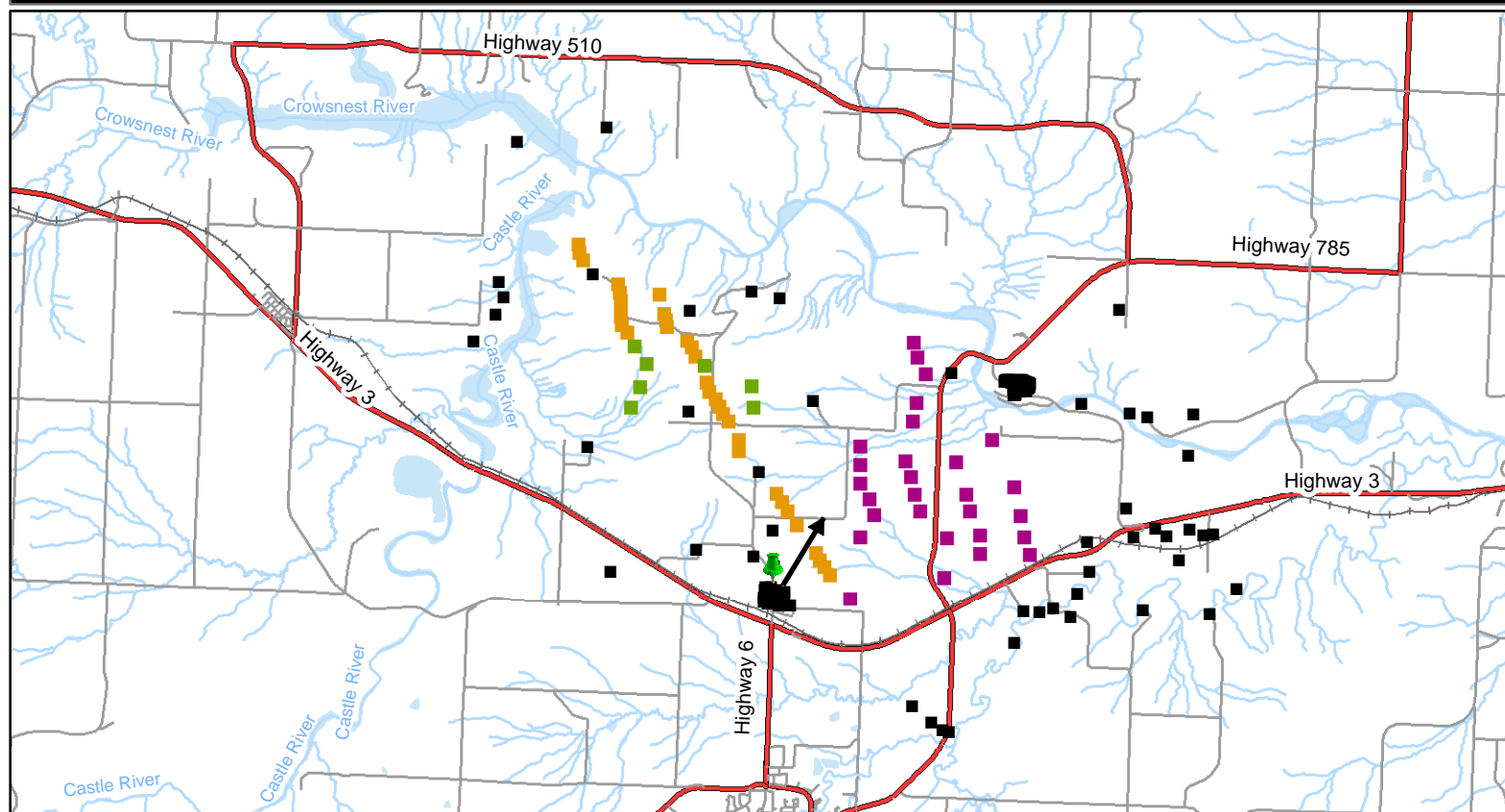
3

Title

**View From Viewpoint 1
 SW Sec 01 Twp 07 Rge 30 W4M
 Looking Northwest**

Photomontage Image

Original Photo



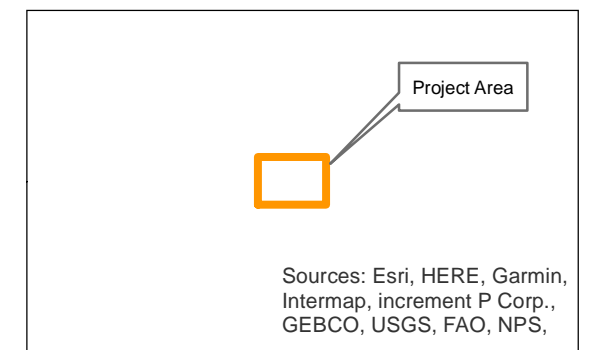
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:150,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location
M.D. of Pincher Creek
Alberta Canada

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Client/Project

ENEL Green Power
CRR2/Riverview Wind Farm

Figure No.

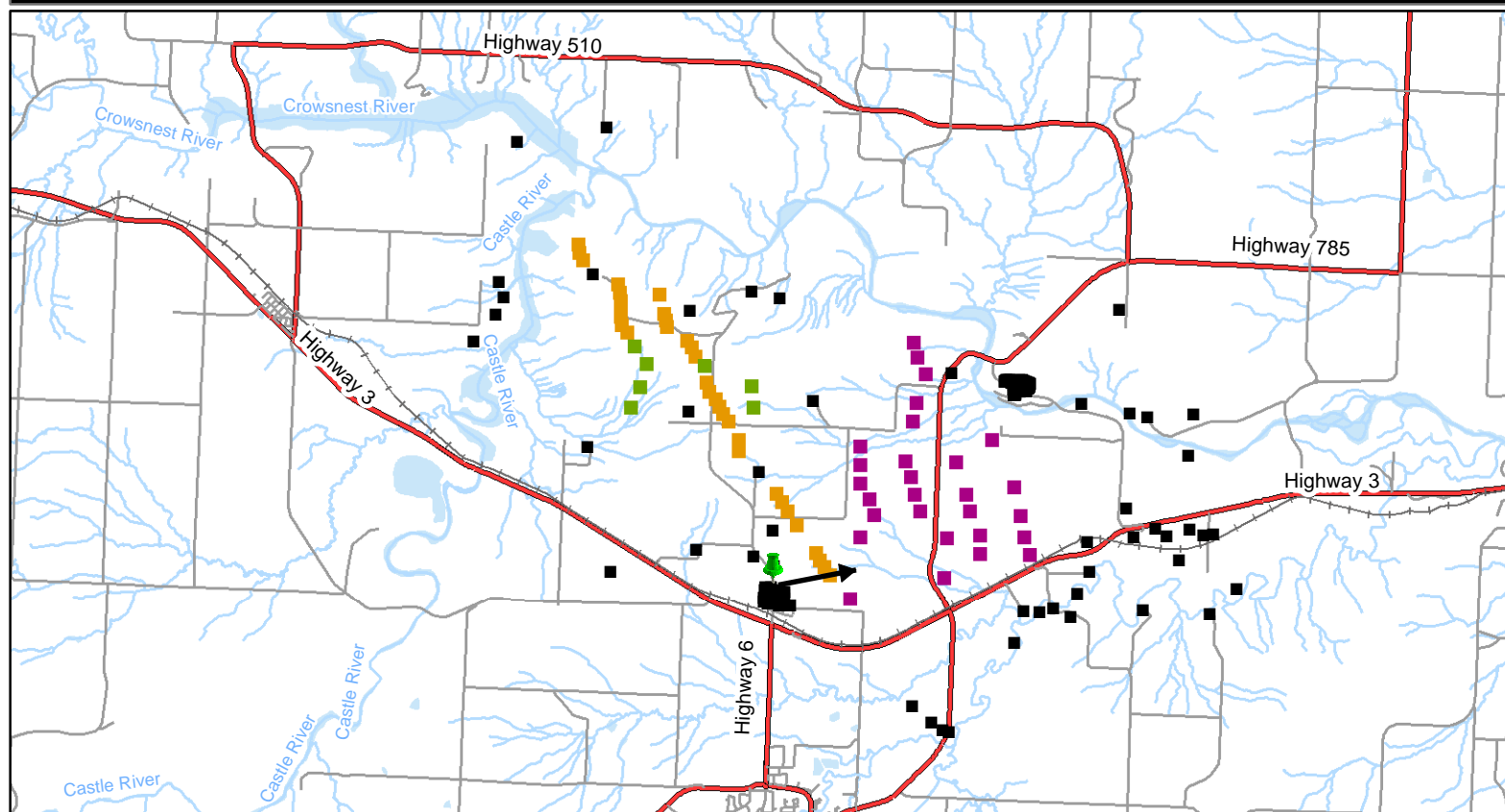
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Title

**View From Viewpoint 1
SW Sec 01 Twp 07 Rge 30 W4M
Looking Northeast**

Photomontage Image

Original Photo



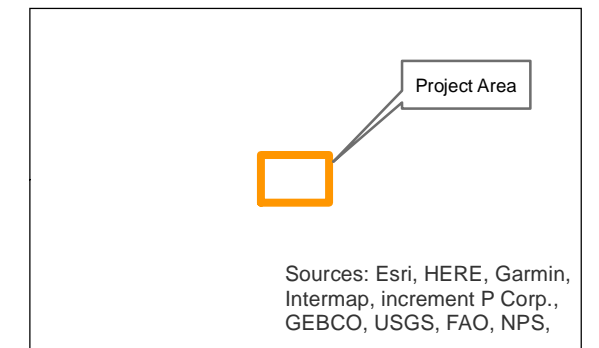
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

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2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
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Client/Project

ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No.

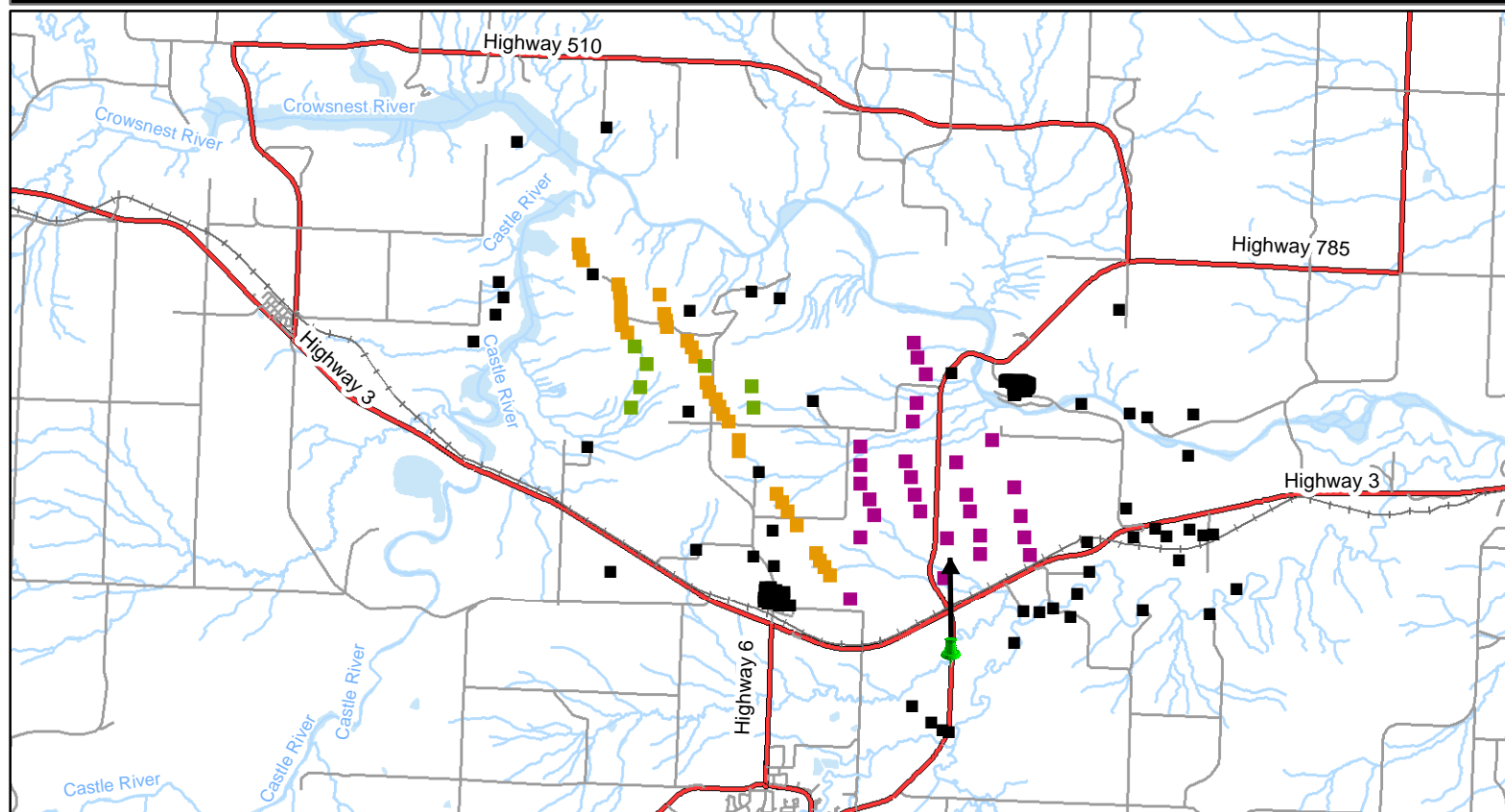
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Title

**View From Viewpoint 1
 SW Sec 01 Twp 07 Rge 30 W4M
 Looking East**

Photomontage Image

Original Photo



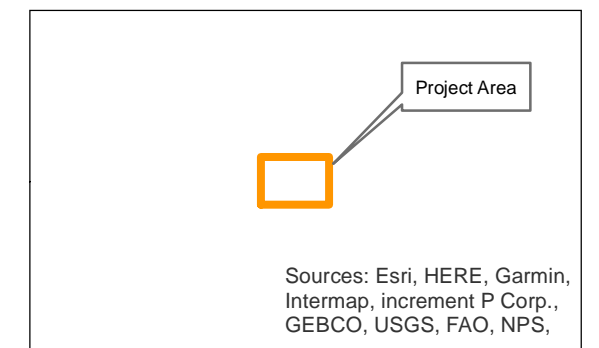
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location
M.D. of Pincher Creek
Alberta Canada

118212101 REVA
Prepared by DM on 2018-05-03
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Client/Project

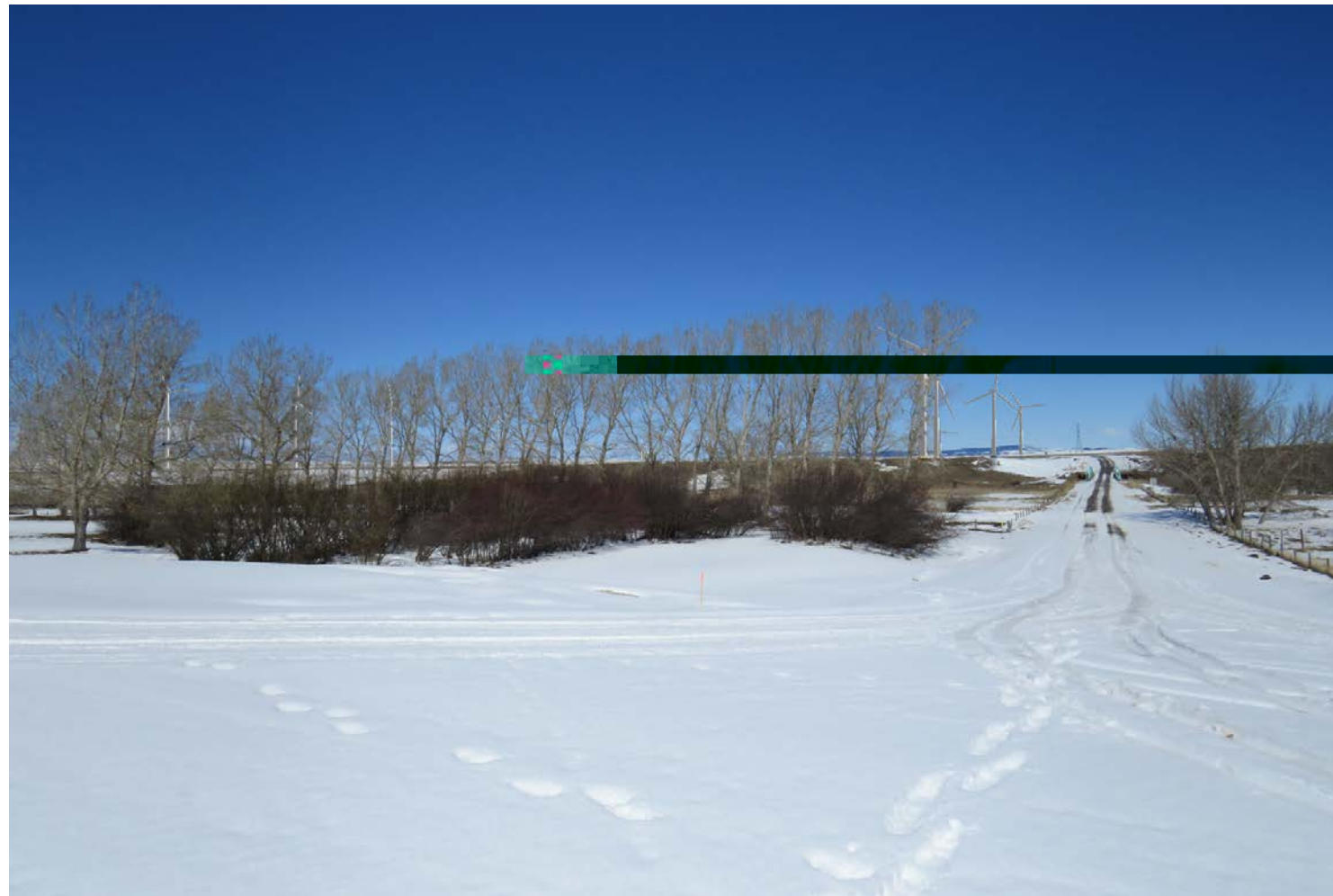
ENEL Green Power
CRR2/Riverview Wind Farm

Figure No.

6

Title

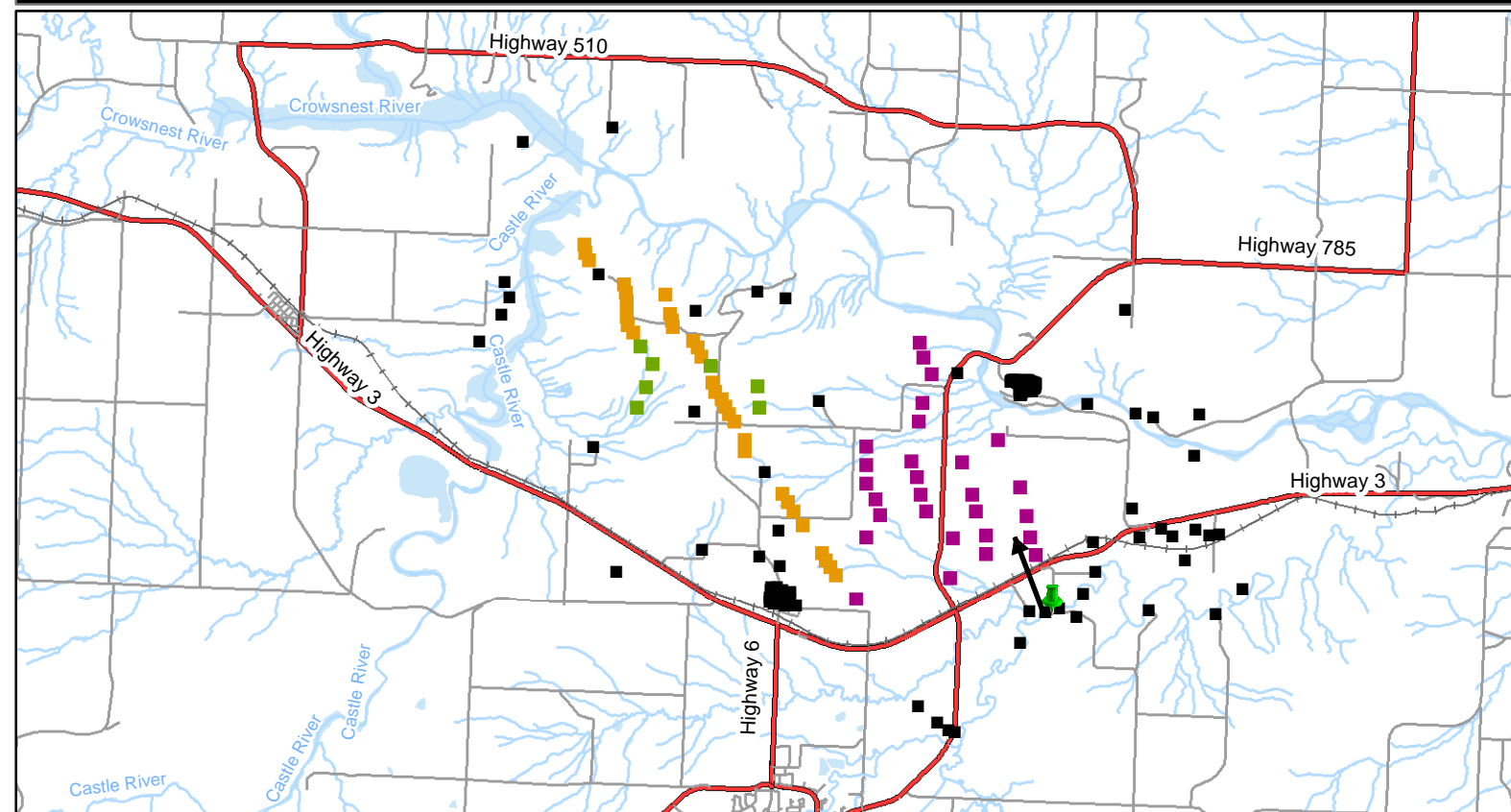
**View From Viewpoint 2
NW Sec 31 Twp 06 Rge 29 W4M
Looking North**



Photomontage Image



Original Photo

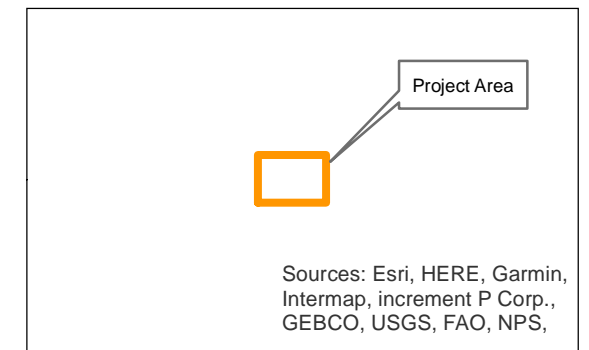


Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 12N
 2. Photo Taken: 2018/04/09



Project Location
M.D. of Pincher Creek
Alberta Canada

118212101 REVA
Prepared by DM on 2018-05-03
Technical Review by SK on 2018-05-03
Independent Review by JD on 2018-05-03

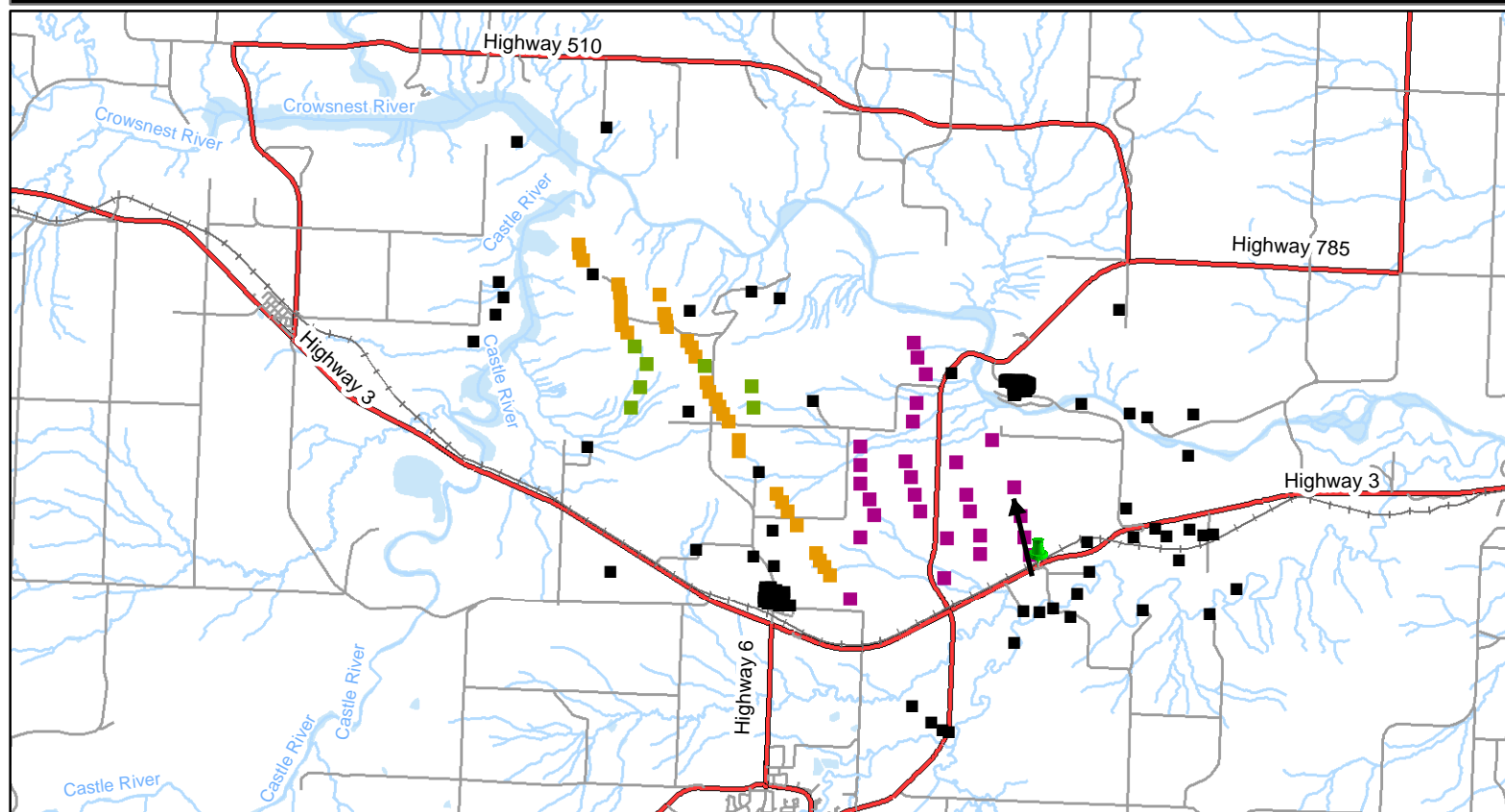
Client/Project
ENEL Green Power
CRR2/Riverview Wind Farm

Figure No.
7
Title
**View From Viewpoint 3
SW Sec 04 Twp 07 Rge 29 W4M
Looking North**

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Photomontage Image

Original Photo



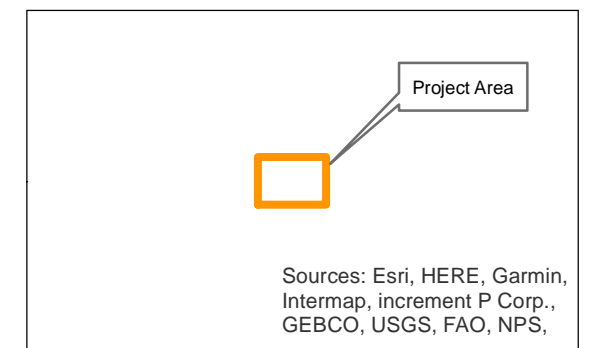
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
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 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

Client/Project

ENEL Green Power
CRR2/Riverview Wind Farm

Figure No.

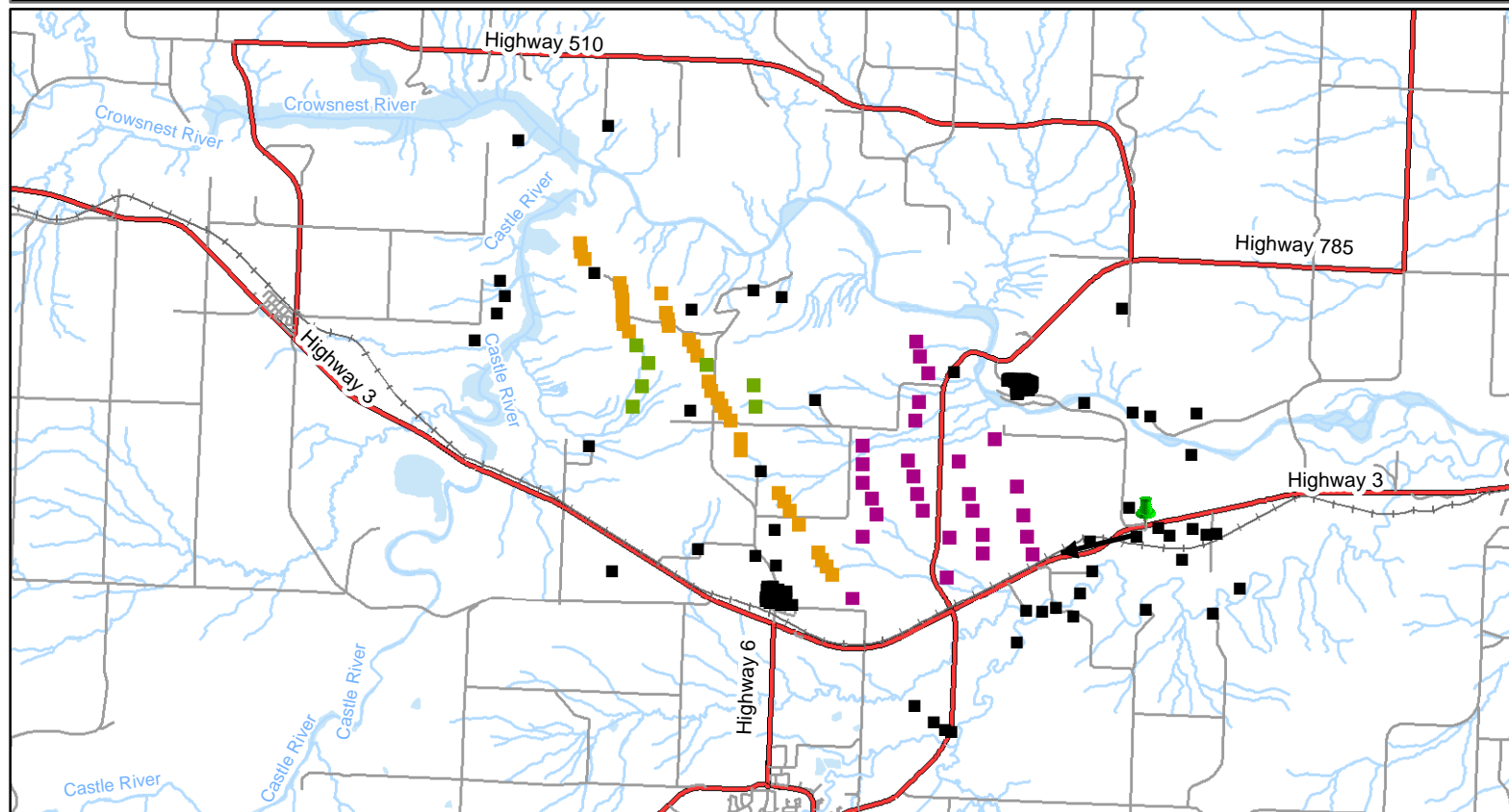
8

Title

View From Viewpoint 4
NW Sec 04 Twp 07 Rge 29 W4M
Looking North

Photomontage Image

Original Photo



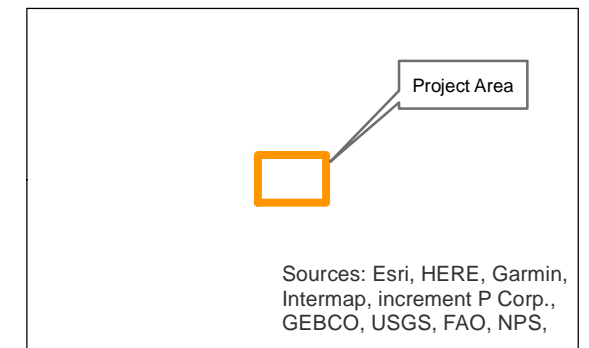
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
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 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

Client/Project: ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No. 9

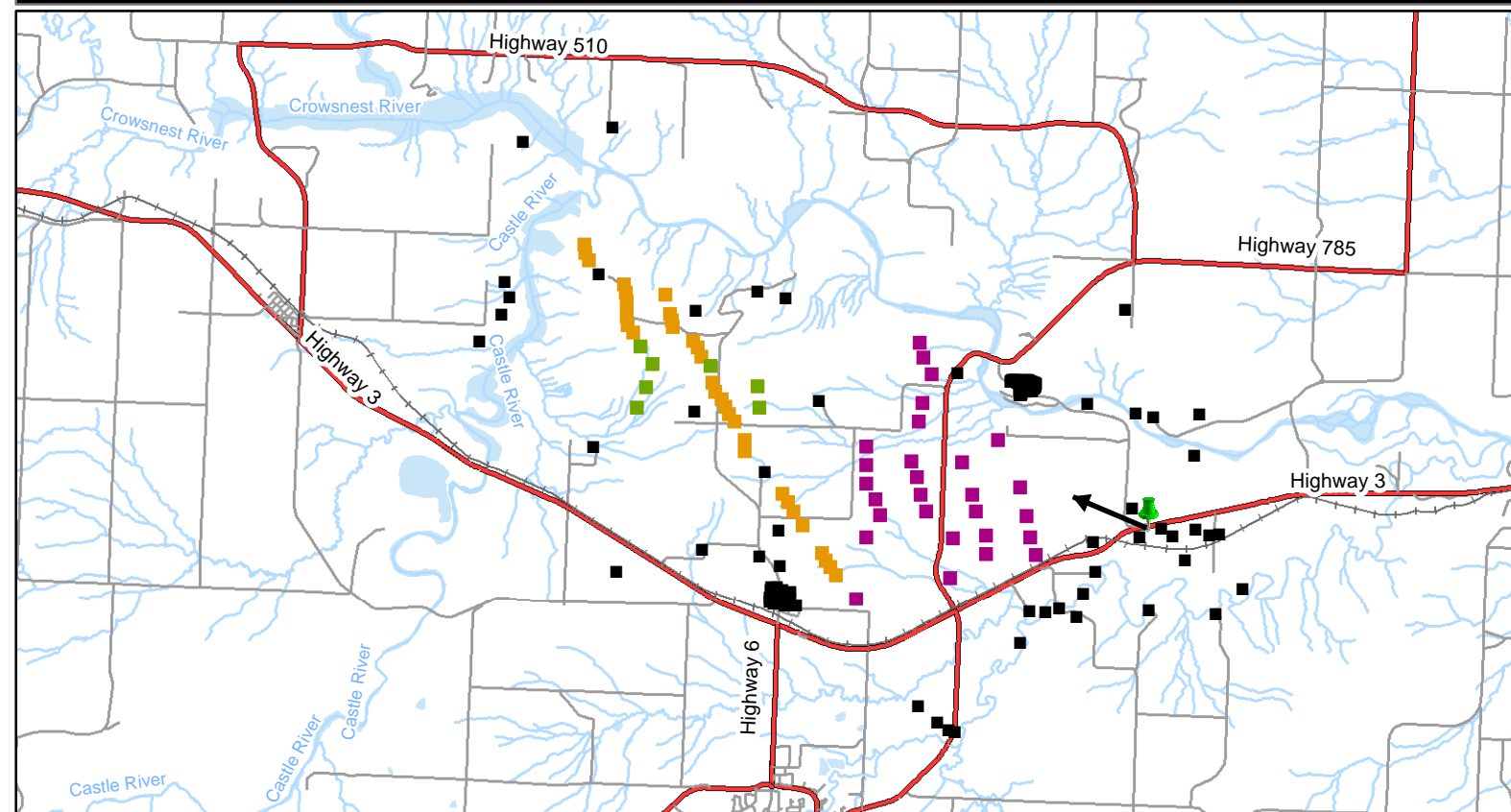
Title: View From Viewpoint 5
 SW Sec 10 Twp 07 Rge 29 W4M
 Looking West



Photomontage Image



Original Photo



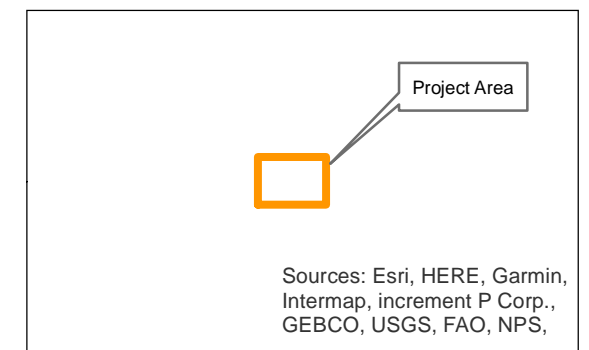
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location
M.D. of Pincher Creek
Alberta Canada

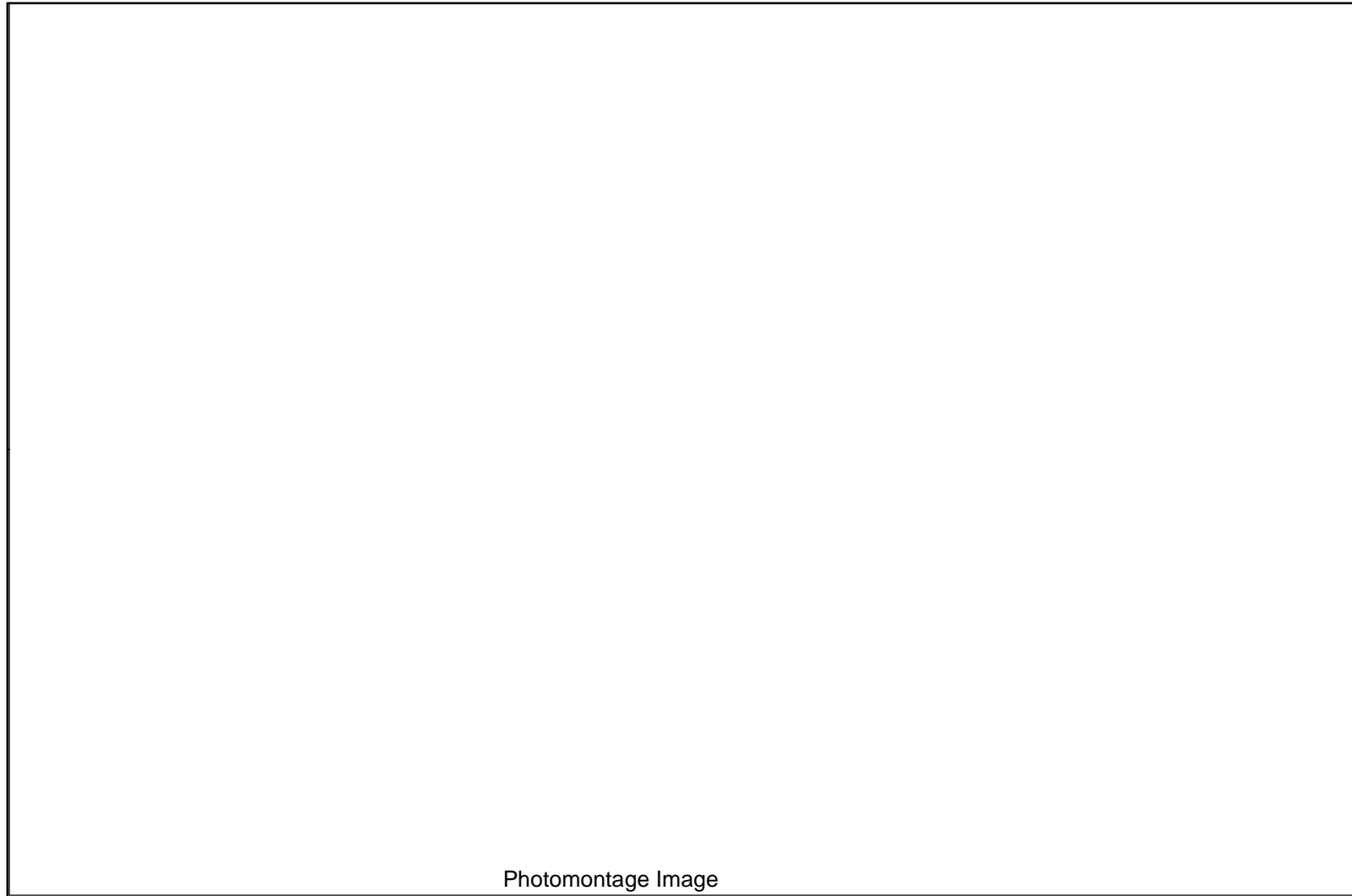
118212101 REVA
Prepared by DM on 2018-05-03
Technical Review by SK on 2018-05-03
Independent Review by JD on 2018-05-03

Client/Project
ENEL Green Power
CRR2/Riverview Wind Farm

Figure No.

10

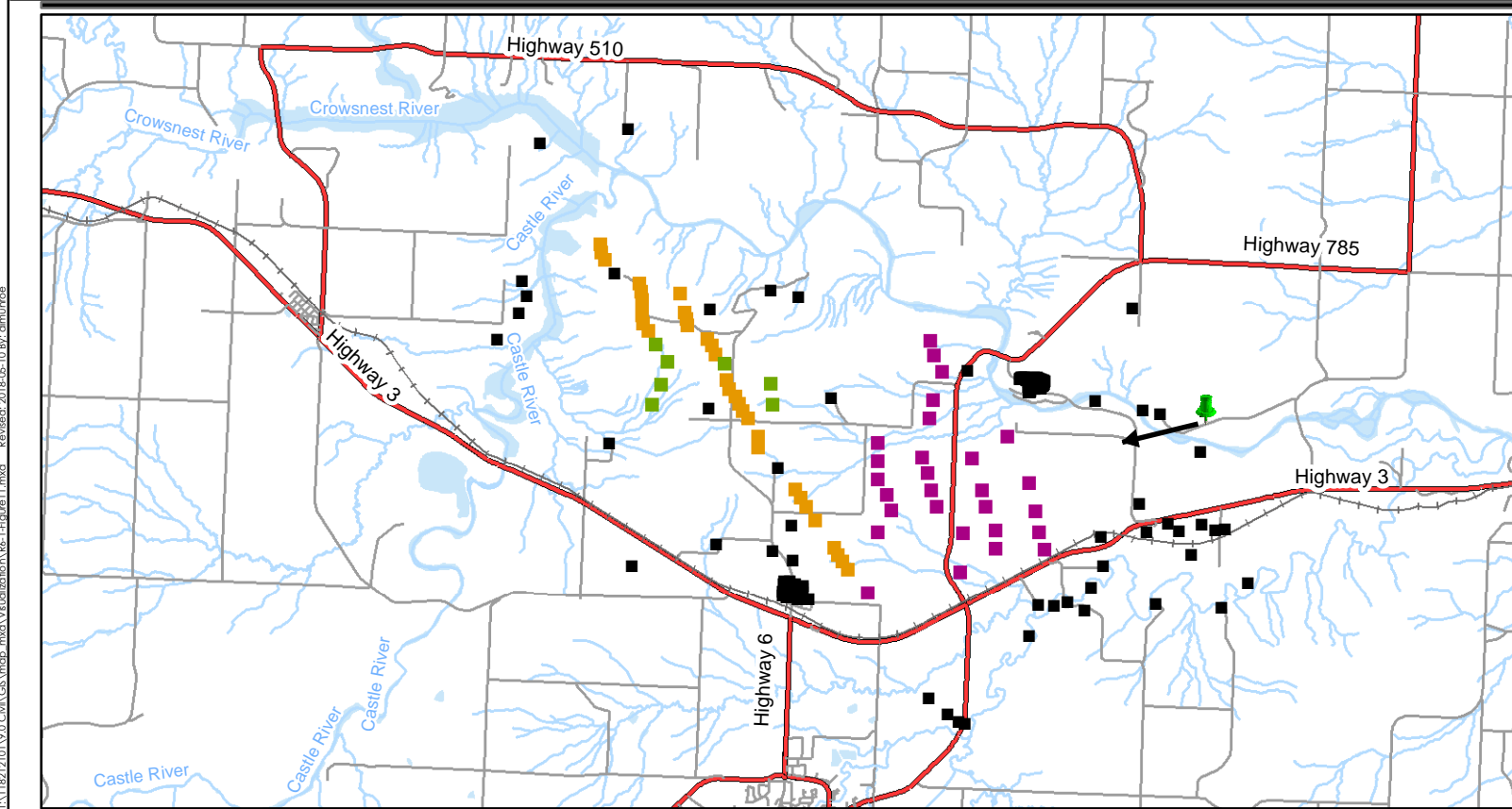
Title
**View From Viewpoint 5
SW Sec 10 Twp 07 Rge 29 W4M
Looking Northwest**



Photomontage Image



Original Photo



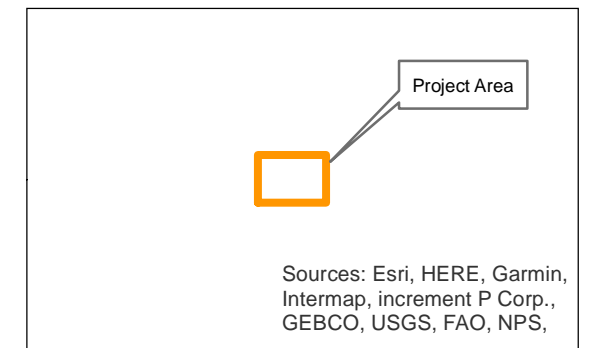
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location
M.D. of Pincher Creek
Alberta Canada

118212101 REVA
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Independent Review by JD on 2018-05-03

Client/Project
ENEL Green Power
CRR2/Riverview Wind Farm

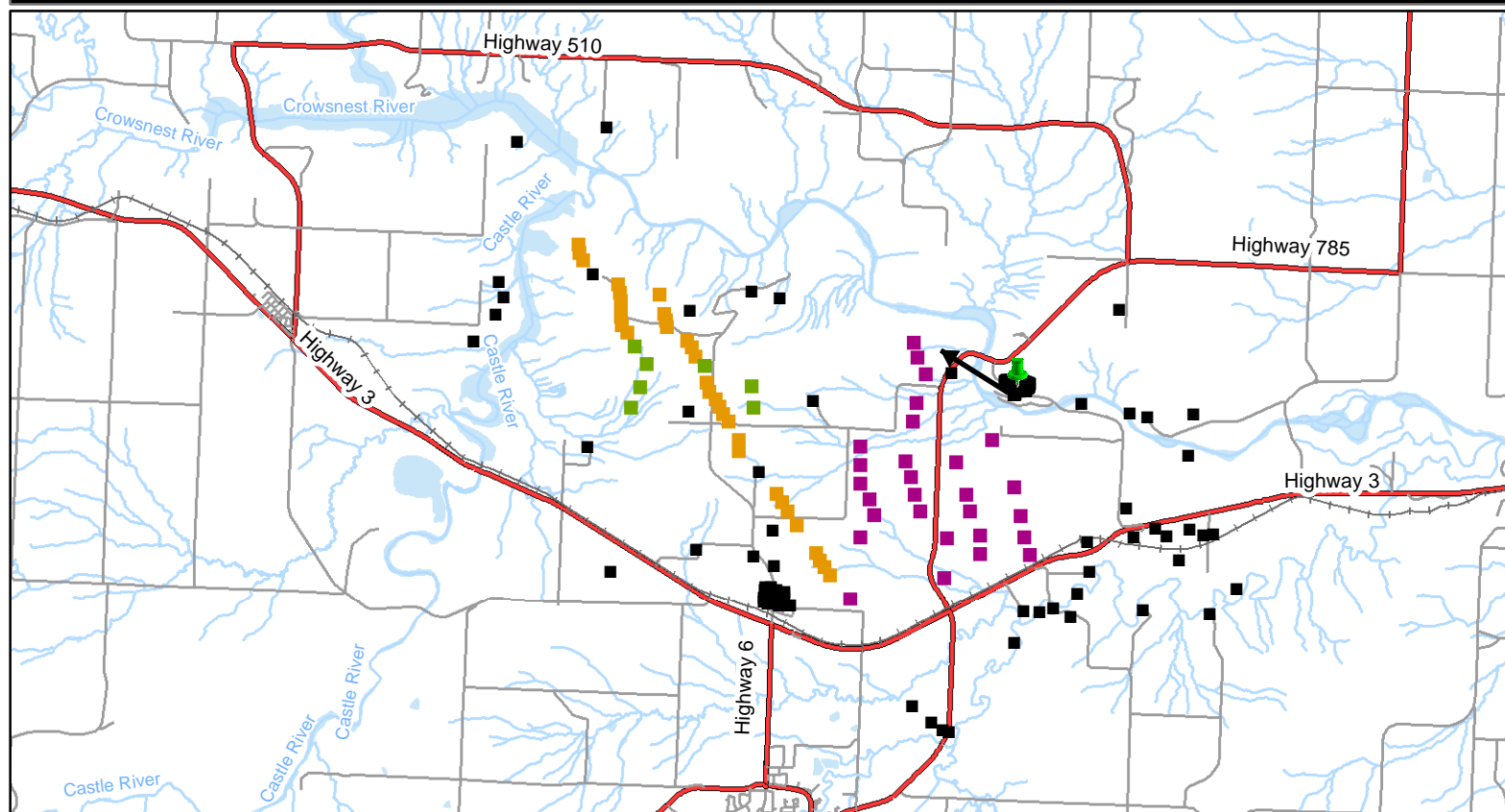
Figure No.

11

Title
**View From Viewpoint 6
SE Sec 15 Twp 07 Rge 29 W4M
Looking Southwest**

Photomontage Image

Original Photo



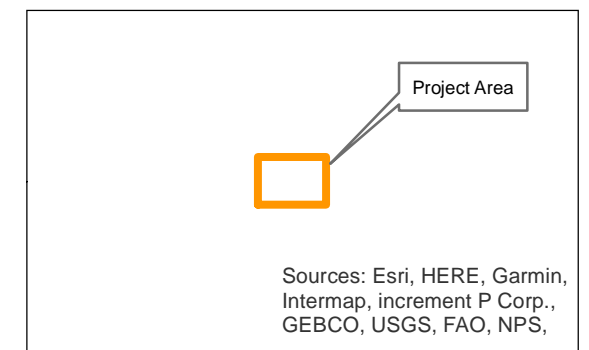
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:130,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
 118212101 REVA
 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

Client/Project: ENEL Green Power, CRR2/Riverview Wind Farm

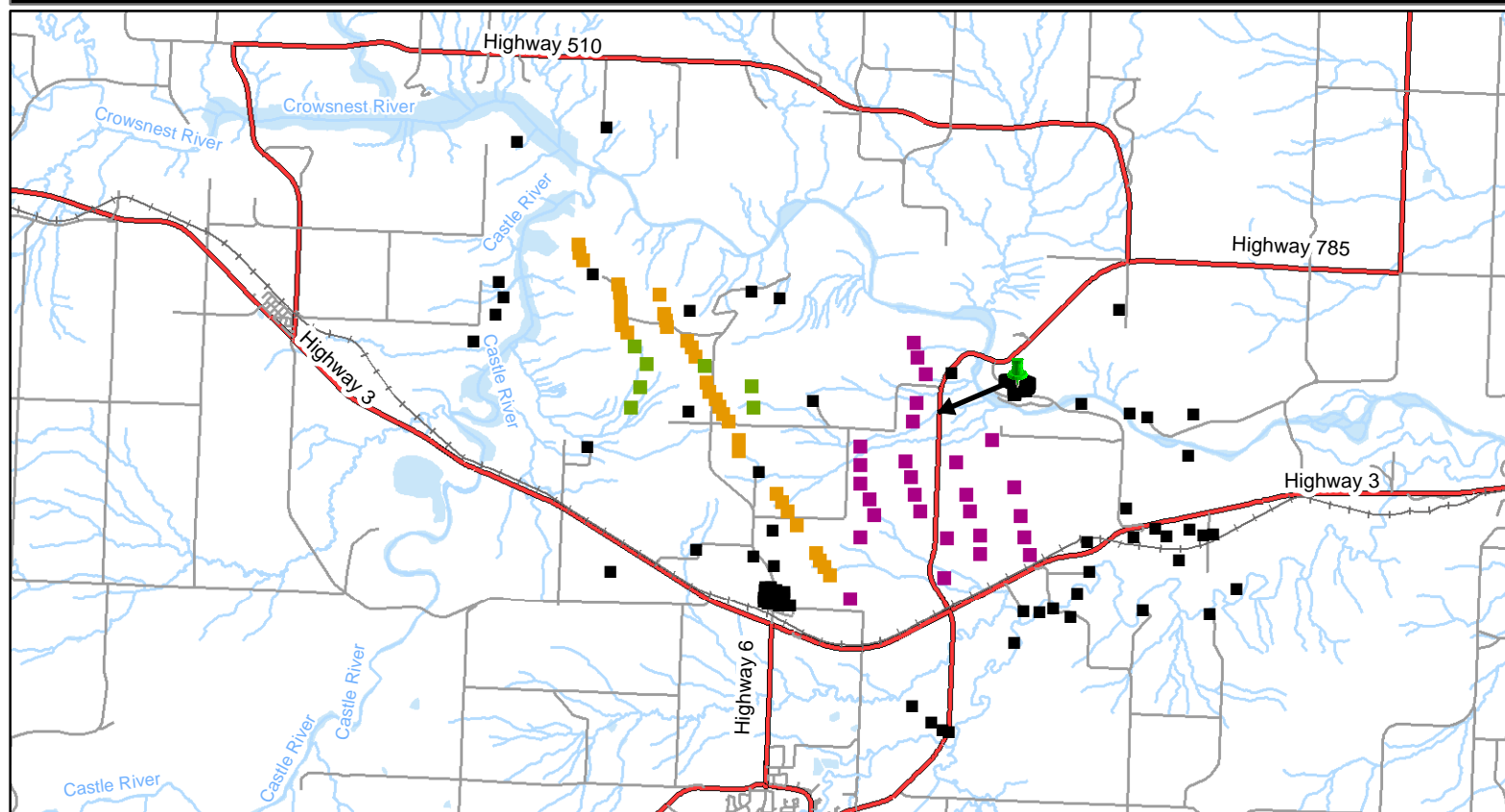
Figure No.

12

Title: **View From Viewpoint 8
 NE Sec 17 Twp 07 Rge 29 W4M
 Looking Northwest**

Photomontage Image

Original Photo



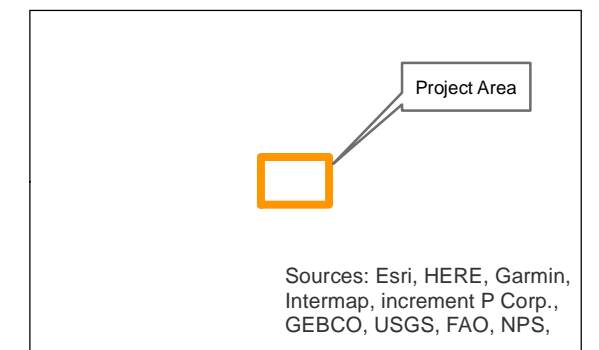
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

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Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
 118212101 REVA
 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

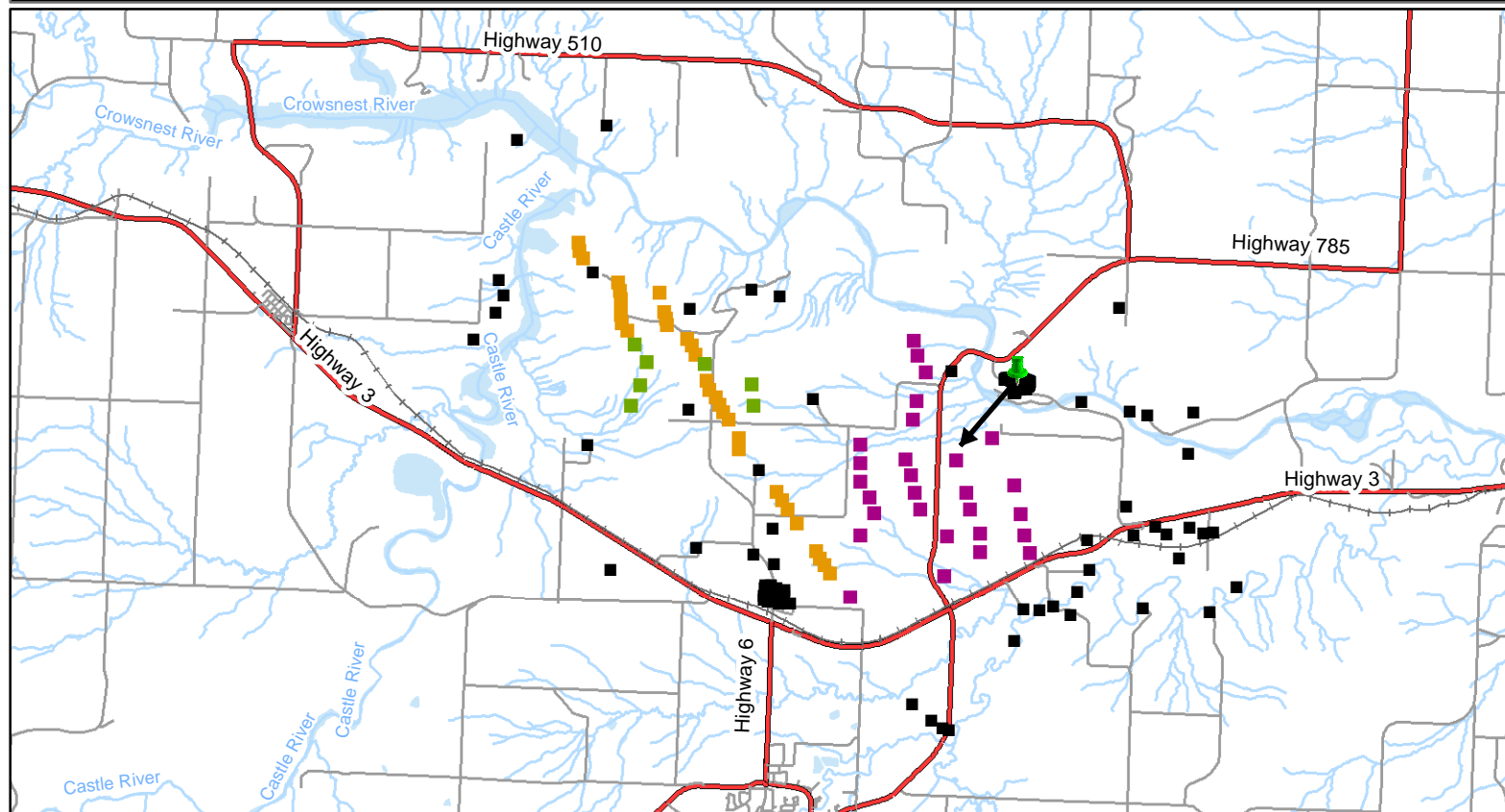
Client/Project: ENEL Green Power, CRR2/Riverview Wind Farm

Figure No.:

13

Title: **View From Viewpoint 8
 NE Sec 17 Twp 07 Rge 29 W4M
 Looking Southwest**

D:\119212101\11.0_Civil\GIS\map_mxd\Views\Views\08-3_Eframe1.mxd - Revised: 2018-04-22 By: dmurphy

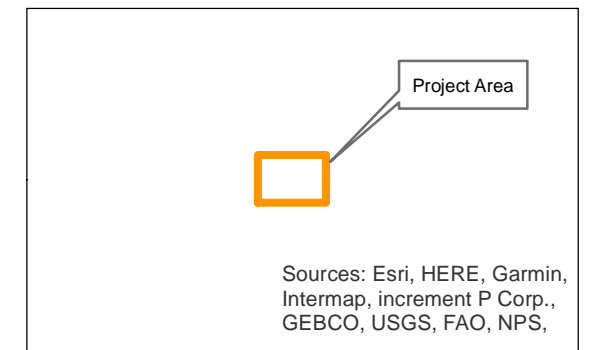


Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



M.D. of Pincher Creek
 Alberta Canada

118212101 REVA
 Prepared by DM on 2018-05-03
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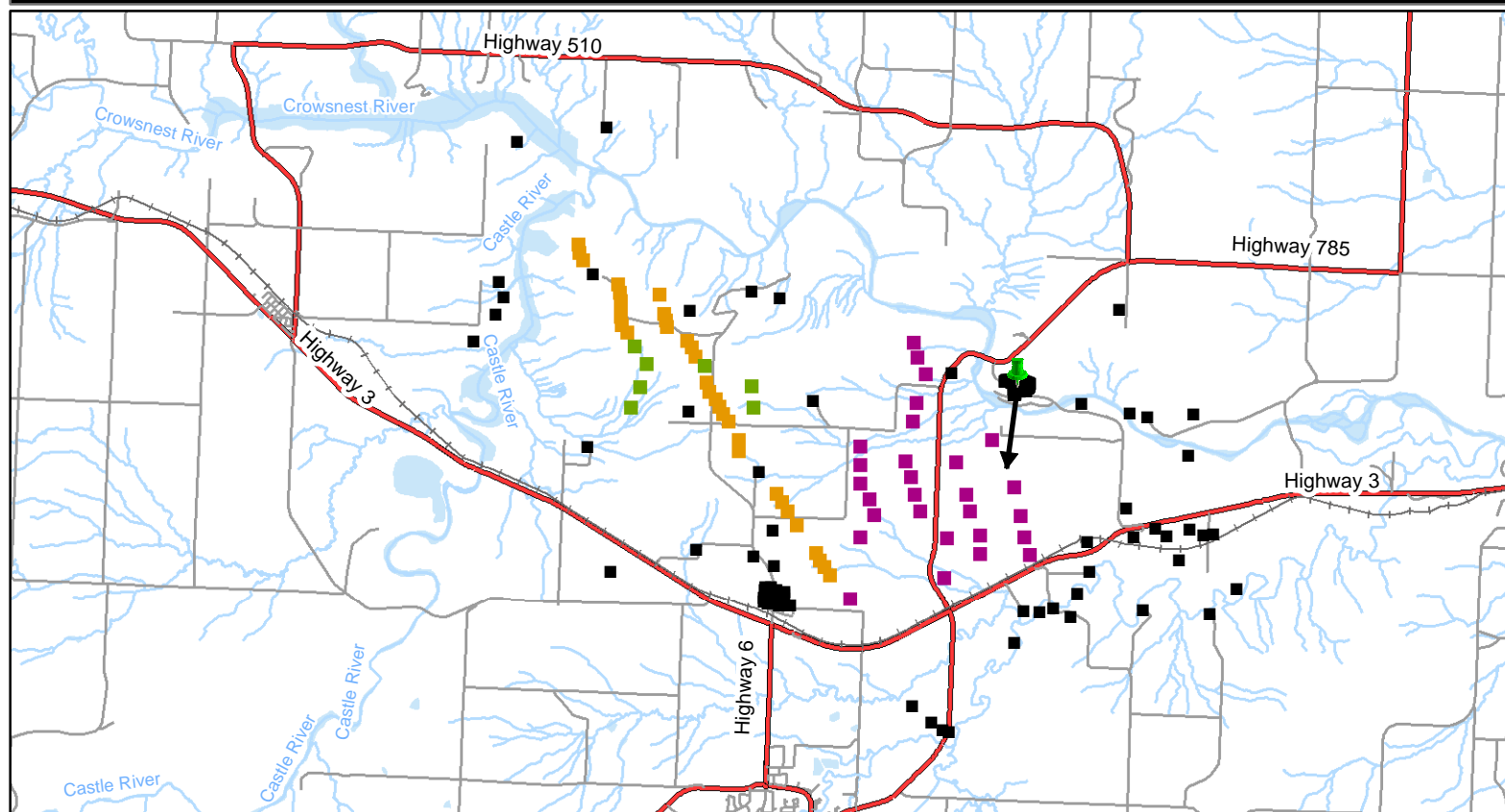
ENEL Green Power
 CRR2/Riverview Wind Farm

14

View From Viewpoint 8
NE Sec 17 Twp 07 Rge 29 W4M
Looking Southwest

Photomontage Image

Original Photo



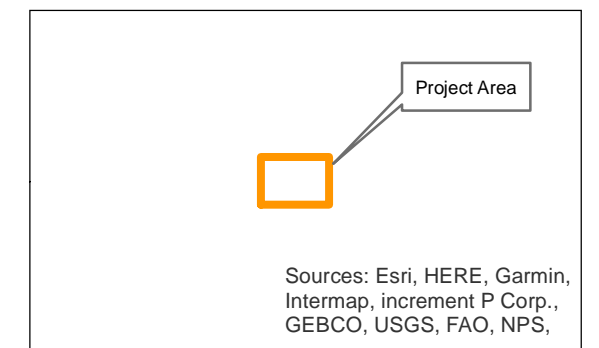
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
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1:130,000 (at original document size of 11x17)

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Project Location: M.D. of Pincher Creek, Alberta Canada
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Client/Project: ENEL Green Power, CRR2/Riverview Wind Farm

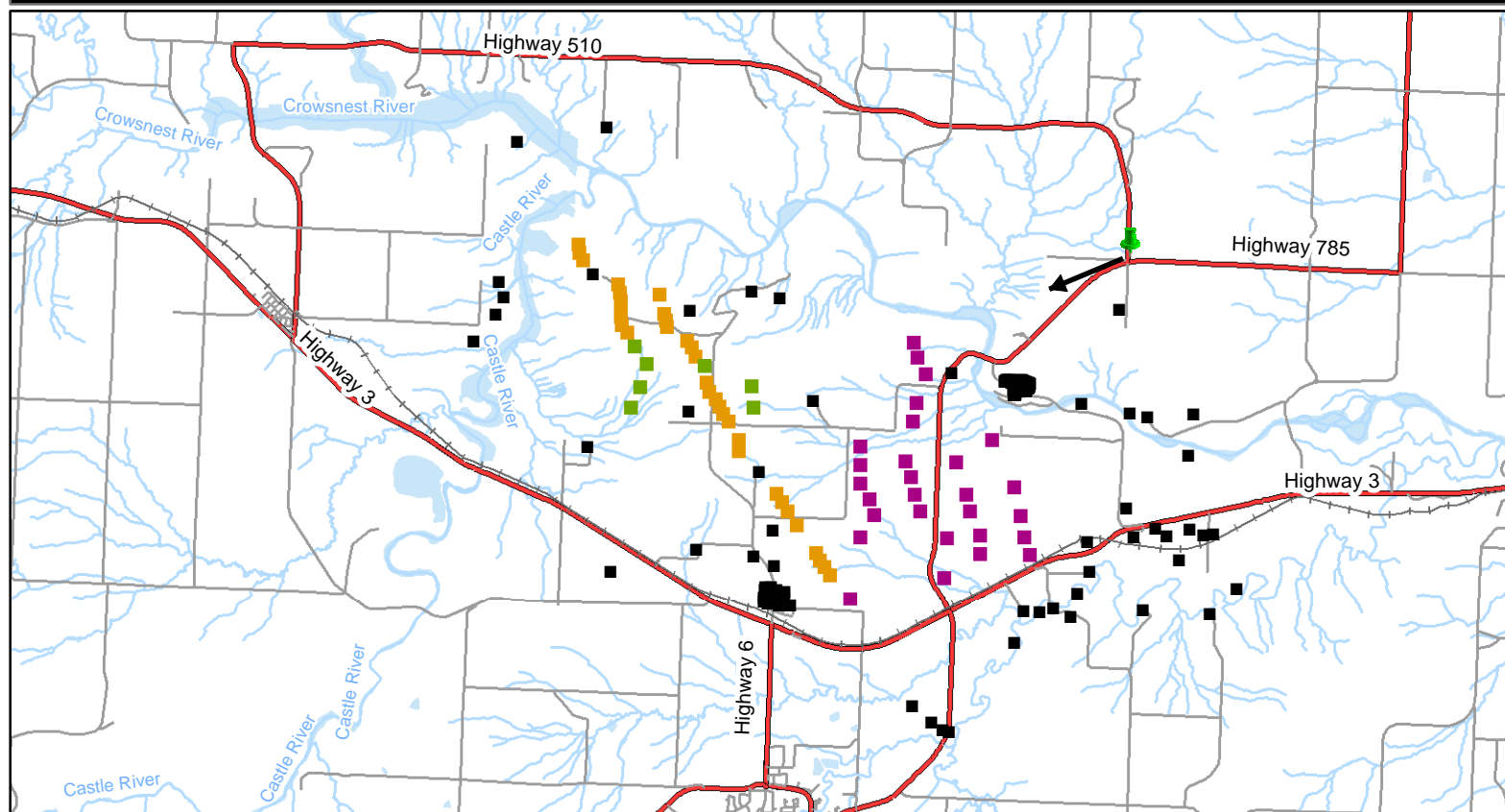
Figure No.

15

Title: **View From Viewpoint 8
 NE Sec 17 Twp 07 Rge 29 W4M
 Looking South**

Photomontage Image

Original Photo



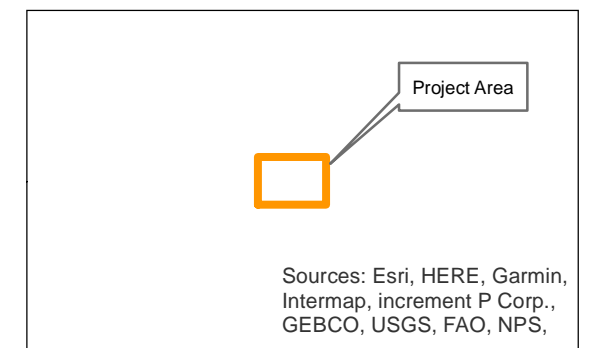
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

1:150,000 (at original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
 118212101 REVA
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 Independent Review by JD on 2018-05-03

Client/Project: ENEL Green Power
 CRR2/Riverview Wind Farm

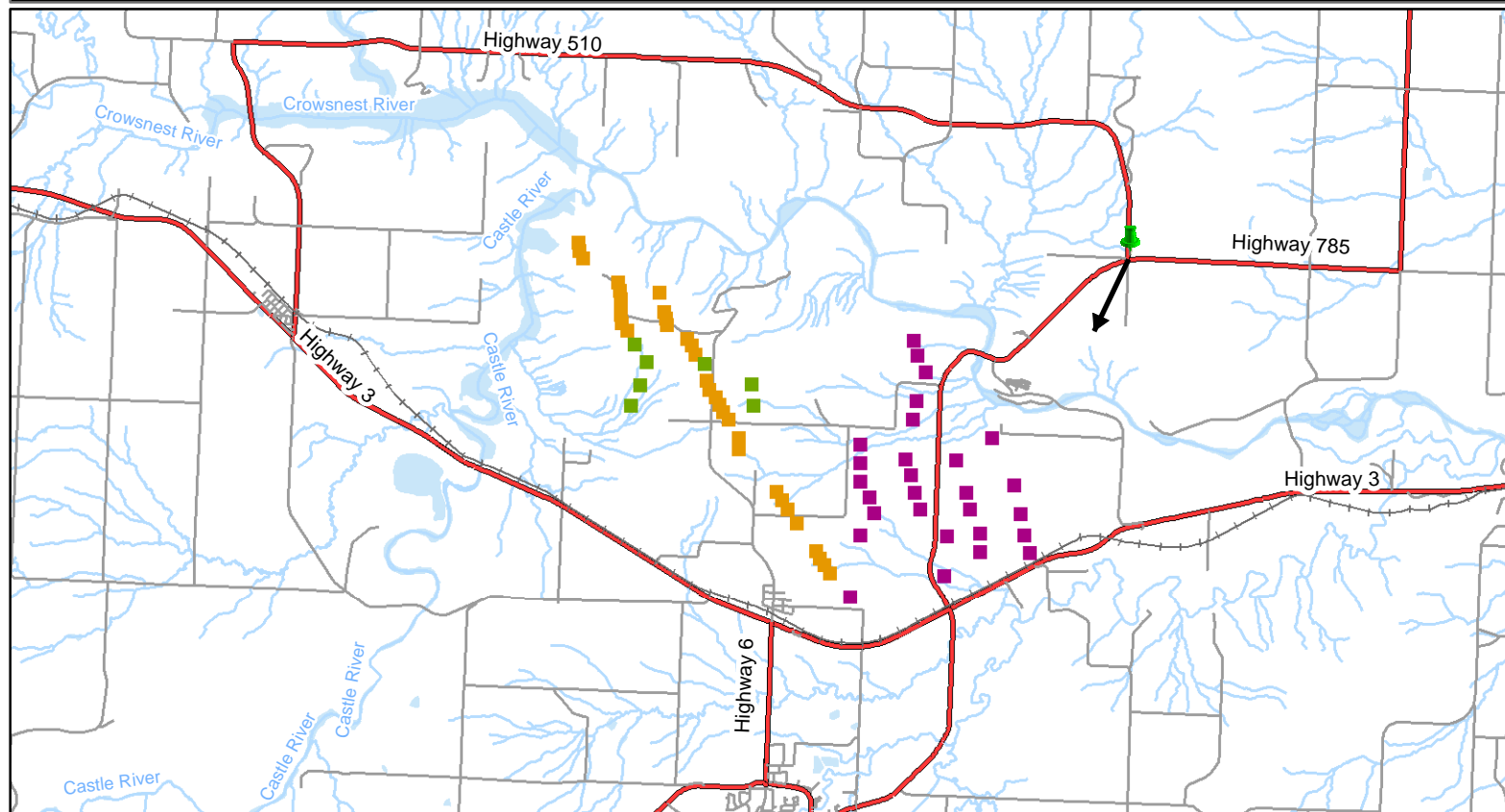
Figure No.

16

Title: **View From Viewpoint 9
 SE Sec 28 Twp 07 Rge 29 W4M
 Looking Southwest**

Photomontage Image

Original Photo



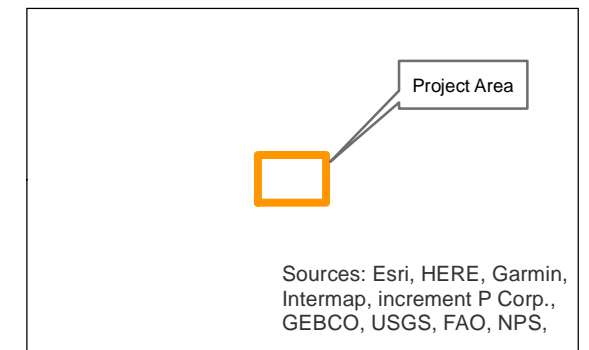
Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

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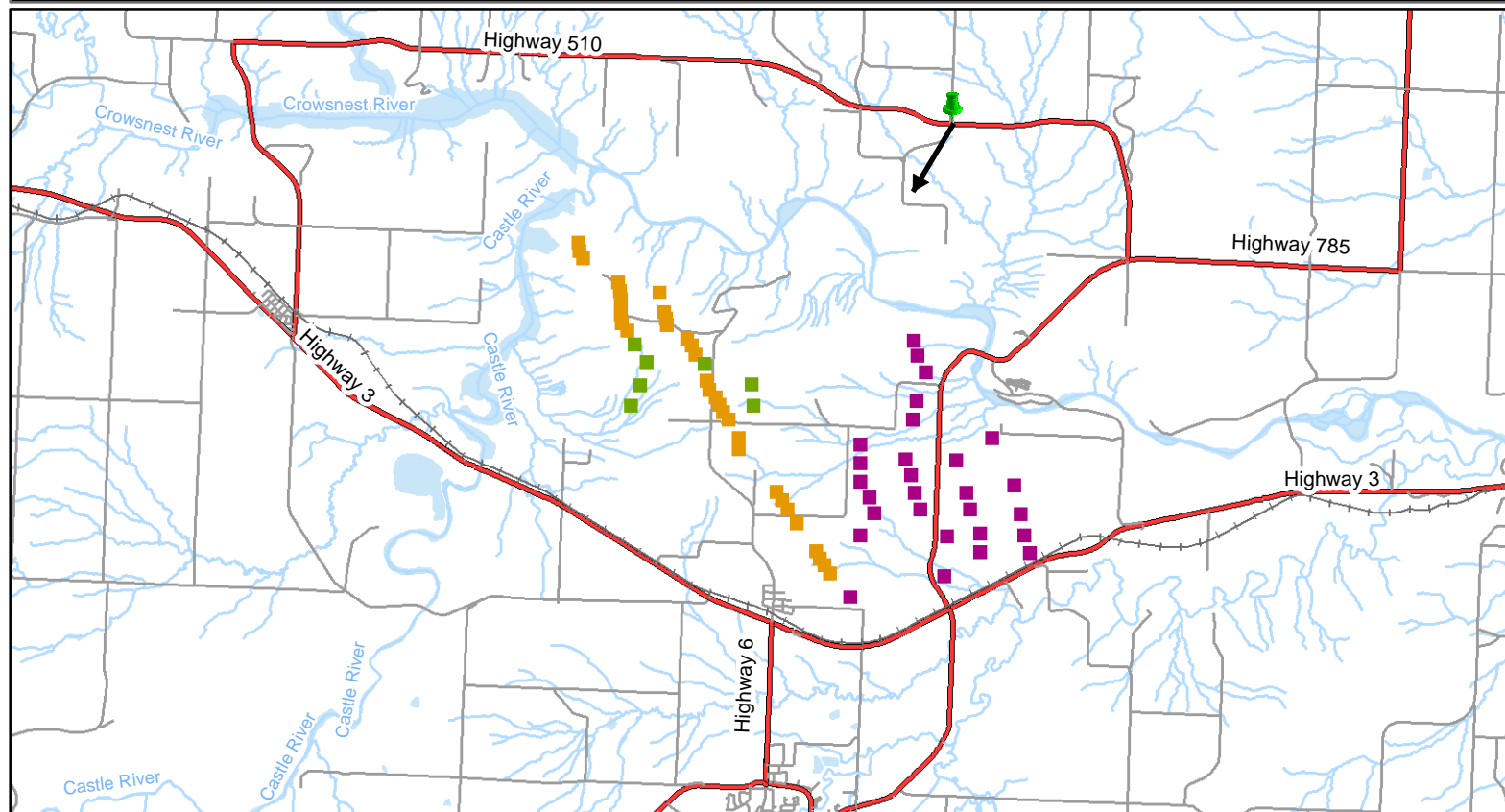
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12 3 45 6 * 7/21 *-8
07) 45 4 7/19 *-8
) A 4) *) 7/2 *-8

17

View From Viewpoint 9
SE Sec 28 Twp 07 Rge 29 W4M
Looking Southwest

Photomontage Image

Original Photo

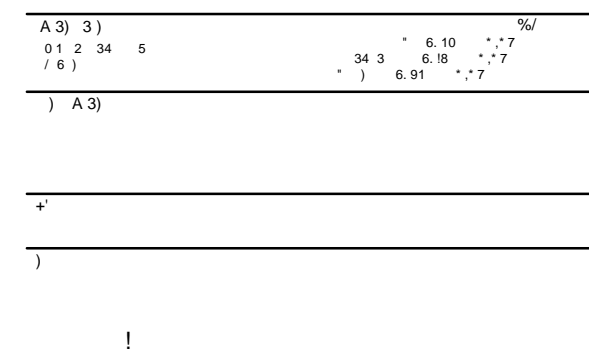
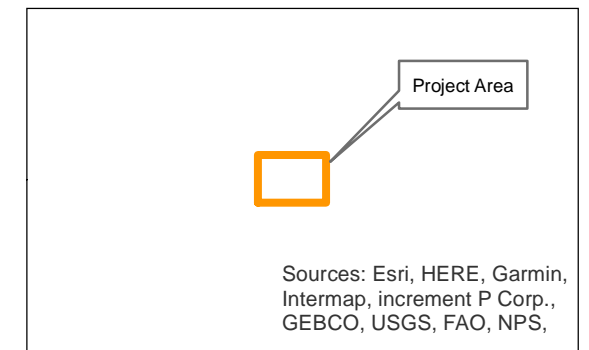


Legend

- Receptors
- Turbines - Riverview
- Turbines - CRR Phase 2
- Turbines - CRR Phase 1
- Major Road
- Minor Road
- Watercourse
- Waterbody
- 📍 Camera Location

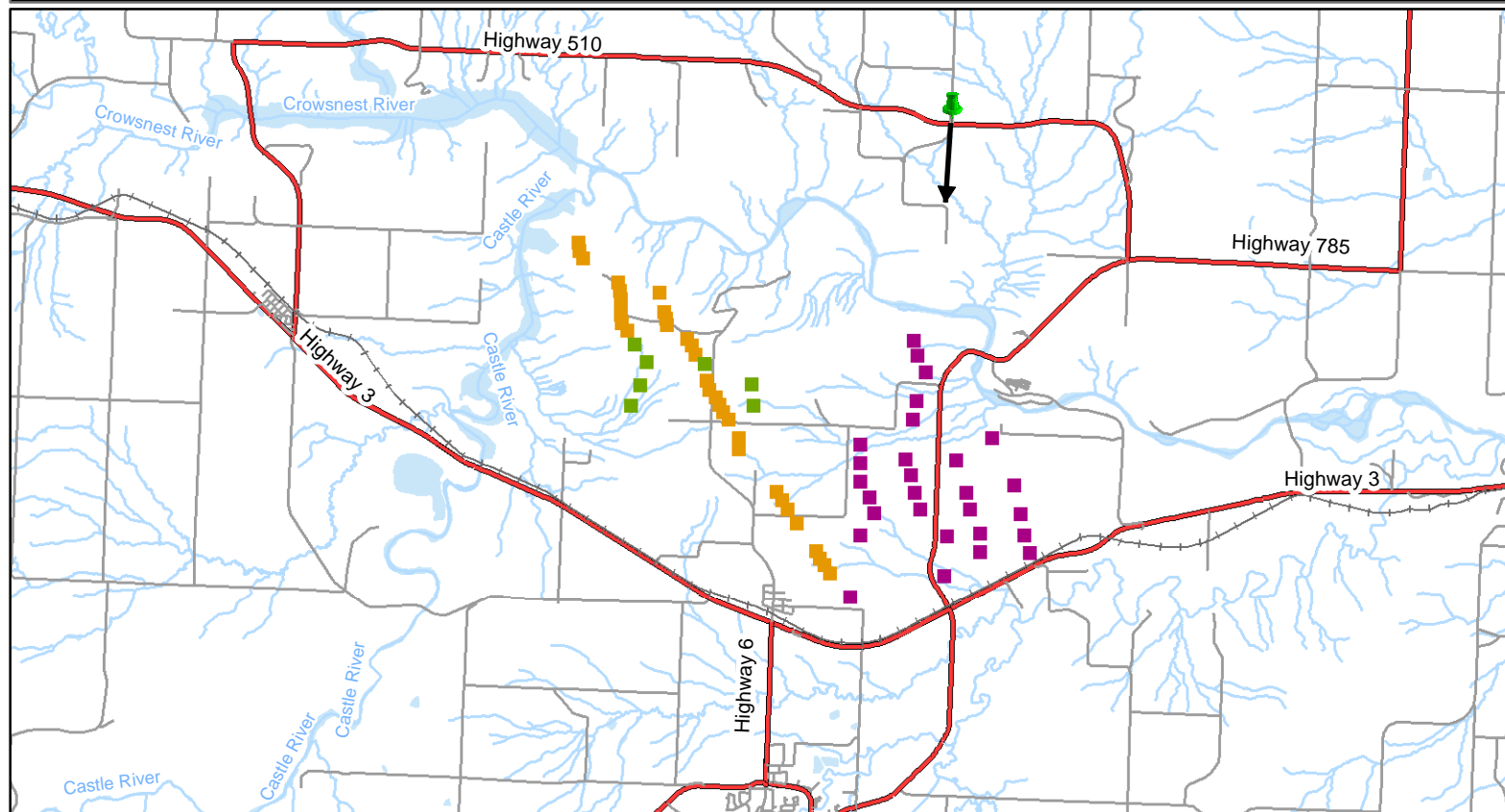
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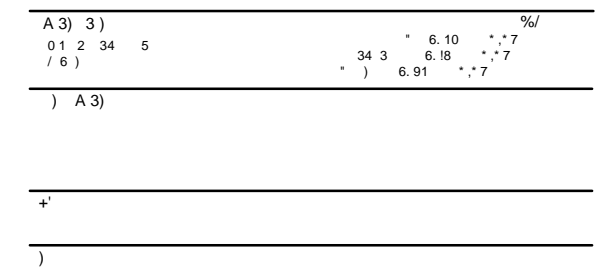
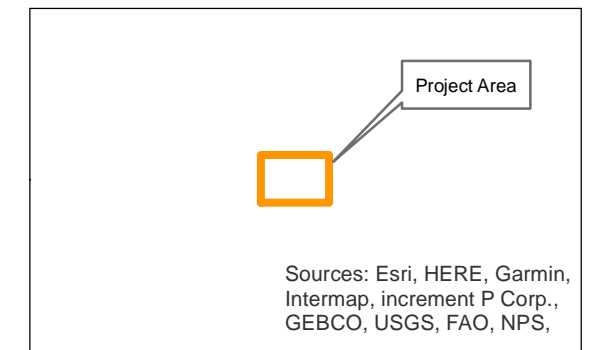
Photomontage Image

Original Photo



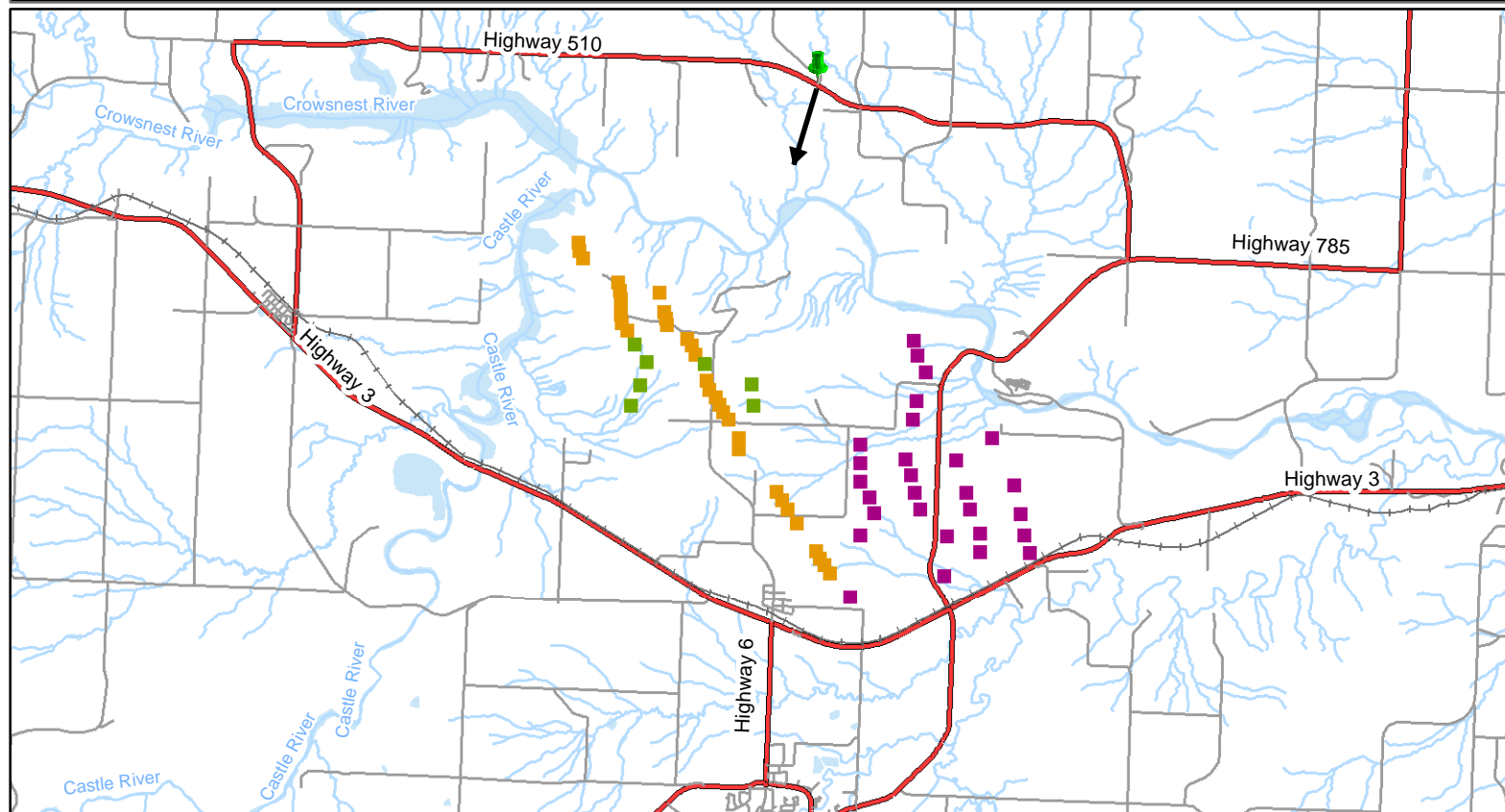
Legend

- Receptors
 - Turbines - Riverview
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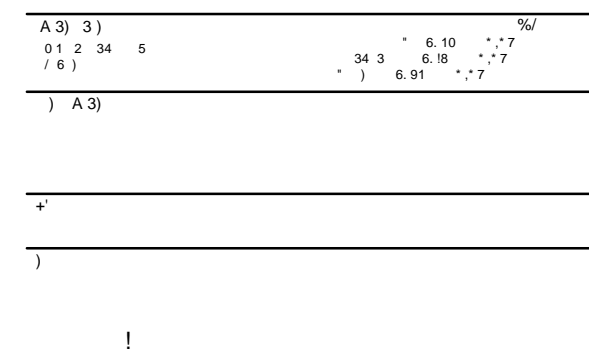
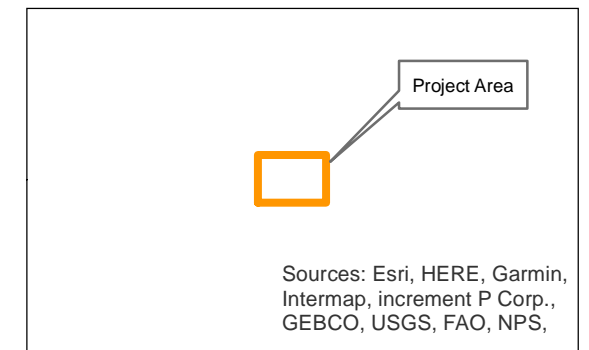
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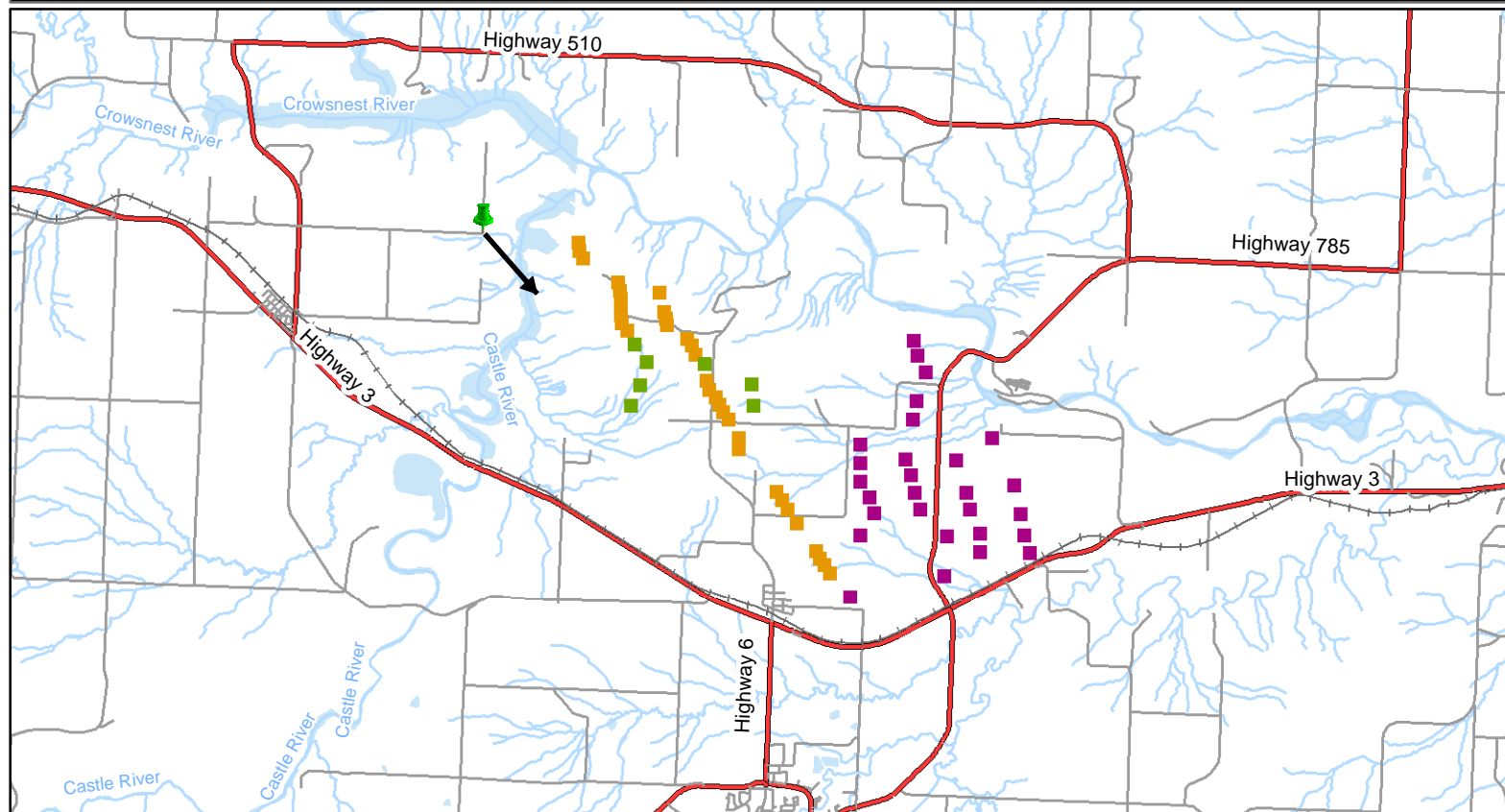
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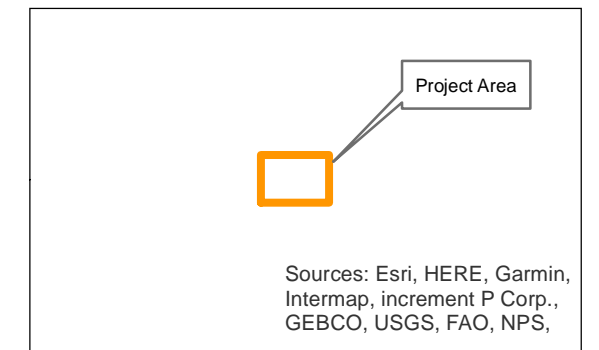


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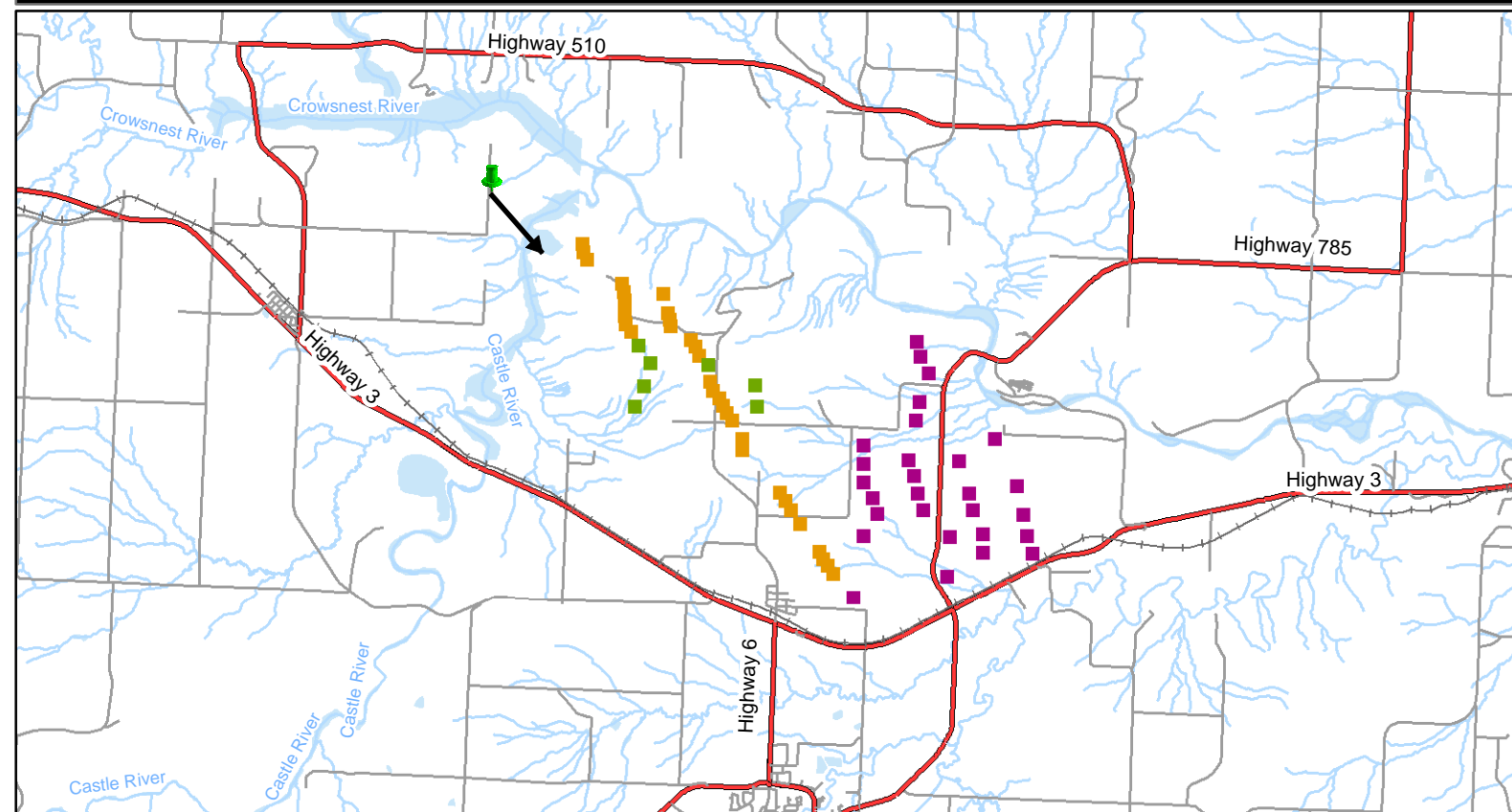
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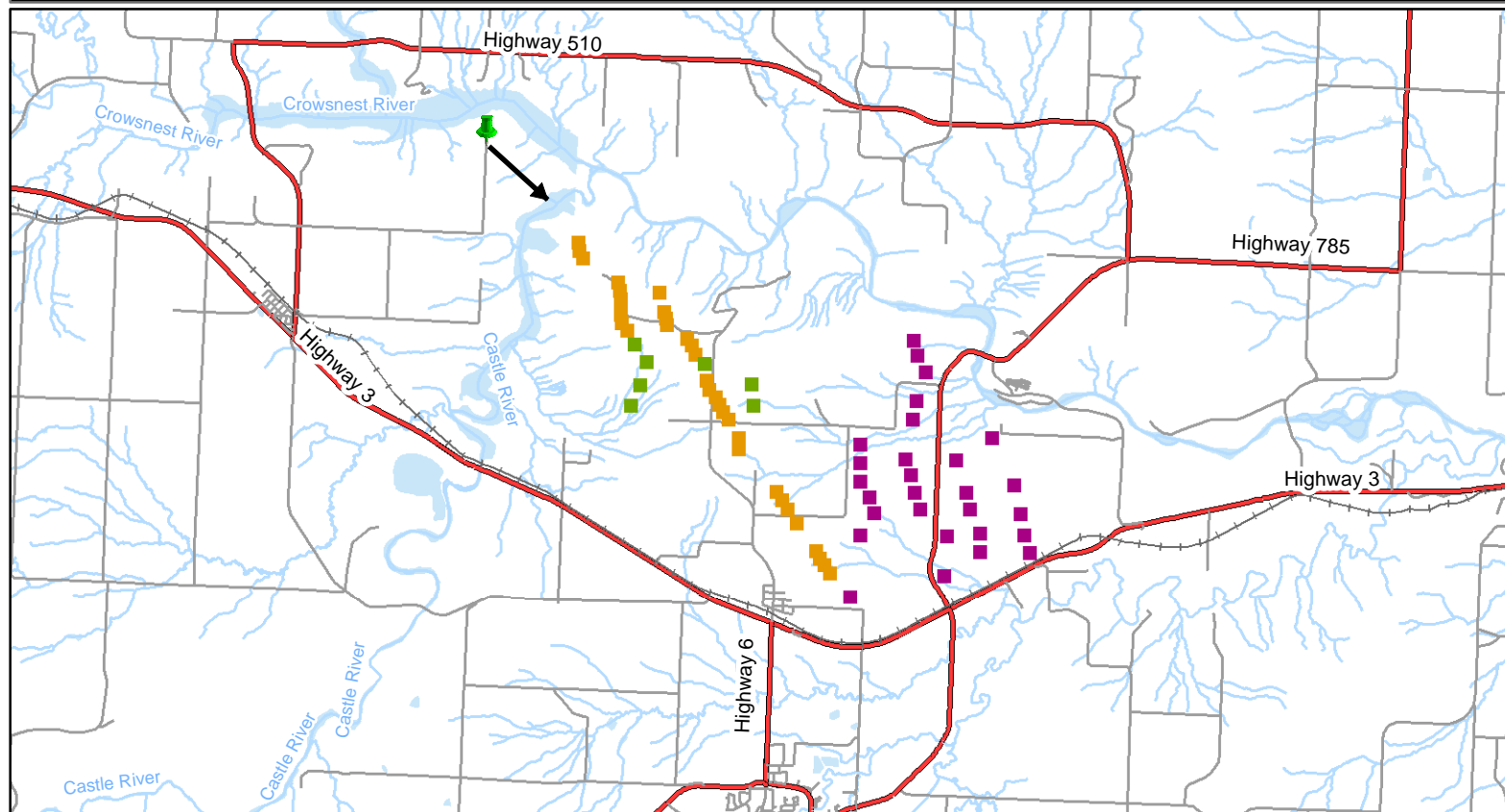
Project Area

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

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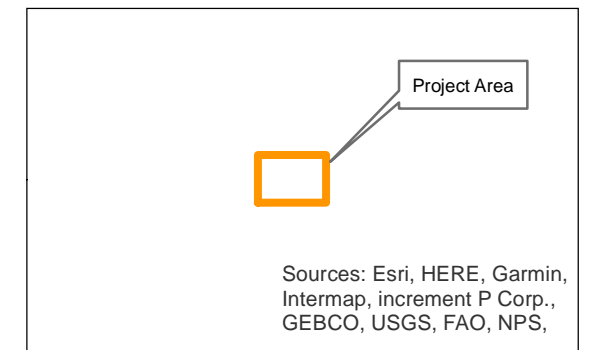


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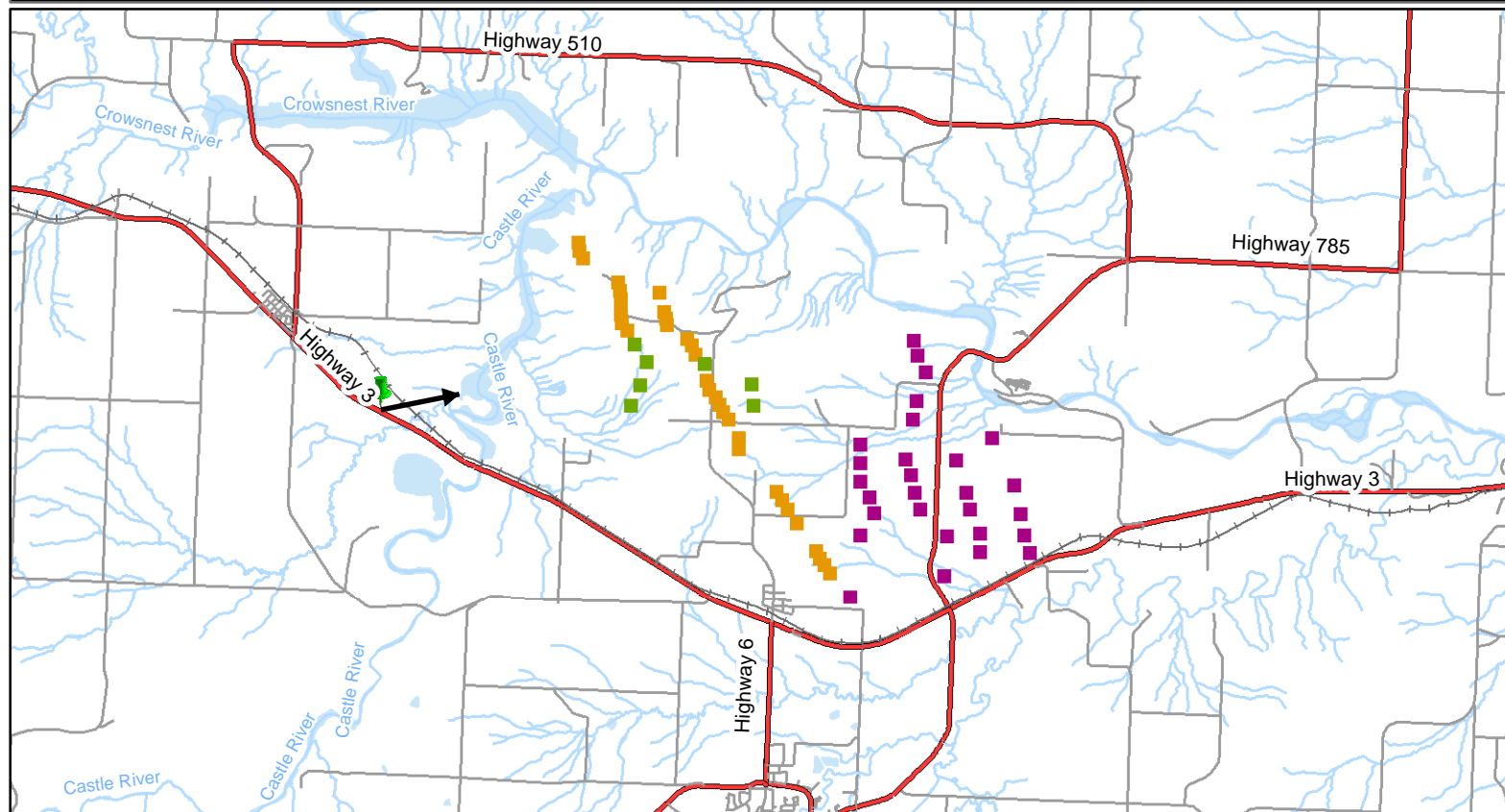
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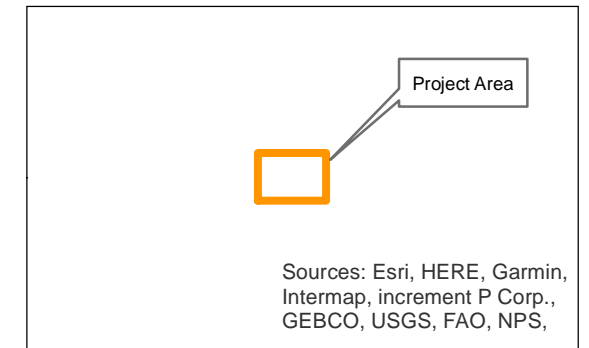


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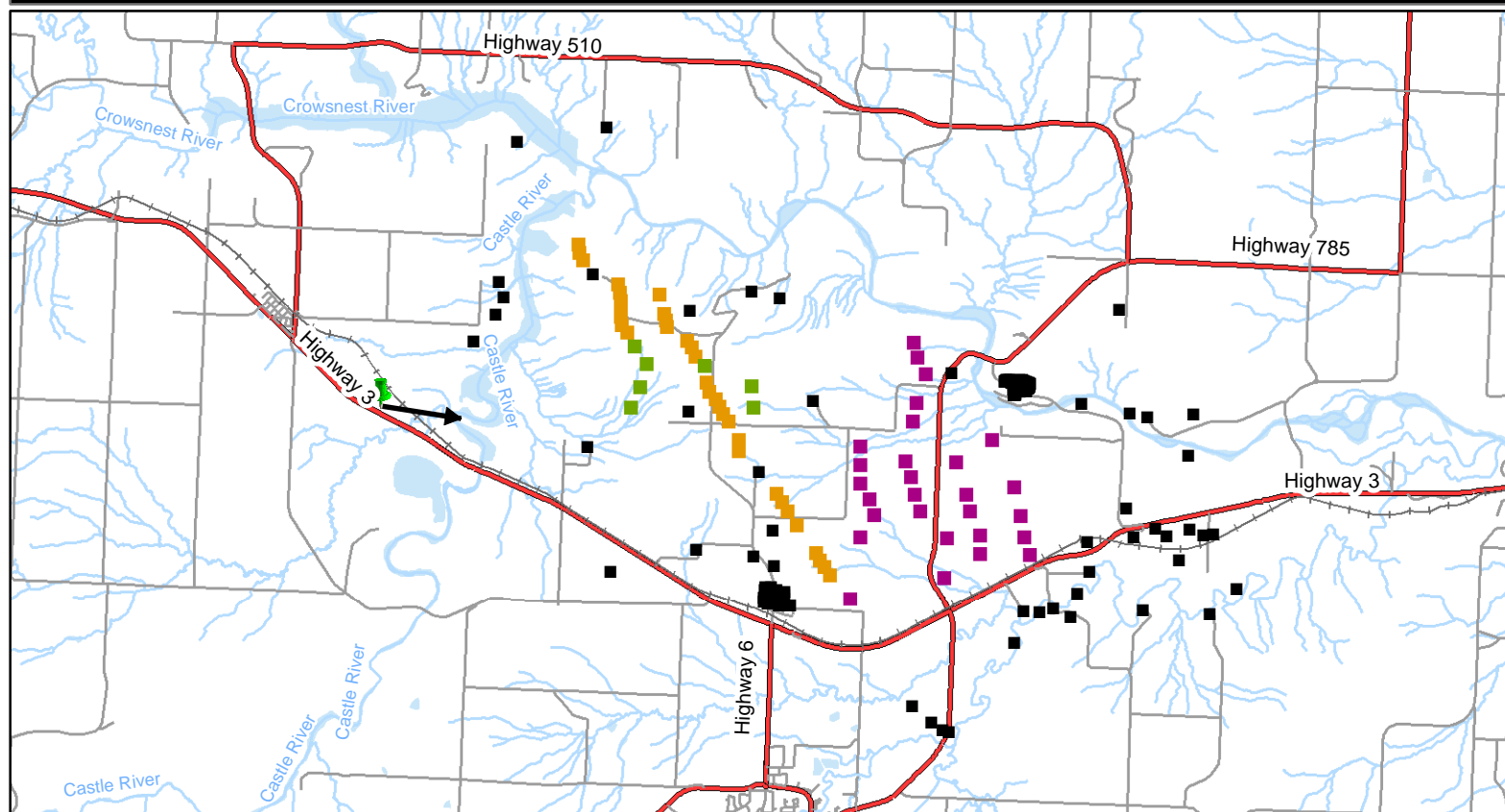
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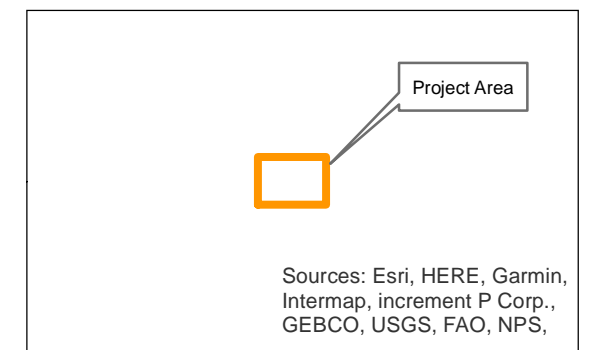


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- Turbines - CRR Phase 2
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- Watercourse
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- 📍 Camera Location

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1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
 118212101 REVA
 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

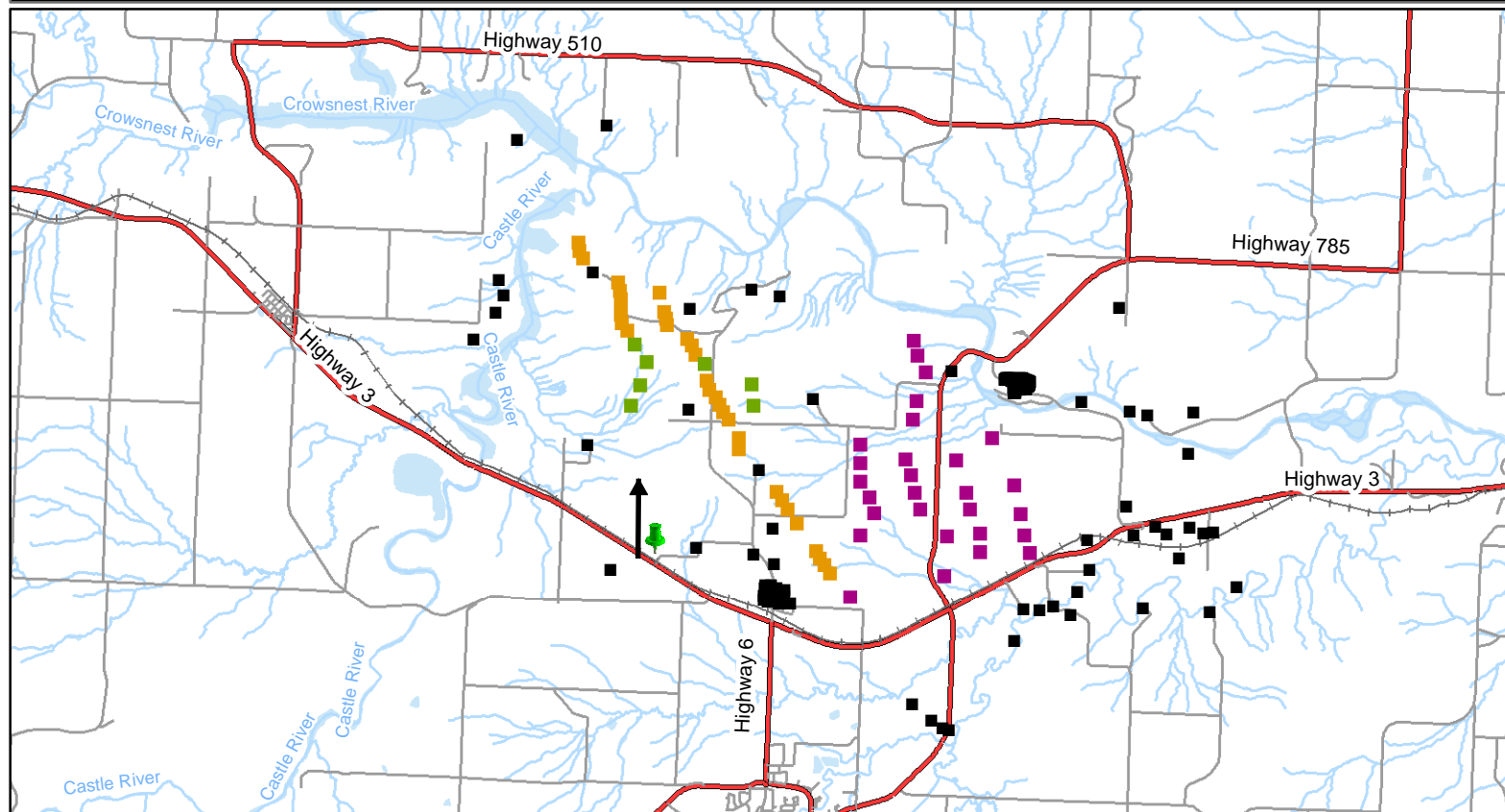
Client/Project: ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No.

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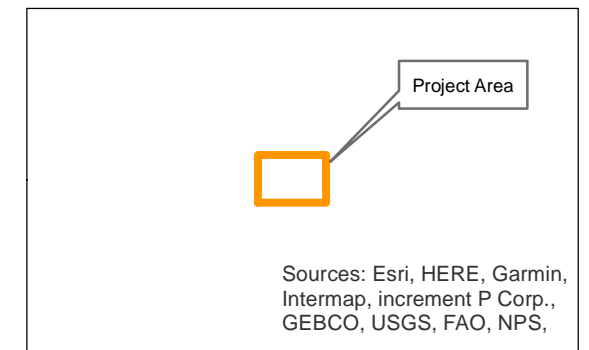
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Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
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 Prepared by DM on 2018-05-03
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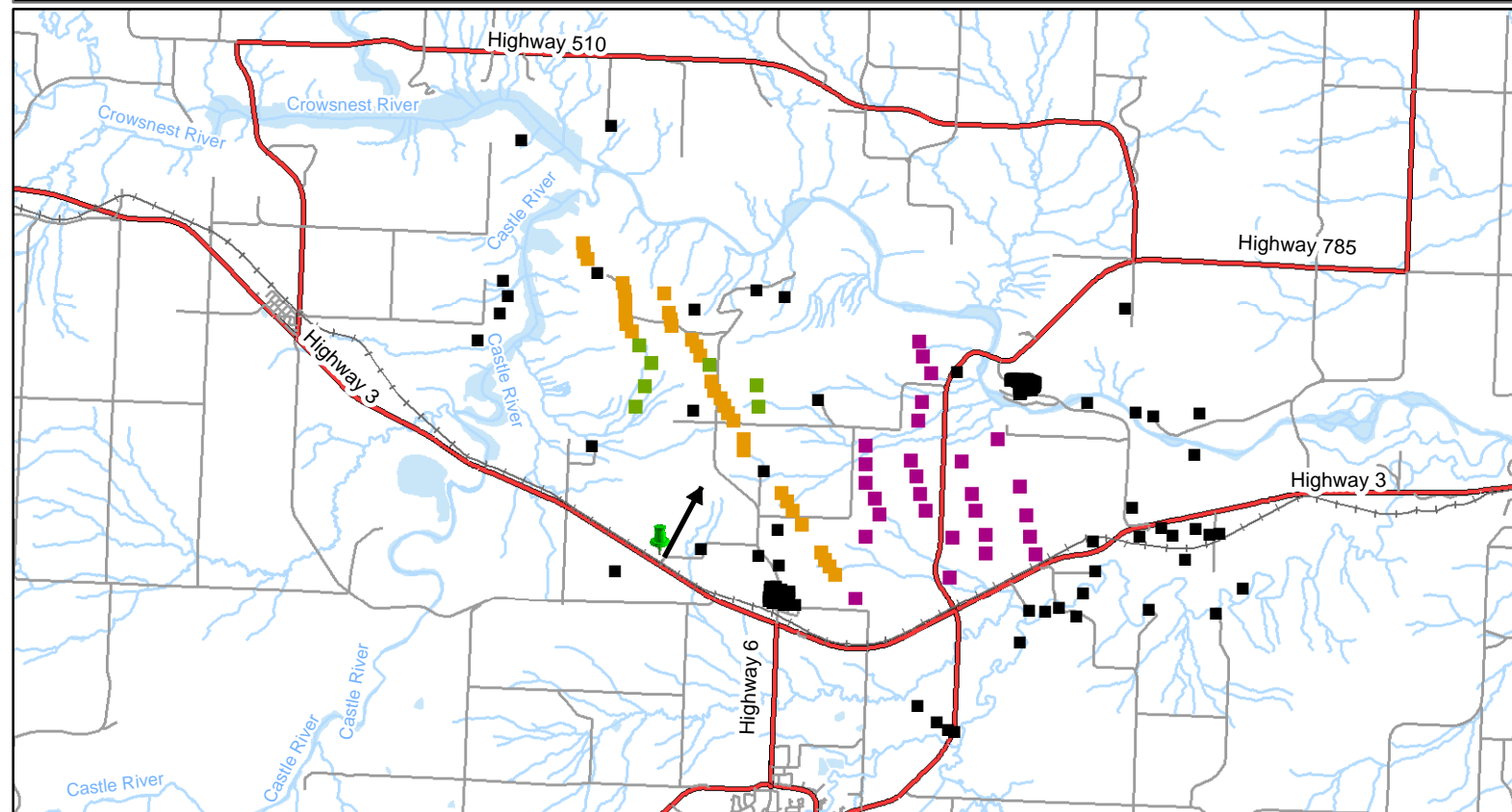
Client/Project: ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No. **26**

Title: **View From Viewpoint 16
 NE Sec 03 Twp 07 Rge 30 W4M
 Looking North**

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Original Photo



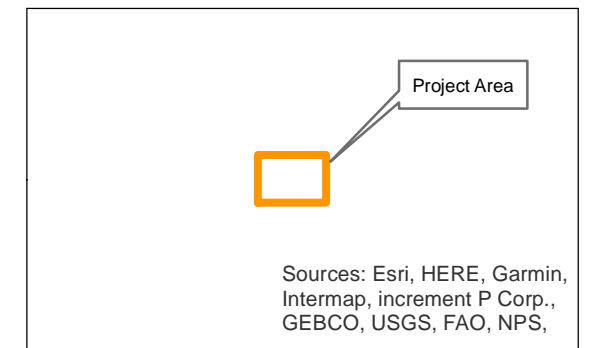
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Notes

1. Coordinate System: NAD 1983 UTM Zone 12N
2. Photo Taken: 2018/04/09



Project Location: M.D. of Pincher Creek, Alberta Canada
 118212101 REVA
 Prepared by DM on 2018-05-03
 Technical Review by SK on 2018-05-03
 Independent Review by JD on 2018-05-03

Client/Project: ENEL Green Power
 CRR2/Riverview Wind Farm

Figure No. **27**

Title: **View From Viewpoint 16
 NE Sec 03 Twp 07 Rge 30 W4M
 Looking Northeast**

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(s u b s i d i a r y o f E n e l G r e e n P o w e r N o r t h A

1110–1255 Boulevard Robert Bourassa
Montréal, Québec, H3B 3W7
www.enelgreenpower.com

May 25, 2018

R i v e r W i n d P o w e r

Dear Stakeholder:

Thank you for your ongoing interest in the Riverview Wind Power Plant (the Project), located near the hamlet of Pincher Station, Alberta. The Project is owned by Riverview, L.P., through its general partner, Enel Alberta Wind Inc. You may be more familiar with our parent company, Enel Green Power North America, Inc. (EGP), the owner of Enel Alberta Wind Inc. You are receiving this information because you live, own, or occupy property within 2,000 metres of the Project boundary. More importantly, we are reaching out to you because we want to hear your feedback.

P r o j e c t D e t a i l s

When we last updated you in June 2017, we proposed installing up to 44 3.2-megawatt (MW) wind turbines for a total capacity of 115 MW. After further study and after receiving stakeholder feedback, we have chosen to use 28 turbines and have selected the 4.2-MW Vestas V136 model for a total rated capacity of 117.6 MW with a total electrical capacity remaining at 115 MW. Selecting the higher rated turbine model allows us to reduce the total number of turbines from 44 to 28 turbines.

Accompanying this letter are several documents with further information about the Project:

- The Project-Specific Information Package has an overview of the Riverview Wind Power Project, Project details, and other consultation information. We have also provided information on Project effects such as shadow flicker, noise impact, and visual simulations.
- The Project Map shows the Project boundary and site plan with 28 turbine locations, the proposed Project collector substation location, access roads, and laydown area.
- The Visual Simulation shows the wind farm representation at two locations near the Project.
- The Alberta Utilities Commission Brochure, *Public involvement in a proposed utility development*, outlines your rights and options for participating in the proceedings.

A l b e r t a E l e c t r i c S y s t e m O p e r a t o r R e n e w a b l e E l e c t r i c i t y

The Alberta Electricity System Operator's Renewable Electricity Program launched a tender for electricity that was awarded in December 2017. We are thrilled to share that EGP has been awarded a 20-year Renewable Electricity Support Agreement for this Project. This award is a major milestone for our company, and we look forward to continuing to grow here in Alberta and to investing in the Canadian economy.

C o n t a c t U s

We are committed to continuing to engage with the community, landowners, and local government — both as we move toward construction and throughout the Project's life. We welcome your feedback!

If you have any questions or concerns regarding the Riverview Wind Power Project, please feel free to contact me at **1 8 5 5 5 0 0 5 1** riverviewwind@enel.com

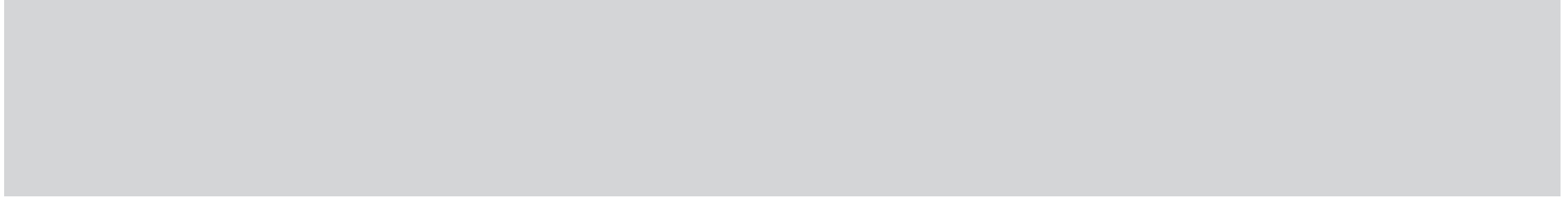
V i c t o r A . E n g e l

Project Manager - EGP Riverview Wind Power
Plant
Riverview, L.P., by its general partner
Enel Alberta Wind Inc.
(subsidiary of Enel Green Power North
America, Inc.)

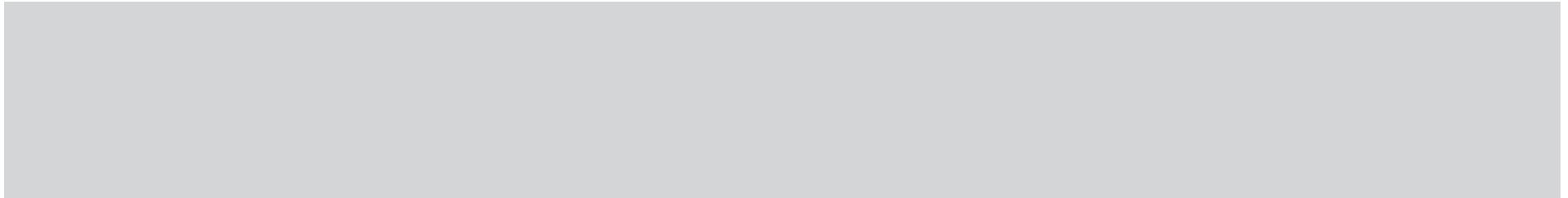
VIEWPOINT 2: NW-31-6-29-W4M - LOOKING NORTH

All visual simulations are based on the proposed turbine locations for Castle Rock Ridge Phase II and Riverview Wind Power Plant.

BEFORE



AFTER

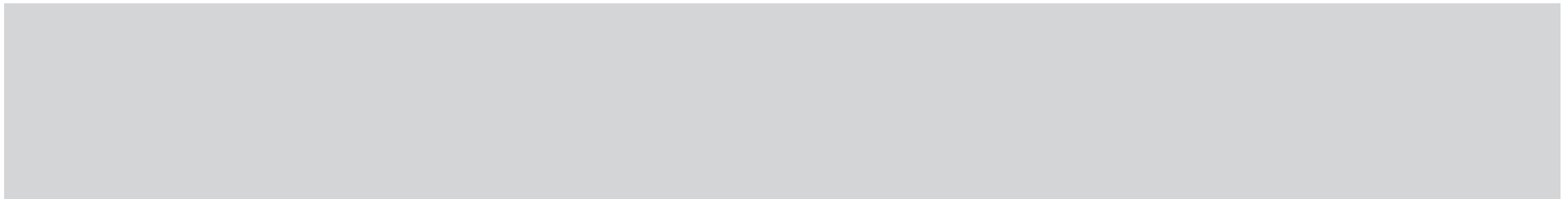


VIEWPOINT 5: HIGHWAY 3, SW-19-7-29-W4M - LOOKING WEST

BEFORE



AFTER



Frequently Asked Questions

How long will construction take and what should I expect?

We anticipate construction will begin in fall 2018, and it will take approximately one and a half years to complete. Construction activities will be suspended during the winter season of 2018-2019. Construction activities include civil works, access road preparation, foundation installation, turbine erection, collector system installation, and electrical and mechanical completions. EGP will aim to minimize disruption and will discuss mitigations for dust and traffic with the Municipal District.

Could wind turbines affect my health?

The community is top-of-mind when EGP designs wind sites. EGP works with community leaders and stakeholders to receive feedback on the wind farm design. A Health Canada study¹ from 2014 found that there is no scientific evidence to support negative effects on human health resulting from exposure to wind turbine noise. Under Rule 012, the Project must demonstrate that nighttime noise levels do not exceed the permissible sound level at residences located within 1.5 km of the turbines and substation. As referenced in the Health Canada study, the World Health Organization identifies that below an annual outdoor nighttime average of 40 dBA, no adverse health effects associated with sleep disturbance are expected, even among the most vulnerable people.²

Have you considered the plants and animals that live here?

Wind energy is one of the cleanest, most environmentally-friendly energy sources. Wind energy does not emit greenhouse gases or air pollutants. Under AEP's guidelines, all wind project proponents in Alberta must evaluate and report the potential impact of their wind projects on wildlife and vegetation. In 2018, AEP reviewed our environmental reporting and provided a Wildlife Referral Report. EGP has completed an environmental constraints analysis and integrated setbacks where practical. After construction, EGP will complete post-construction environmental monitoring, as required by the AEP.

How long will the wind farm operate?

The Project is expected to operate for at least 20 years. Near the end of the Project's life, we will evaluate whether the Project should be decommissioned or repowered. Decommissioning includes removing turbines and above-ground infrastructure. EGP will remove turbine foundations to a depth of 1.5 metres below ground. EGP will reclaim and restore all disturbed land to meet regulatory requirements at the time of decommissioning. Repowering is an alternative to decommissioning that allows wind farm owners to extend the project's life. It involves replacing project components and, often, leveraging project infrastructure. Repowering is often an attractive alternative to decommissioning a wind power project with a proven wind resource.

¹ Health Canada, 2014. *Wind Turbine Noise and Health Study: Summary of Results.* ² WHO, 2009. *Night Noise Guidelines for Europe.*



Introduction

Riverview, L.P. through its General Partner, Enel Alberta Wind Inc., is developing the Riverview Wind Power Plant (Project) in your area. Enel Alberta Wind Inc. is a subsidiary of Enel Green Power North America, Inc. (EGP).

Thank you for your continued support and interest in the proposed Project; EGP greatly values our relationship with the community, and we are committed to engaging and consulting with all stakeholders. This newsletter provides up-to-date information on this Project, and it gives us the opportunity to seek your feedback.

Project Description

EGP is pleased to announce that in December 2017, two of our proposed wind power projects, Castle Rock Ridge Phase II and Riverview Wind Power Plant, were awarded contracts through the Alberta Electric System Operator's (AESO) Renewable Electricity Program (REP). We are moving forward with the regulatory process in the coming months. EGP is proposing to develop, construct, and operate the 115-megawatt (MW) Project near the hamlet of Pincher Station, Alberta, and we anticipate the Project will be under construction in 2018.

The Project involves the construction of 28 wind turbines, an electrical collection system, access roads, two permanent meteorological towers, a proposed Project collector substation, adjacent to the existing Castle Rock Ridge Substation (205S). The turbines in the Project will be connected through underground collector lines that connect to the proposed 45 metre (m) by 65 m Project collector substation. The Project will also require a temporary laydown area during construction, and it may require upgrades to roads in the area. This newsletter includes a map of the proposed Project layout as a separate page.

The Project proposes to connect to Alberta's electric grid through a 240 kilovolt transmission line. The interconnection process will be covered under a separate consultation and application process that AltaLink will conduct.

In 2014, EGP initiated an Alberta Utilities Commission (AUC) application for the Project. Since then, we have changed the turbine model to improve the Project's overall competitiveness. We have selected the Vestas V136-4.2 turbine. This turbine has a capacity of 4.2 MW and allows us to reduce the number of wind turbines from 50 to 28. The Project's total capacity is 117.6 MW although only 115 MW will be transmitted to the Alberta Interconnected Electric System. All of the proposed turbine locations are a subset of the previously identified locations in 2014.

IN THIS NEWSLETTER, YOU WILL FIND:

- Project Status Update
- Anticipated Project Schedule
- Wind Power Information
- Contact Information

INSERT:

- Proposed Project Map
- Visual Simulations

Next Steps

As we move through the regulatory and permitting process, we will continue the dialogue with landowners and stakeholders in the area. We will consider your feedback for this Project. We are updating our AUC application for this Project. We intend to submit our regulatory application this summer, which will include a summary of stakeholder feedback. **We encourage you to reach out to us about the Project updates.**

Contact Information

If you have any questions, or concerns about this Project, please contact our consultation agents at: **Tel: 1.855.450.3051 • Email: riverviewwind@enel.com**

For more information about our operations in North America, please visit: **www.enelgreenpower.com/en/country-north-america.html**

| Mike Stafford | Chris Poitras

Privacy Commitment: Riverview L.P. is committed to protecting your privacy. Collected personal information will be protected under the provincial *Personal Information Protection Act*. As part of the regulatory process for new generation projects, Riverview L. P. may be required to provide your personal information to the AUC.

The table below compares the Project information from 2014 to April 2018.

	2014 LAYOUT	2018 LAYOUT	NOTES
Turbine type	Siemens 2.3-101	Vestas V136-4.2	New turbine type
Number of turbines	50 turbines	28 turbines	Fewer turbines
Number of turbine locations	50 turbine locations	28 turbine locations	Locations are a subset of original turbine locations
Rated capacity	2.3 MW	4.2 MW	Larger size
Diameter	101 m	136 m	Larger rotor
Total height	130.5 m	150 m	Taller
Hub height	80 m	82 m	Similar hub height
Total Project size	115 MW	117.6 MW	Electrically limited to 115 MW – No change
Total Project maximum output to the Alberta grid	115 MW	115 MW	No change

Table 1: Comparison of the Turbine Type and Layout from 2014 to April 2018

Environmental Studies

In 2014, the Project previously received a Wildlife Referral Report from Alberta Environment and Sustainable Resource Development, Alberta Environment and Parks' (AEP) predecessor. EGP conducted additional wildlife studies in 2017 to update the information about the Project and surrounding area. In 2018, we received an updated Wildlife Referral Report from AEP.

Noise Impact Analysis

In Alberta, energy facilities must comply with AUC Rule 012: Noise Control. This rule requires the cumulative assessment of noise emissions, including wind power projects, oil and gas facilities, and other energy-related facilities. Under Rule 012, the Project must demonstrate that nighttime noise levels do not exceed the permissible sound level at residences located within 1.5 kilometres (km) of the turbines or the substation. In general at rural residences, the permissible sound equivalent level is 40 dBA. The Project complies with the Rule 012 requirements. The Project map identifies residences within 1.5 km of the Project that are noise compliant and those that have no net increase in noise.

Shadow Flicker Analysis

Shadow flicker can occur when rotating turbine blades cast shadows on residences. EGP modelled shadow flicker potential effects including the probability for cloud cover. EGP did not consider mitigating factors such as window locations and physical obstructions. The analysis indicated that no residences are predicted to experience shadow flicker.

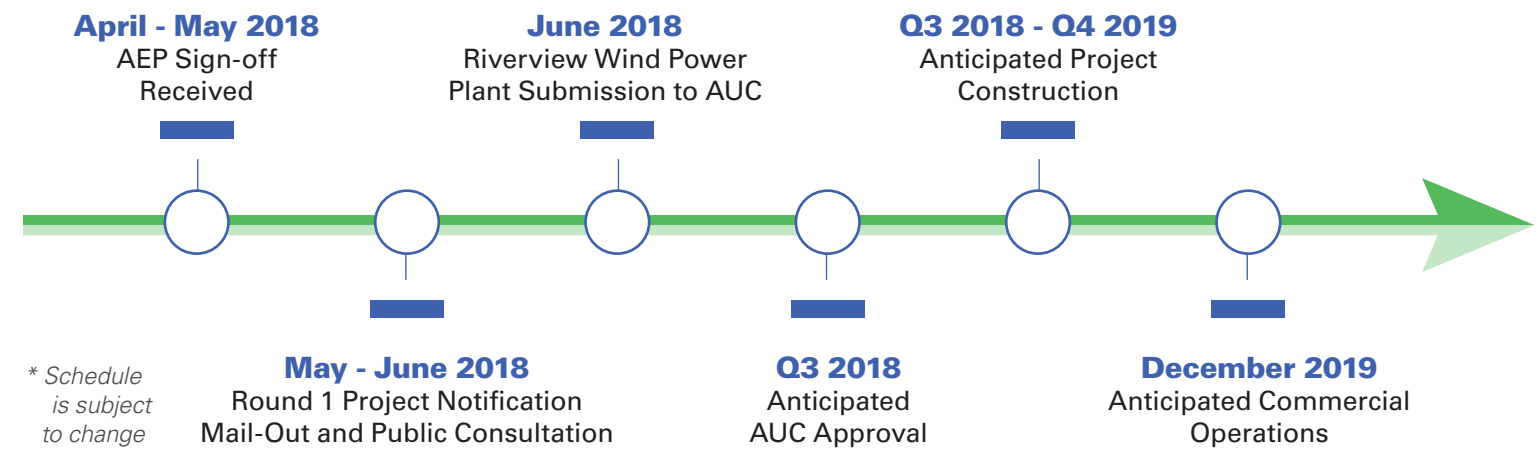
Visual Simulations

EGP has developed two visual simulations for the Project. The simulations include all 28 turbine locations, existing wind farms in the region, and the proposed Castle Rock Ridge Phase II project.

Canadian Wind Energy Association: www.canwea.ca/wind-facts/why-wind-works

Anticipated Project Schedule*

The proposed timeline for the Project is as follows:



Engaging with the Local Community

EGP values the long-term benefits of working with the local community. The surrounding community will benefit from the following:

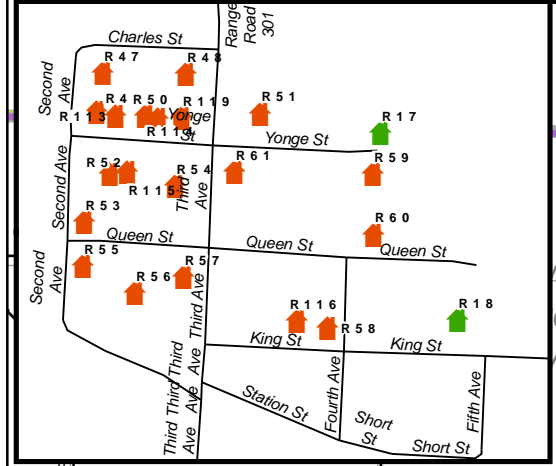
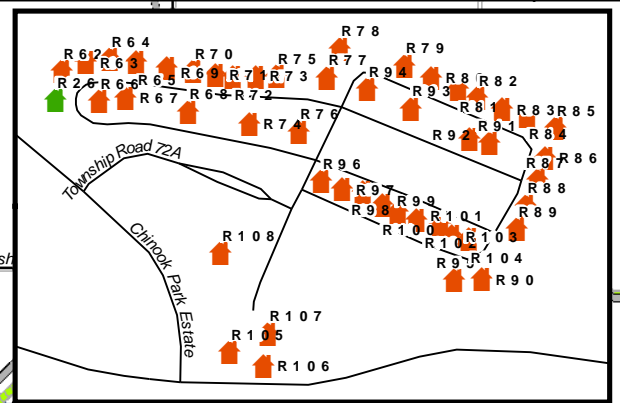
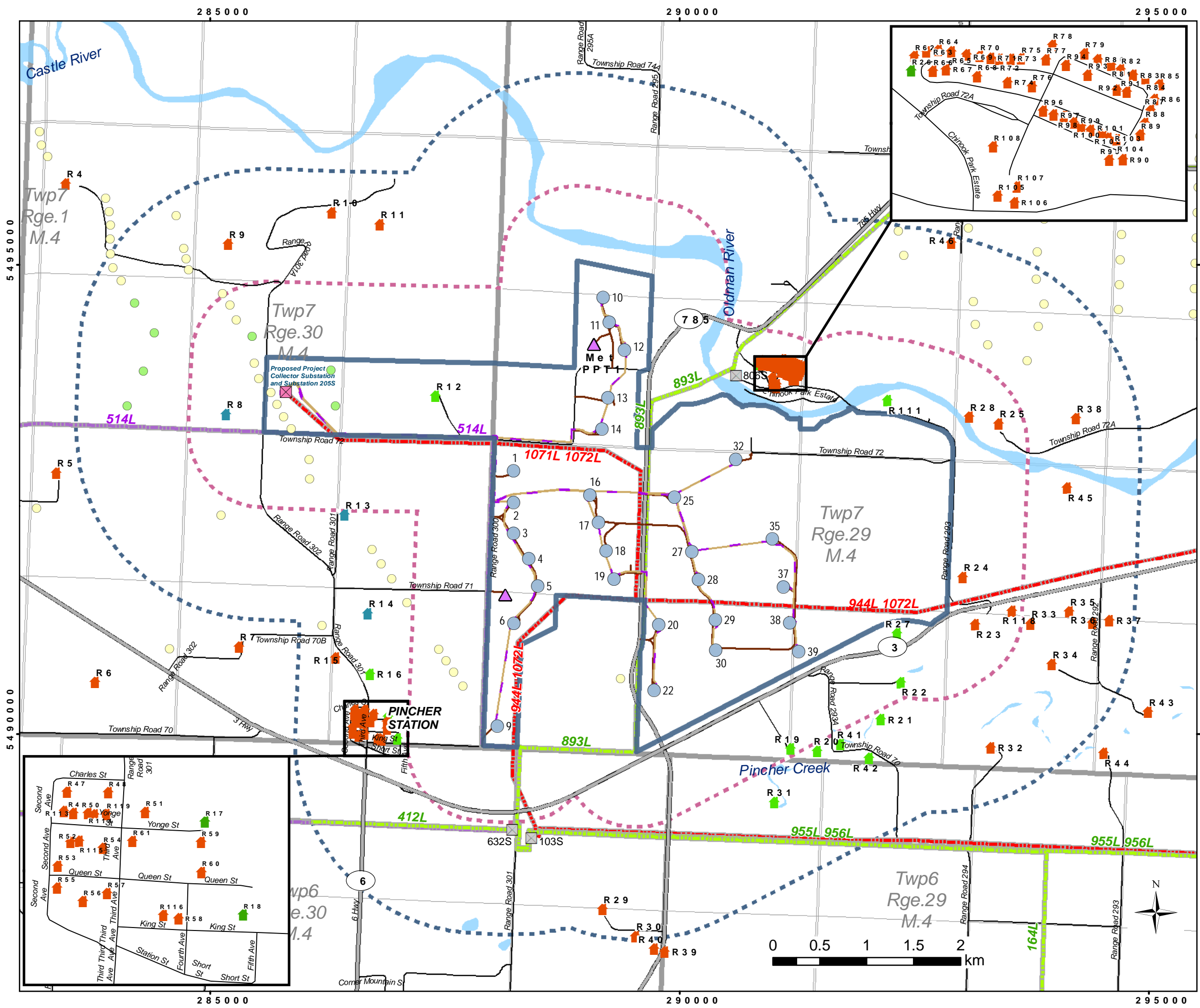
- Employment opportunities during construction
- Permanent employment opportunities during operations
- Contracting opportunities for local businesses
- Royalties for landowners
- Tax revenue for the Municipal District of Pincher Creek No. 9

These benefits will enrich the community throughout the 20-plus years of the Project's operational life.

Renewable Electricity Program (REP)

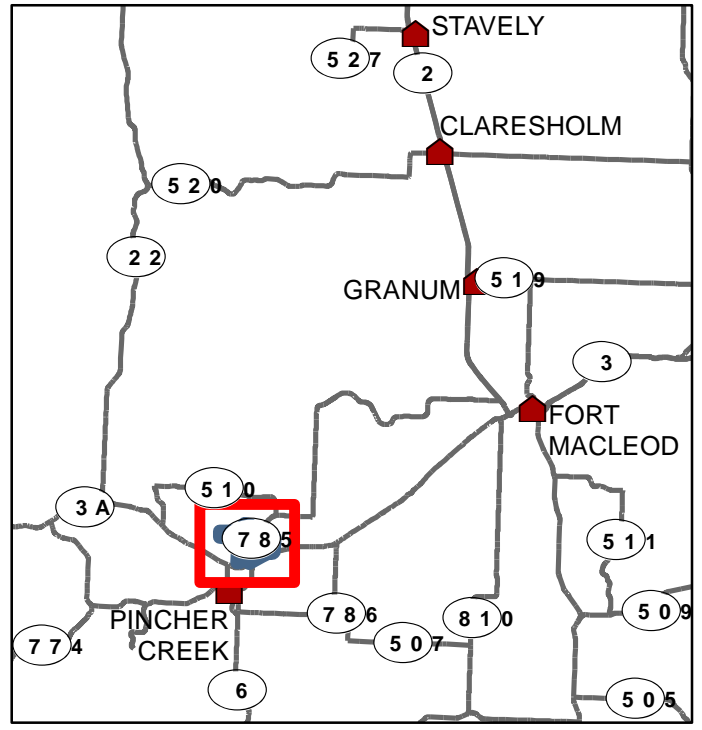
Alberta is changing its mix of power generation to include more natural gas and renewable energy, including wind power. In March 2017, the AESO launched Round 1 of the REP to competitively procure renewable electricity.

EGP submitted bids for the Riverview Wind Power Plant and the Castle Rock Ridge Phase II project, and EGP was awarded two contracts in December 2017. These awards mark a major milestone for our company, and we look forward to continuing to grow here in Alberta and to investing in the Canadian economy.



Riverview Wind

Project Layout, Shadow Flicker, and Noise Impact Map



- LEGEND**
- Residence Location outside of Noise Assessment Area
 - Residence - Noise Compliant
 - Residence - No Net Noise Increase
 - Proposed Riverview Turbine
 - Proposed Castle Rock Ridge Phase II Turbine
 - Existing Turbine
 - Proposed Project Collector Substation
 - Meteorological Tower
 - Project Area
 - Proposed Collection Line
 - Proposed Access Road
 - Existing Transmission Line
 - 69 kV
 - 138 kV
 - 240 kV
 - Existing Substation
 - Consultation Area - 800 m
 - Notification Area - 2 km
 - Section Boundary
 - Municipal Roads
 - Highways
 - Water Body
 - Section Boundary
 - Township Boundary

ENEL GREEN POWER NORTH AMERICA, INC. RIVERVIEW WIND PROJECT

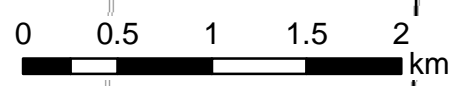
DATE: 2018-05-23
REV. 0

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AUTHOR: A.G.
CHECKED: P. MCG.

PREPARED BY SOLAS ENERGY CONSULTING INC.

COORDINATE SYSTEM: NAD83 UTM 12N

REFERENCES: ENEL INC, SOLAS ENERGY CONSULTING, CANVEC PLUS



Appendix O Environmental Protection Plan – Transportation Plan Figures

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
Alberta, Canada

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Rev.	Date	Description	PREP.	CHKD.	APPR.
01	09/26/13	Initial release	MKehle		
02	04/22/14	Native Prairie Revision	TBanks		
03	05/26/14	ESRD Edits Incorporated	TBanks		
04	06/26/15	Alberta Environment & Parks sign-off	MKehle		
05	08/13/15	Correct Format and Comment	JAllen		
06	02/16/18	Update	ASmith		

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
Alberta, Canada

1. Environmental Protection Plan (EPP) 115 MW Riverview Wind Project, Alberta Canada

This Environmental Protection Plan (EPP) describes the project-specific measures to be implemented during development of the 115 MW Riverview Wind Project (Project). The EPP consists of a series of general protection measures that apply to all development activities and a series of specific protection measures that apply to the various stages of construction and reclamation. These protection measures are an addendum to the construction contract specifications and should be read in conjunction with the contract documents. The Owner, Riverview, LP. is committed to protect the environment in the areas where Work is conducted as well as related off-site areas.

Adherence to the protection measures specified in the EPP will ensure that the Project is developed with the least possible disturbance to the natural environment, the least possible disruption to the current land uses and is done in accordance to the commitments made to, and permitting requirements of, the appropriate permitting authorities with jurisdiction.

2. Department in Charge of the Document

The Environmental Compliance and Regulatory Services group in the North America unit is responsible for drafting, updating and maintaining this document.

This document is reviewed annually, as a minimum, and updated as needed.

3. References

- x Group Enel Code of Ethics;
- x Zero Corruption Tolerance (ZCT) Plan;
- x Organization and Management Model according to Legislative Decree no. 231 dated 8 June, 2001 – Guidelines for non-Italian Subsidiaries
- x List of reference documents issued by external organizations (laws, guidelines, regulations)
- x EGP NA HSE Manual
- x ENA-ENV-FR-GEN-001 – Environmental Checklist
- x Environmental Health and Safety Management Systems

4. Definitions and Acronyms

ACCS: Alberta Culture

AEP: Alberta Environment and Parks

ASERT: Alberta Environment Support and Environmental Response Team

ATV: All terrain vehicles

AUC: Alberta Utilities Commission

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

CSA: Canadian Standards Association

CWS: Canadian Wildlife Service

ECRS: Environmental Compliance and Regulatory Services

EGP: Enel Green Power S.p.A.

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EGPNA: Enel Green Power North America, Inc.

EMS: Emergency Medical Service

EPP: Environmental Protection Plan

ESRD: Alberta Environment & Sustainable Resource Development. This entity was combined in 2013 from two separate government entities; Alberta Environment and Alberta Sustainable Resource Development. This department was then renamed Alberta Environment and Parks in June 2015.

Owner: Enel Alberta Wind Inc.

PPE: Personal Protective Equipment

Project: 103.5 MW Riverview Wind Project

RCMP: Royal Canadian Mounted Police

Safety Environment and Quality North America Area unit (SEQ): unit within Safety Environment and Quality Department.

WHMIS: Workplace Hazardous Materials Information System

NOTICE

Please note this document may still require revision as requested by the various regulatory bodies involved in the consultation and permitting process for the Riverview wind power project. Information on the site emergency contact information is required; however this is to be done in consultation with the site contractor and local municipal and EMS authorities. The possibility exists of restrictions on the dates for the civil works caused by the presence of protected wildlife species on the site. As the construction plans are not finalized, the conditions of the EPP may be subject to change.

Updated revisions of the EPP, if any, will be forwarded to each party once available.

5. Project Description

The Project is located approximately 4 kilometers north of the Town of Pincher Creek in southwest Alberta, Canada. The project will be composed of 28 Vestas V136 4.2MW wind turbine generators for a total generating capacity of 115 MW. The wind turbine generator blades are 66 m in length with a rotor diameter of 132 m when installed. The wind turbine generators will be erected on an 82 m tall steel tower. Concrete foundations will be constructed to support the wind turbines. An electrical substation will be constructed for the Project. Access roads composed of select fill material shall be constructed and will lead to each of the wind turbine generator foundations. Turnoffs to existing access roads from Highway 3 and Highway 785 will be used and reinforced to accommodate the cranes and construction equipment. The access road will be designed to support the weight loads and dimensions of the Project construction equipment, most importantly the erection cranes. The access roads will be located on private property. Electrical conductors and fiber optic communications cabling will be strung to each wind turbine and buried underground.

The site plan showing the major Project components is provided in Figure 1.

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The EPP was prepared based on a proposed Fall 2018 construction start-date with completion expected by December 31st 2019. The proposed wind farm will be constructed at a time period that meets habitat protection restrictions for nesting birds and wildlife and avoids problems associated with crop production, cattle grazing and handling of frozen soils. Vegetation clearing of access roads, collection lines, and turbine pads is scheduled to begin in Fall 2018. Full project construction will begin in April 2019. Construction of the Project will be completed as quickly as practical. The distance between front and back end operations will be kept to a practical minimum.

5.1 Contractor Responsibilities

To ensure protection of the environment, the Work at all times shall be subject to inspection by the Owner and municipal, provincial and federal government agencies with jurisdiction.

For the construction of the Project, the Owner will be using a Contractor to coordinate and undertake the construction activities, whereas the operation of the Project shall be the responsibility of the Owner. This EPP assigns responsibility to either the Owner or Contractor; however, it is ultimately the responsibility of the Owner that all practices are followed and respected.

5.2 Owner's and Contractor's Responsibilities

- a) The Contractor shall ensure that its employees and those of its subcontractors and sub-subcontractor and agents and vendors comply with all of the requirements of the Contract and with all applicable environmental laws, regulations, permits and requirements of federal, provincial and municipal authorities.
- b) The Owner and the Contractor will obtain all the required permits, approvals, and authorizations for the construction of the Project. Copies of all certificates and approvals acquired by the Contractor must be provided to the Owner in a timely manner, and copies are to be available and/or posted on-site as appropriate or required.
- c) The Contractor shall identify and obtain required permits to establish and/or use a Waste Disposal Area for garbage disposal. If the Contractor establishes a Waste Disposal Area for use during construction, the Contractor shall decommission and close the Waste Disposal Area prior to Final Completion of the Work.
- d) All Works related to the Project are to take place within the Project Boundary outlined in Figure 1. Any Works outside of the Project Boundary must be approved in writing prior to their commencement by the Owner.

Environmental Effects Monitoring programs have been committed to in the various supporting documents prepared for the approvals of the Project by the Owner and shall be implemented by the Owner in consultation with the appropriate regulatory authorities. Monitoring programs as conditions of permits, approvals or authorizations issued to the Contractor shall be implemented by the Contractor.

5.3 Owner's and Contractor's Personnel

- a) All government laws, regulations and rules pertaining to fish and wildlife (e.g., federal *Migratory Birds Convention Act* and provincial *Wildlife Act*), fires, travel, smoking and littering shall be complied with by the Contractor and its employees, its Subcontractors and Sub-subcontractors, vendors and

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agents. There shall be no hunting, trapping or shooting within the Project Boundary. All personnel involved with field activities on the Project Site will not be permitted to have dogs or pets on Project Site during the Works.

- b) Any contravention of laws and environmental requirements by the Contractor and its employees, Subcontractors, Sub-subcontractors, vendors or agents, accidental or otherwise, resulting in environmental damage shall be reported to the Owner immediately and/or the appropriate agency with jurisdiction in the matter within the time period as stipulated in this EPP.
- c) The Contractor shall report any incident to the appropriate authorities (e.g. AEP, AUC, Environment Canada, MD Pincher Creek, etc.). The Contractor shall be responsible for clean-up, reclamation or other restorative measures as may be directed by the Owner, provincial or federal government agencies or the landowners.
- d) All construction work shall be conducted in compliance with the Canadian Centre for Occupational Health and Safety Act and its regulations.
- e) All workers shall utilize Personal Protective Equipment (PPE) appropriate to the duties being performed.
- f) All workers working at an elevation greater than 3.05 meters above grade or floor level shall wear a fall prevention system that is in accordance with the current standards of the Canadian Standards Association (C.S.A.) Code.

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Figure 1 – Site Plan of Major Project Components

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5.4 Project Notification

The landowners, leaseholders, Alberta Environment and Parks, and municipal officials will be informed of project developments throughout all phases of construction if requested. Efforts will be made to minimize interference with existing land uses (agricultural activities, public highway, and road use) through timing of construction activities and consultation with stakeholders.

Prior to commencement of construction activities, a “pre-construction meeting”, will be conducted with each contractor in attendance. The appropriate representatives from the Owner’s and Contractor’s management team, environmental monitors, and construction management personnel will attend.

The purpose of this meeting is as follows:

- a) to review project issues,
- b) to describe and discuss project mitigation measures, and
- c) To address any outstanding issues.

The appropriate marshaling yard/staging area in farm land and off the native grassland will be provided for construction activities. The location of the marshaling/staging area is to be decided by the Owner.

All licenses, permits and approvals will be obtained in writing prior to any construction activities. Any inconsistencies in conditions between approval permits will be resolved prior to the commencement of construction. Copies of the permits and approvals will be retained on file and in the field office by the On Site Supervisor. All regulatory authorities, landowners, occupants, and lease holders will be notified of the project start-up date.

The landowner(s) within the area impacted by the Project will be notified of the final project schedule a minimum of two weeks prior to construction startup, to prevent or reduce disturbance caused to the landowner’s operations.

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6. General Environmental Protection Measures

This EPP will be provided to all prospective contractors by the Owner and will form part of the Contractor's construction planning. The EPP will be part of the bid package to all bidding contractors and be included in the final contract documents for the Project.

The Owner and Contractor shall ensure that all necessary provincial and federal licenses, permits and approvals will be obtained and conditions met prior to commencement of construction. Inconsistencies between conditions of different licenses, permits, and approvals will be resolved before construction begins. A listing of the permits that may be required for the construction of the Project can be found in Section 9 – Permits, Approvals and Authorizations.

The Owner will conduct a pre-job meeting with the Contractor, applicable regulatory agencies, construction supervisors and environmental specialists to discuss project-related issues and a schedule of activities.

Contact information, including personnel, their title and phone numbers, will be provided to all parties involved in construction.

If requested, the applicable regulators such as the AEP and the Municipal District of Pincher Creek will be kept informed of all construction schedules and will be consulted regarding timing, limitations or special requests dealing with environmental protection.

All construction personnel involved with Work of the Project and their contractors, subcontractors and inspectors, will be made aware of and must abide by the Owner's corporate policies for environmental protection and any site-specific environmental concerns (i.e., the sensitivity of agricultural soils, wildlife and the prevention of grass fires) and procedures (i.e., the salvage of topsoil and the control of soil erosion) identified for this project.

Smoking on site will not be permitted by Owner or Contractor personnel, including subcontractors and vendors, except in designated smoking areas which are to be posted and marked.

The following sections provide general environmental protection procedures for activities associated with the construction and operation of the Project:

- x Surveying
- x Vegetation Clearing and Disposal
- x Stripping and Material Excavation
- x Disposal of Excavated Material
- x Linear Developments
- x Ditching
- x Heavy Equipment Movement onsite
- x Dust Control
- x Sewage and Solid Waste Disposal
- x Storage Handling and Transfer of Fuels and Other Hazardous Materials
- x Light and Noise Levels
- x Vehicle Traffic
- x Blasting
- x Concrete Production/Placement
- x Marshaling and Storage Areas
- x Avoidance of Migratory/Protected Birds and Wildlife
- x Pumps and Generators

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7.1 Surveying

Environmental Concerns

Surveying activities may disturb wildlife species, vegetation and historic resources.

Site surveying activities will be conducted primarily on rangeland or native prairie grass. The surveying activities that may be required include:

- vegetation removal
- traversing
- establishing permanent benchmarks

Environmental Protection Procedures

The following procedures shall be used to minimize the potential environmental effects of vegetation clearing and disposal:

- a) The boundaries of the right of way for access roads, underground electrical conductors, fiber optic cabling, crane pads, electrical substation and temporary work spaces will be surveyed and clearly marked with stakes and ribbon by the Contractor before construction to ensure that construction vehicles do not trespass off these marked paths. Vehicles will proceed in single file where practicable.
- b)

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7.2 Vegetation Clearing and Disposal

Environmental Concern

The removal of vegetation from the Project Site could potentially alter or destroy existing or potential plant and wildlife habitat. Vegetation removal may also create the potential for increased soil erosion at the Project Site.

Vegetation clearing activities include the removal and disposal of soil, native grassland and other vegetation at the Project Site. Vegetation clearing may be required prior to access road construction, lay down areas, erection pads, transmission line pole installation and wind turbine foundation excavation.

Environmental Protection Measures

The following procedures shall be used to minimize the potential environmental effects of vegetation clearing and disposal, particularly with the removal of native grassland:

- a) The boundaries of the access roads, underground conductor cabling, working area (i.e. laydown areas), parking, and fiber lines will be surveyed and clearly marked with stakes and ribbon by the Contractor before construction to ensure that construction vehicles do not trespass off the site access roads. Temporary access will also be clearly marked.
- b) All construction related activities will be conducted during suitably dry or frozen ground conditions, if practicable.
- c) The clearing of vegetation shall be restricted to the minimum areas needed for the Project Work.
- d) The Contractor shall stockpile all topsoil, which will remain the property of the Landowner and shall be stockpiled by the Contractor at locations directed by the Landowner of which excess material remains the property of the landowner. These locations are to be identified prior to construction.
- e) Landowners will be given sufficient notice prior to vegetation clearing in order to salvage crops from the affected area.
- f) Grading of slopes for the convenience of construction is not permissible, except as may be provided for in any approved designs and plans. Construction plans will include sod and topsoil salvage and storage requirements, erosion control measures, and specific re-vegetation and erosion control measures. Topsoil will be salvaged from all areas for use during reclamation.
- g) On some lands topsoil will be stripped and then put back and then covered by the access road according to *AENV Native Plant Revegetation Guidelines for Alberta, February 2001* specifications for native rangeland.
- h) Ditch line and cable vault locations on rangeland will be stripped according to *AENV Native Plant Revegetation Guidelines for Alberta, February 2001* standards then the top soils and the sods used at other sites for reclamation and landscaping.
- i) Revegetation of any disturbed ground surface that is not part of an access road, lay down area, underground conductor, substation base or cabling or erection pad shall be undertaken by the Contractor in order to prevent soil erosion.

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- j) All seed mixes used for revegetation must be registered seed and acceptable to the landowners and the Municipal District of Pincher Creek district agrologist. Only Canada No. 1 Certified seed will be used for hay land and tame pasture mixes. Copies of the Certificates of Seed for each lot will be approved by the Owner prior to purchase. Copies of the Seed Certificate will be provided to the Owner. The seed type shall not be used without the written approval of the Owner's Representative.
- k) Seed mixes used on native prairie sites will be selected based on the composition of the surrounding native prairie community. Seed mixes will be certified weed free by the supplier and agreed upon with the landowner.
- l) Seeding should be done only when the potential for seed germination is high (i.e., spring or fall).
- m) No attempt to harass or disturb wildlife shall be made by any person (see Section 7.17 Avoidance of Migratory/Protected Birds and Wildlife).
- n) Vehicles shall yield the right-of-way to wildlife (see Section 7.17 Avoidance of Migratory/Protected Birds and Wildlife).
- o) Any archeological & paleontological sites and features that are encountered shall not be disturbed. Any discovered sites shall be reported to the Historic Resources Management Branch and to the Owner (see Section 8.6 – Discovery of Historic Resources). All works are to cease in the immediate area.

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7.3 Stripping and Material Excavation

Environmental Concern

These activities increase the potential for erosion due to exposed soil and associated effects of runoff containing high sediment load on nearby water quality, ecosystems and environmentally sensitive areas once the overlying vegetation has been removed.

Stripping refers to the removal of topsoil. Materials excavation refers to the excavation of all other soil materials.

Environmental Protection Procedures

The following procedures shall be used to minimize the potential environmental effects of stripping and materials excavation:

- a) The Contractor shall ensure that surface disturbances, such as traffic, grading and vegetation clearing will be kept to a minimum, especially in environmental sensitive areas associated with native prairie and near wetlands.
- b) The boundaries of the right-of-way and temporary work spaces will be surveyed and clearly marked with stakes and ribbon by the Contractor before construction to ensure that construction vehicles do not trespass off the Project Site access roads, erection pad or underground cabling paths. Vehicles will proceed in single file where practicable.
- c) All construction related activities will be conducted during suitably dry or frozen ground conditions, where practicable.
- d) Topsoil (Zone A) will be stripped and stored separately from subsoil (Zone B). Care shall be taken during excavation operations to prevent mixing of the two topsoil zones.
- e) Topsoil and subsoil will be stored a minimum of 1.0 m distance from all other soil materials and as close to trenches as practical (0.5 m) to prevent topsoil loss.
- f) Topsoil and subsoil, where required, will be replaced with appropriate soils reclamation practices including seeding with native grasses seeds.
- g) Topsoil where it is exposed will be protected from water erosion by the installation of breaks in the topsoil windrows in low-lying areas.
- h) Topsoil, where exposed, will be protected from wind erosion by shortening the time between stripping and replacement as much as possible and by the application of soil tackifiers to the piles and windrows where required.
- i) A suitably sized back hoe will be used for trench shading and backfill. Backfill will be carefully compacted with the back hoe attached tamper.
- j) Trench lines will be backfilled without mixing spoil with topsoil. Stones in excess of natural conditions will be removed from the replaced spoil before topsoil replacement.

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- k) The established sod layer on native prairie should not be scalped when moving topsoil and spoil during backfill. Special attention by experienced grader operators should be used in native prairie areas to minimize impacts to the sensitive native sod layer.
- l) The right-of-way will be assessed for compaction and admixing of soils due to rutting; and will be restored, reclaimed or landscaped. Areas of concern will be documented and mitigation options discussed with the landowner.
- m) Topsoil and subsoil will be replaced evenly over any exposed stripped portions of the right-of-way. In native range and tame pastures, a backhoe with a Prairie Protector Blade or similar device will be used where topsoil is stored on unstripped sod.
- n) Following the completion of trench backfill and compaction with a back hoe tamper or grader wheel, any surplus spoil material will be evenly distributed back onto the ditch line.
- o) Vehicle ruts, small erosion gullies, and trench line settlement areas will be re-graded smooth to remove the potential for soil erosion during spring runoff.
- p) Stones will be picked from the subsoil surface before topsoil replacement. Stones in excess of surrounding conditions will be picked from the topsoil surface. Rocks will be disposed at locations approved by the landowner or used as fill in roads.
- q) Dewatering of excavated areas shall make use of measures to minimize and control the release of sediment laden water through the use of filtration through vegetation, erosion control devices, sediment collection ponds, check dams or other devices.
- r) Stripping and excavation activities shall be avoided where practical in areas of high slopes near watercourses.
- s) During stripping and excavation, care shall be taken that grubbed material will not be pushed onto areas which are to be left undisturbed.

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7.4 Disposal of Excavated Material

Environmental Concerns

These activities increase the potential for erosion due to exposed soils and the associated effects of runoff containing high sediment loads on nearby water quality, aquatic ecosystems and environmentally sensitive areas.

Waste materials are generated during excavations involved with site development and access road construction activities.

Environmental Protection Procedures

The following procedures shall be used to help minimize the potential environmental effect of the activities associated with the disposal of excavated materials:

- a) Where appropriate, efforts shall be made to use excavated material for the construction of the access roads, laydown area and Project substation.
- b) Stones will be picked from the subsoil surface before topsoil replacement. Stones in excess of surrounding conditions will be picked from the topsoil surface. Rocks will be disposed at locations approved by the landowner, for erosion protection pads at culvert discharge points, or used as fill in roads.
- c) Excavated waste material shall not be disposed of in an environmentally sensitive area or near a watercourse, wetland or on native grass.
- d) The Contractor shall ensure that any excess excavated material, other than topsoil (see Section 7.2 – Vegetation Clearing and Disposal), will be stored at a location directed by the Landowner which excess material shall remain the property of the Landowner except to the extent that the same material shall be required for reclamation of the lands.

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7.5 Linear Developments

Environmental Concerns

The construction of access roads, underground electrical collector system and fiber optic lines and aerial electric power lines can cause local disturbance of both terrestrial and aquatic habitat as well as causing local soil erosion.

Linear developments encompass a diverse range of activities including the construction and operation of access roads, underground electrical collector systems, fiber optic lines, and aerial electric power lines. These activities can cause local disturbance of both terrestrial and aquatic habitat as well as causing local soil erosion.

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- i) Temporary fencing may be required to restrict livestock movement on the Project Site. Any permanent fencing removed to accommodate construction will be replaced immediately following construction to their original state.

Underground Electric Conductor and Fiber Optic Line

- a) The Contractor shall ensure that the conductor and cabling paths will be clearly flagged and identified prior to construction activities.
- b) Any approved existing access trails will be clearly marked in the field by the Contractor. Approved access trails will only be used under suitably dry or frozen ground conditions, where practicable.
- c) All damaged ditches will be restored by the Contractor to preconstruction conditions or better upon the completion of the Works. Reclaimed bar ditches at road accesses will be seeded to the seed mix specified by the Municipal District of Pincher Creek. Copies of the Certificates of Seed for each seed lot will be provided to the Owner. Copies will remain in the project file. Fertilizer will not be applied to the re-vegetated Municipal District right-of-way.
- d) The right-of way will be checked after reclamation to evaluate the success of seed germination and seedling establishment, and if weed invasion is occurring.
- e) The electrical conductor line and fiber optic cable vault locations will be stripped according to AEP standards then the top soils and the sods put back for good soil reclamation and landscaping.
- f) Ditching will be closely followed by cable installation and backfilling. Long sections of open ditch will be avoided. The Contractor shall ensure that any open ditches left overnight will be clearly marked and livestock monitored.
- g) A suitably sized back hoe will be used for trench shading and backfill. Backfill will be carefully compacted with the back hoe attached tamper.
- h) The time between trenching and backfilling will be minimized, to reduce the potential sloughing of ditch walls and foreign material falling on the cables.
- i) Trench lines will be backfilled without mixing spoil with topsoil. Stones in excess of natural conditions will be removed from the replaced spoil before topsoil replacement.
- j) Backfill material will be compacted by running a grader tire along the trench line, once the trench has been filled to the level of the surrounding ground.
- k) All survey stakes, signs, and other road right-of-way debris will be removed from the right-of-way and disposed of at an appropriate waste management facility.

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7.6 Ditching

Environmental Concern

These activities increase the potential for erosion due to exposed soils and the associated effects of runoff containing high sediment loads on nearby water quality, native rangeland ecosystems, archeologically & paleontologically significant resources and environmentally sensitive areas.

Ditching is undertaken to affect drainage within the road system and to correct deficiencies such as erosion, non-conformity in grade and restrictive vegetative growth that may impede drainage. Ditching consists of excavation and grading to construct a new ditch or to re-establish an existing, deteriorated ditch.

Environmental Protection Measures

The following procedures shall be used to minimize the potential environmental effects associated with ditching:

- a) Ditching shall proceed in the upslope direction wherever possible.
- b) Trapezoidal ditches result in less erosion of the ditch bottom and should be installed where space requirements allow. Where this is not possible, a V-bottom design may be used.
- c) Natural drainage shall be maintained whenever practical.
- d) Ditches and overland stormwater runoff shall discharge into the natural drainage courses where practical .
- e) All ditching activities will be conducted during suitably dry or frozen ground conditions, if practical.
- f) Water erosion prone slopes will be identified.
- g) To minimize any interruption of surface water flow, a crown will not be left along the ditch line.
- h) Rip-rap or an erosion control blanket designed for high flows shall be used to line the bottom of ditches that have steep gradients and/or excessive erosion.
- i) Siltation control measures such as sediment traps shall be installed where appropriate. Solids which accumulate in a settling pond or behind a sediment trap shall be removed on a regular basis to ensure such devices remain effective.
- j) Work shall not be undertaken on easily erodible materials, or during or immediately following heavy rainfall.
- k) Activities shall not result in the deposition of debris or soil and other deleterious substances into any watercourse or water body, including on associated ice.
- l) Where practicable, shallow ditches shall be constructed and have adequate number of approaches so that the landowner can cross the roadway with farm machinery to move from one field to another which lies across the roadway.
- m) Ditching designs shall follow the requirements of Section 7.19 – Cattle and Livestock.

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7.7 Construction Equipment Use and Maintenance

Environmental Concerns

Environmental concerns associated with the operation and use of construction equipment includes accidental spills and chronic leaks of fuels and lubricating oils which may contaminate local water bodies and water supplies. A variety of equipment such as bulldozers, shovels, graders, water pumps, hoses and generators are frequently used in construction work as well as in their accompanying support and supply facilities.

Environmental Protection Procedure

The following procedures shall be used to minimize the potential environmental effects associated with the equipment use and maintenance activities:

- a) The Contractor shall ensure that all construction equipment on the job site is clean, i.e., free of weeds and weed seeds, in good working order and with no oil or hydraulic fluid leaks. All equipment will be washed with high-pressure water or steam to remove any dirt and vegetative debris prior to entering the Project Site.
- b) Prior to proceeding from cultivation, tame pasture or hay land, the Contractor shall ensure that all dirt and vegetative debris will be removed from the equipment before entering native rangeland.
- c) Equipment or machinery will not be washed, serviced or re-fuelled within 100 m of a water body, wetland, or slough.
- d) Drip pans shall be placed underneath all pumps and generators located near water bodies.
- e) Hoses and connections on equipment located near water bodies shall be inspected routinely for leaks and drips.
- f) All leaks shall be repaired and reported immediately to the Contractor's On-Site Supervisor and to the Owner.
- g) All equipment is to be kept clean and in proper operating condition.
- h) Spill kits will be maintained on site as described in 7.11 - Storage Handling and Transfer of Fuels and Other Hazardous Materials.

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7.8 Heavy Equipment Movement Onsite

Environmental Concerns

Heavy equipment movement at the Project Site has the potential to impact archeologically & paleontologically significant resources and water quality, as well as environmentally sensitive areas. A variety of equipment is required for the various stages of project construction. This equipment includes bulldozers, backhoes, excavators, trenching equipment, large trucks, flatbed trailers, large cranes, graders, forklifts and other equipment as required.

Environmental Protection Procedure

The following procedures shall be used to minimize the potential environmental effects associated with heavy equipment movement activities:

- a) Vehicle use on public roads, access roads, and highways within the project area will be in accordance with applicable laws and road use permits and agreements.
- b) Vehicles required for the construction of the Project are not to travel through water bodies. Vehicles are to travel in a straight line and single file as much as is possible following delineated access routes, especially on native grassland areas, and only travel through areas as required. Existing paths are to be used as much as possible.
- c) Appropriate protective materials, such as tires or plating, will be used when tracked equipment cross asphalt surfaces.
- d) Any roads damaged by construction equipment will be repaired to pre-disturbance conditions by the Contractor.
- e) Any permanent fencing removed to accommodate construction will be replaced immediately following construction to their original state.
- f) Equipment and vehicles shall only operate on the access road, laydown area, underground cabling route and cleared areas designated for construction activities.
- g) For the ditching activities for the underground cabling, tracked vehicles (i.e., track hoes, wheel ditchers, or tracked cranes) the Contractor shall avoid unnecessary damage to the sod layer outside of the ditch line.

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7.9 Dust Control

Environmental Concerns

Environmental concerns associated with dust within the Project Site include human health effects and potential impacts on aquatic ecosystems and vegetation.

Environmental Protection Procedure

- a) Water is to be used as dust suppression agent. Any other products or chemicals shall be approved in writing by the Owner prior to its use.
- b) Dust from construction activities will be controlled using water. Waste oil shall not be used for dust control.

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7.10 Sewage and Solid Waste Disposal

Environmental Concerns

The release of untreated sewage and solid waste is a concern to human health, drinking water quality, and aquatic ecosystems. Solid waste (domestic waste, paper, cardboard, wood), if not properly controlled and disposed of, will be unsightly and may cause human safety and health concerns.

Environmental Protection Procedures

Sewage:

- a) Portable toilets shall be placed temporarily on site during the Project construction. The disposal of sewage shall comply with the appropriate provincial and municipal guidelines. Sewage will be stored in holding tanks and disposed offsite in an approved manner.
- b) Development of sewage facilities shall proceed in consultation with the relevant regulatory agencies for a temporary Sewage Collection System and a certificate of approval shall be obtained from the appropriate agency. A copy of the certificate of approval shall be provided to Owner.
- c) Chlorine shall not be used for sewage waste disinfection.

Solid Waste:

- a) Construction debris and other garbage will be collected on a daily basis and be disposed of at an approved facility by the Contractor.
- b) The Contractor shall receive the Owner's written approval to place any temporary shelters or structures prior to their construction.
- c) Construction debris and other garbage will not be disposed of in trenches.
- d) Waste receptacles shall be installed at all active landing areas for use by workers. The Contractor shall ensure that all lunch waste and empty oil containers are recovered and disposed of properly.
- e) No waste materials shall be deposited in or within 30m of a watercourse.
- f) Waste accumulated onsite prior to disposal shall be confined so that it does not pose an environmental or health hazard.

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7.11 Storage, Handling and Transfer of Fuels and Other Hazardous Materials

Environmental Concerns

The major concern regarding the use of fuels and other hazardous materials is their uncontrolled release to the environment through spillage and subsequent adverse effects on terrestrial and aquatic habitat and species, soil, groundwater quality and human health and safety. Hazardous materials include oils, greases, diesel, gasoline, hydraulic and transmission fluid and lubricants.

Environmental Protection Procedures

The following procedures shall apply to the storage, handling and transfer of fuel and other hazardous materials:

- a) The Contractor shall receive the Owner's written approval to place any temporary shelters or structures prior to their construction. Before installing fuel storage tanks, the necessary approvals in compliance with the applicable provincial regulations, if any, shall be obtained from the appropriate Provincial Government by the Contractor. Copies of the storage tank approval shall be provided to the Owner.
- b) The WHMIS program shall be implemented throughout the job site in accordance with the Alberta Occupational Health and Safety Act and regulation governed by the Workplace Health, Safety and Compensation Commission of Alberta.
- c) Hazardous materials shall be used only by personnel who are trained and qualified in the handling of these materials, clean-up in the case of their release into the environment, and only in accordance with the manufacturer's instruction and government regulation. All training will be documented.
- d) Servicing and fueling of equipment is prohibited within 100 meters of watercourses, or wetlands both seasonal and permanent and shall be carried out on a prepared impermeable surface with a collection system. Fuel tanks, including mobile fuel tanks will not be placed or parked within 100 meters of a water body, wetland or slough.
- e) All service vehicles and/or equipment used for refueling must be equipped with automatic shut-off valves and will be monitored by the operator at all times during fueling.
- f) All storage tank systems will be inspected on a regular basis. This involves, but is not limited to, gauging or dipping and the keeping of reconciliation records for the duration of the Project. All gauging or dipping is to be recorded by the Contractor and provided to the Owner upon request.
- g) A copy of the Contingency Plan for Fuel and Hazardous Material Spills shall be present at storage facilities and during transfer of fuel. In the event of a spill, the outlined procedures shall be followed. The fuel and hazardous material spills contingency plan is provided in Section 8.4 - Fuel and Hazardous Material Spill.
- h) The Contractor shall, within thirty (30) days of known decommissioning of a storage tank system, empty the system of all products, remove the tank and associated piping from the ground, remove any contaminated soil, clean the area and restore the site.

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Fuel storage areas and non-portable transfer lines shall be clearly marked or barricaded to ensure that they are not damaged by moving vehicles. The markers shall be visible under all weather conditions. Fuel transfer lines shall be equipped with check valves to prevent spillage in the case of equipment failures.

- i) Drums of fuel, oil, hydraulic fluids, and other chemicals shall be tightly sealed against corrosion and rust and stored in a dry, water-tight building or shed having an impermeable floor. Waste oils and lubricants shall be retained in an appropriately labeled tank or closed container.
- j) Any and all spills are to be reported as per the instructions outlined in Section 8.4 Fuel and Hazardous Material Spill.

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7.12 Light and Noise Levels

During construction and commissioning there will be an increase in noise levels due to increased vehicle traffic. The use of dynamite during the construction phase will also cause instantaneous noise emissions from the Site.

Environmental Concerns

A variety of noises associated with heavy construction activity can cause avoidance by wildlife resources and alter their distribution or movements. Noises associated with blasting and heavy equipment use are temporary in nature.

Cranes and erection equipment will be used at heights where they could pose safety concerns for air navigation.

There is the potential for visual impacts to local residents as well as for migratory avian populations.

Environmental Protection Procedures

Measures shall be implemented wherever possible to minimize potential impacts arising from a variety of noise sources:

- a) Blasting plans shall be developed and wildlife surveillance undertaken prior to blasting, as required.
- b)
- c)
- d)
- e)
- f) Enel does not currently plan to deliver concrete or stone outside of the hours 07:00 to 22:00. It may be necessary to deliver turbine components at night as these are oversized loads and it may only be possible/feasible to transport them at night. Due to the size of turbine component delivery vehicles they must travel very slowly and therefore noise from the moving vehicles is generally not an issue at receptor locations. Enel plans to unload the components between the hours of 07:00 to 22:00 to reduce the impact of noise of cranes and for health and safety reasons. In the event that components need to be unloaded from delivery trucks outside of the hours between 07:00 to 22:00, all reasonable efforts would be made to work as slowly as possible to ensure that the noise level is kept to a minimum;
- g) Advise nearby residents of significant noise-causing activities and schedule these events to reduce disruption to them;

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- h) If possible, take advantage of acoustical screening from local topography and on-site buildings to shield dwellings from construction equipment noise;
- i) If possible, the concrete for the foundations will be prepared off site and transported to the site; and
- j) Strict speed limits will be enforced on all site roads primarily for health and safety reasons and also to minimize construction noise.

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7.13 Vehicle Traffic

During any construction related operations, the level of activity involving equipment movement, types of equipment and supply, etc. require various infrastructure such as roads, to conduct the work efficiently and in an environmentally acceptable manner. Typically, resource road construction is supported by vehicles ranging in size from all-terrain vehicles (ATVs) to heavy equipment, all of which can result in ground disturbance.

Environmental Concerns

Direct physical disturbances as a result of vehicular movements can adversely affect both terrestrial and aquatic environments.

Environmental Protection Procedures

- a) All construction and operational activities associated with the Project will be restricted to the surveyed rights-of-way and approved marshaling yard, temporary workspaces, and designated access roads. Construction traffic will be restricted to the existing roads, and approved existing access trails. Vehicles are to travel in a straight line and single file as much as is possible and only travel through areas as requires. Existing paths are to be used as much as possible.
- b) All construction traffic shall adhere to safety signs and road regulations. All vehicles shall not exceed the safe speed based on driving conditions and a maximum of 30 km/h on site access (private) roads.
- c) Recreational use of all-terrain vehicles by construction personnel will not be permitted on the site.
- d) All roads damaged by construction equipment will be repaired to pre-disturbance conditions by the Contractor as required.
- e) Any permanent fencing removed to accommodate construction will be replaced immediately following construction to their original state.
- f) Traffic will be strictly controlled on the unstripped portions of the access roads to “turnouts” to reduce the impact on the sod layer. Vehicle traffic will be restricted to the traffic essential for each construction activity and vehicle will remain on the Project site access roads at all times. Unnecessary two-way traffic will be discouraged.
- g) The Contractor shall ensure that the vehicles required for construction are not to travel through water bodies.

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7.14 Blasting

Given the nature of the terrain of the Site, blasting may be required for the construction of the wind turbine foundations, access roads and erection pads. Blasting will be undertaken in association with quarry development, excavation, and foundation preparation. Blasting near water bodies will be avoided as much as possible.

Environmental Concerns

The principal environmental concerns include the following:

- x destruction of vegetation outside Project Site limits;
- x noise disturbances to landowners and wildlife; and
- x disturbance of archaeological and paleontological resources.

All blasting shall be done in compliance with the appropriate permits and approvals. All temporary magazines for explosive storage shall have the appropriate approvals. All permits and approvals shall be obtained by the Contractor. Copies of all permits and approvals associated with blasting and the storage of explosives shall be provided to the Owner by the Contractor.

Environmental Protection Procedures

The handling, transportation, storage and use of explosives and all other hazardous materials shall be conducted in compliance with all applicable laws, regulations and orders the following measures shall be implemented to minimize the impact of the use of explosives and blasting:

- a) Explosives will be used in a manner that will minimize scatter of blasted material beyond the limits of the activity. Damage to the organic mat outside of disturbed areas shall be restored as required and as directed by the Contractor's Engineer.
- b) Blasting pattern and procedures shall be used which minimize shock or instantaneous peak noise levels.
- c) Blasting shall not occur in the vicinity of fuel storage facilities.
- d) The Blasters Safety Certificates and the Temporary Magazine License (from Energy, Mines and Resources Canada) will be obtained prior to drilling and blasting and copies of same shall be provided to Owner by the Contractor.
- e) Use of explosives shall be restricted to authorized personnel who have been trained in their use.
- f) Contractor shall have separate magazines on Site, a magazine for explosives and a smaller cap

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- i) Landowners shall be made aware of the blasting plans as soon as is practicable.
- j) Blasting activities shall be done in a manner which ensures that the magnitude of explosions is limited to that which is absolutely necessary. The Contractor's On-Site Supervisor shall monitor the blast.
- k) Prior to any blasting, a visual reconnaissance of the area shall be undertaken to ensure that there are no mammals, or concentrations of birds or waterfowl. Blasting shall be delayed in such circumstances until they have been allowed to leave the area of their own accord. Under no circumstances shall noise or other devices be used to harass or otherwise disturb these animals to encourage them to leave the area of the proposed blast.
- l) The Contractor shall test any existing water wells within 1 mile of any construction site prior to construction and continue to monitor said wells for damage caused by blasting. Repairing any damage to existing wells shall be the responsibility of the Contractor.
- m) If wildlife (e.g. cattle, birds or deer) are observed then precautionary measures shall be taken. Any animal sightings shall be reported to the Contractor's On-Site Supervisor and the Owner. Precautionary measures include:
 - a. Reduced speed limits
 - b. Notification of the environmental monitor
 - c. Posting wildlife warning signs

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7.15 Concrete Production/Placement

Environmental Concerns

Although cured concrete has little effect on water quality, fresh concrete and concrete products may raise the pH in receiving waters to potentially toxic levels (i.e., above pH 9).

Environmental Protection Procedures

The following measures will be implemented to minimize the potential impacts from concrete production or placement.

- a) Mixing of cement to form concrete will take place at least 100 meters from any watercourse.
- b) Cement or fresh concrete shall not enter any watercourse or water body. Dumping of concrete or washing of tools and equipment in any body of water is prohibited.
- c) If a concrete batch plant is to be used at the site, the measures set forth in the *Alberta Environmental Protection and Enhancement Act 2000 – Code of Conduct for Concrete Producing Plants* will be followed.

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7.16 Marshaling and Storage Areas

Environmental Concerns

Areas will be required for storing and maintaining equipment and supplies through the operation phase of the Project. Erosion and run-off of sediment into nearby water bodies will be prevented.

Environmental Protection Procedures

The following measures will be implemented to minimize the potential impacts from the Marshaling and Storage areas:

- a) No marshaling or storage areas will be located on native prairie.
- b) Any new marshaling, maintenance or storage areas required for the Project Works will be established within the Project Site.
- c) Establishing any new marshaling or storage areas will follow the procedures for vegetation clearing (7.2 - Vegetation Clearing and Disposal), stripping and excavation and debris disposal (7.3 - Stripping and Material Excavation).
- d) External storage areas will be placed on level terrain and kept free of ponds or run-off.
- e) Drainage from areas of exposed fill will be controlled by grade or ditching and directing run-off away from water bodies.
- f) The established marshaling yard required for mobilization and demobilization sites for construction equipment will be located on previously disturbed areas and not on undisturbed native rangeland.
- g) All construction and operational activities associated with the Project will be conducted in accordance with the Environmental Protection Plan (EPP) and the Environmental Management System (EMS) requirements.

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7.17 Avoidance of Migratory/Protected Birds and Wildlife

The following outlines the requirements for the avoidance of migratory birds and other wildlife during spring and fall migration and the nesting season. Mitigation designed to minimize conflict between wildlife and activities associated with the construction phase of this Project is provided here.

Environmental Concerns

Birds may be impacted by sediment plumes, dust, noise and activities that could disturb or destroy nesting or feeding migratory birds. Construction activities that involve clearing vegetation and building structures may cause destruction and/or disturbance to migratory birds and their habitat. Wildlife encounters pose a risk for stress or injury of both wildlife and site personnel.

Environmental Protection Procedure

The following procedures are intended to minimize the potential effects of the Project construction on migratory birds and other wildlife:

- a) Under the *Migratory Birds Convention Act and Regulations*, no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any areas frequented by migratory birds.
- b) The nesting period for ground nesting birds in the area of the Project is, though species specific, generally from March 15th – August 31st. The Contractor should be aware that migratory birds, their eggs, nests and young are protected under the *Migratory Birds Convention Act*. Species previously observed onsite during pre-construction surveys are, though not limited to; Peregrine Falcon, Prairie Falcon, Golden Eagle and the Sprague's Pipit.
- c) For areas outside of the native grassland areas, during the bird nesting season (see above); a suitable qualified bird surveyor shall survey the proposed access road, underground conductor and fiber optic path, turbine erection pad and substation locations prior to the vegetation removal to determine the presence of protected nesting birds. This will be done for areas outside of the native grassland areas. Surveys are scheduled for mid-March, mid-April, mid-June and one to two weeks prior to the start of construction activities which disturb ground. Once construction has begun, this monitoring shall be undertaken once per week until August 31st or until the young has fledged. Any migratory or protected species nests shall be identified and construction temporarily avoided in this area. Any discoveries shall be reported to the Owner.
- d) If the nest of any ground nesting protected bird is encountered during vegetation clearing;
 - i. The nest site and neighboring vegetation will be left undisturbed until nesting is completed,
 - ii. Construction activities will be minimized in the immediate area until nesting is completed
- e) During the bird nesting season (see above), a suitable qualified bird surveyor shall survey the project site and previously identified nest locations to determine their occupancy and report their findings to the Owner.

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- i. If a previously identified or new nest is observed to be occupied, construction activities are to be avoided during the nesting season within the appropriate setback (see table below for dates).
 - ii. If no birds are observed nesting in any new or previously identified nests during the appropriate nesting season then construction activities can take place within the appropriate setback unimpeded (see table below for dates).
 - iii. If a newly identified nest is observed during the appropriate nesting season, construction activities will be suspended within the appropriate setback of the new nest for the duration of the nesting season. Consultation with AEP will commence in order to determine appropriate mitigation methods for the new nest.
 - iv. Results of the nest monitoring shall be reported to the AEP by the Owner.
- f) No person shall disturb, destroy or take a nest or egg of a bird.
 - g) Avoid disturbances to all birds and bats in and near the project area.
 - h) Concentrations of birds, waterfowl, or raptors shall not be approached.
 - i) The Contractor shall be aware of the importance of taking measures to ensure that contaminant spills and littering, regardless of the amount, do not occur.
 - j) Site and working areas shall be kept clean of food scraps and garbage so as not to attract scavenging birds or rodents serving as prey to raptors. Waste shall be collected for disposal at an approved landfill site.
 - k) No attempts to chase, catch, divert, follow or otherwise harass wildlife by ATV, aircraft, vehicle or on foot shall be made by any person at the Project Site.
 - l) Equipment and vehicles shall yield to wildlife.
 - m) To avoid increased pressure on wildlife populations through hunting, trapping and angling, these activities shall be banned for the Contractor's personnel and that of all of its Subcontractors and vendors.
 - n) Should any sensitive species be discovered or any questions arise regarding adequate protection measures including appropriate setbacks, the environmental monitor for the project should consult with the AEP-Operations Division wildlife biologist.
 - o) Construction activities including access and collector lines associated with turbines T47 and T43 will be done outside the nesting period for Ferruginous hawk of Mar 15 – July 15.
 - p) Construction will be sequenced to avoid the critical grassland bird breeding periods of March 15th – August 31st in areas of native grasslands. Construction and erection, access construction and collector line construction on native grassland will occur between September 1st – March 14th. If avoidance of the RAPs are not possible, Enel will inform AEP and determine if nest searches in suitable habitat will be required.

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7.18 Pumps and Generators

Environmental Concerns

A variety of water pumps, hoses and generators may be in frequent use at the construction site. A back-up generator will be located at the Project substation during operation. Environmental concerns exist with regard to accidental spills or chronic leaks contaminating soil and water bodies.

Environmental Protection Procedure

The following procedures are intended to minimize the potential effects of the Project construction caused by the operation of Pumps and Generators:

- a) Fuel must not be stored near generators or located adjacent to water bodies.
- b) Drip pans should be placed underneath pumps and generators located near water bodies.
- c) Hoses and connections on equipment located near water bodies should be inspected routinely for leaks and drips.
- d) All leaks should be reported immediately to the Owner as per Section 8.4 Fuel and Hazardous Material Spills.
- e) In addition to spill kits located at fuel storage tanks additional spill kits will be located at designated central storage location(s). Personnel who deal with fuelling, fuel transfer and pumps and generators will be trained in the use of the kits.

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7.19 Cattle and Livestock

Environmental Concern

While not an environmental concern, the Project Site is located on private property used for cattle grazing. Cattle may be present within the Project Site and can pose a hazard to vehicle traffic and injury to cattle.

Environmental Protection Procedure

The following procedures are intended to minimize the potential effects of the Project construction on cattle and livestock:

- a) Wherever possible and in coordination with the Contractor and landowners, livestock will be kept out of the fields where construction will occur. Where this is not possible, temporary fences will be erected as requested by the leaseholder to control livestock and to prevent livestock from entering or leaving the field.
- b) Sufficiently sized gaps will be left in the project in all windrows (i.e. topsoil and/or spoil) at all identified farm or ranch trails, existing access roads and obvious livestock or wildlife trails. Sizing of the gaps will be based on the windrow height, surface contours and potential volume and type of cross right-of-way traffic. Open ditches will be clearly flagged. Where livestock are present, the project will limit the amount of ditch left open overnight to the extent possible.
- c) Ditching will be closely followed by cable installation and backfilling. Long sections of open ditch will be avoided. The Contractor shall ensure that any open ditches left overnight will be clearly marked and livestock monitored.
- d) The Contractor, in consultation with the landowners shall implement grazing control (rotational grazing or electric fences) if grazing is affecting revegetation.
- e) Temporary gates and livestock guards will be installed in cooperation with the landowners input at each location where the right-of-way crosses an existing fence line. At the completion of construction, any fence lines altered by the Works will be restored to the pre-existing conditions by the Contractor, unless the designs and plans indicate otherwise.

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8. Environmental Monitoring

8.1 Construction

Environmental compliance on-site shall be the responsibility of all parties and reporting shall be to the Owner. Environmental specialists shall be onsite during the ground breaking activities to monitor the environmental commitments outlined in this EPP. The environmental specialists shall report their observations to the Owner and AEP wildlife biologist where appropriate. Inspections shall ensure implementation of the general and special environmental protection measures which are specified in this document and the other documents of the Contract and this EPP shall be included in all applicable subcontracts and other relevant permits, approvals and authorizations.

8.2 Operation

The Owner will conduct environmental monitoring programs during the operations phase of the Project as identified in the post-construction monitoring plan. Outside of the prescribed formal post-construction monitoring periods, visual inspections shall be made to determine if any bird or other carcasses are present near or around the base of the wind turbines and associated structures. Any carcasses found will be collected and reported to the AEP wildlife biologist.

Formal bird and bat surveys shall take place for the first two years following the in-service date to determine if there is an impact on the local bird or bat population. The results shall be submitted to the AEP wildlife biologist on an annual basis.

All Project vehicles are to be operated on the Project access roads so as not to cause any soil disturbance.

8.3 Contingency Plans

In reaching decisions on containment and clean-up procedures, the objectives of these contingency plans are to minimize the following:

- x danger to persons;
- x pollution to watercourses;
- x area affected by the spill or fire;
- x degree of disturbance to the area and watercourses during clean-up; and
- x degree of disturbance to wildlife.

Notwithstanding contingency plans, the Contractor shall adopt a policy to implement preventative measures as its first line of defense against the possibility of accidents.

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Contingency plans to deal with accidents and unplanned situations have been developed as contained herein, and will be modified as required throughout the Project.

- x Fuel and Hazardous Material Spills on Land
- x Wildlife Encounters
- x Discovery of Historic Resources
- x Fires
- x Native Prairie Protection Measures
- x Wetland Protection Measures

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8.4 FUEL AND HAZARDOUS MATERIAL SPILL

Fuel and hazardous materials can be damaging to vegetation, soil, surface water, ground water, wildlife, aquatic organisms, historic resources and human health and safety.

Environmental Protection Procedures

In the event of a fuel or hazardous material spill, the following procedures shall apply.

- a) The individual who discovers a leak or spill shall make a reasonable attempt to immediately stop the leakage and contain the flow. The individual shall report immediately to the Contractor's On-Site Supervisor the spill location, type of fuel or hazardous material, volume and terrain condition at the spill site.
- b) The Contractor's On-Site Supervisor shall act as the "On-Scene-Commander" for the purposes of cleaning up a fuel or hazardous materials spill. The Contractor's On-Site Supervisor shall be trained in spill clean-up procedures and how to mobilize the clean-up equipment. The Contractor shall have overall responsibility of coordinating a clean-up and maintaining this contingency plan current and up-to-date. The Contractor shall have full authority to take necessary and appropriate action without unnecessary delay.
- c) In the event of any spill regardless of size it must be reported immediately to the Alberta Environment Support and Environmental Response Team (ASERT) at 1-800-222-6514. Required pertinent information includes:
 - i. name of reporter and phone number;
 - ii. time of spill or leak;
 - iii. time of detection of spill or leak;
 - iv. type of product spilled or leaked;
 - v. amount of product spilled or leaked;
 - vi. location of spill or leak;
 - vii. source of spill or leak;
 - viii. type of accident - collision, rupture, overflow, other;
 - ix. owner of product and phone number;
 - x. if the spill or leak is still occurring;
 - xi. if the spill or leaked product is contained, and if not, where it is flowing;
 - xii. wind velocity and direction;
 - xiii. temperature;
 - xiv. proximity to water bodies, water intakes, and facilities; and
 - xv. snow cover and depth, terrain, and soil conditions.

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- d) Traffic will be minimized in and around the spill site.
- e) In reaching decisions on containment and clean-up procedures, the following criteria shall be applied:
 - i. minimize danger to persons;
 - ii. protect water supplies;
 - iii. minimize pollution of watercourses;
 - iv. minimize area affected by spill; and
 - v. minimize the degree of disturbance to the area and watercourses during clean-up.
- f) The Contractor's On-Site Supervisor shall act in consultation with the regulating authorities to:
 - i. assess site conditions and environmental impacts of various cleanup procedures;
 - ii. assess potential for fuel recovery versus burning;
 - iii. deploy on-site staff to mobilize pumps and empty drums or other appropriate storage containers to the spill site;
 - iv. deploy on-site staff to build containment dykes and commence pumping contaminant into drums;
 - v. apply absorbent as necessary;
 - vi. dispose of all contaminated debris, cleaning materials and absorbent by burning (to which a permit is required), if appropriate, or by placing it in an approved land-fill site with the permission of the Owner; and
 - vii. take all necessary precautions to ensure that the incident does not recur.
- g) Spills shall be cleaned and excavated. Dirt that is contaminated with chemicals or petroleum hydrocarbons shall be replaced with natural ground cover. Excavations shall be filled and the fill shall be covered with natural ground cover. All natural ground cover shall be of a depth equal to what was there prior to the spill.
- h) The Contractor's On-Site Supervisor shall be responsible for the preparation of a written report which shall be sent (as soon as possible and no later than 7 days after the spill) to the Owner which may be provided to the appropriate regulatory agency if requested.

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8.5 WILDLIFE ENCOUNTERS

Environmental Concerns

Wildlife encounters including the attraction to site areas by scavengers pose a risk for stress or injury to both the wildlife and site personnel. Control measures and environmental protection procedures shall be put in place to minimize this risk to wildlife and humans.

Response Actions

The Contractor's On-Site Supervisor shall be responsible to see that the following procedures relating to food preparation, storage and waste disposal are implemented:

- a) Site and working areas shall be kept clean of food scraps and garbage.
- b) Feeding of wildlife shall be prohibited.
- c) Waste shall be collected for disposal at an approved landfill site.
- d) No attempt to chase, catch, divert, follow or otherwise harass wildlife by ATV, aircraft, vehicle, or on foot shall be made by any person at the project site.
- e) Equipment and vehicles shall yield the right-of-way to wildlife.
- f) No personal pets, domestic or wild, shall be allowed on the Site.
- g) When animals (e.g. deer, livestock, birds and bats) are identified in the area, the Contractor's On-Site Supervisor shall be responsible for all subsequent actions.
- h) To avoid increased pressure on fish and wildlife populations through hunting, trapping and angling, these activities shall be banned for site personnel. In addition, firearms shall be prohibited on-site with the exception of that authorized for the control of nuisance animals. Such a weapon shall be accompanied by the proper permit, be safely stored and used under the direction of the Contractor's On-Site Supervisor, who must be qualified in the use of firearms.

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8.6 DISCOVERY OF HISTORIC RESOURCES

Environmental Concerns

As appropriate, sites shall be examined prior to the commencement of activities to determine whether the location of such activities is in an area of high archaeological potential, and to identify any site-specific precautions which should be taken. Should any archeologically & paleontologically significant resources be found, notice shall be given to the Historic Resources Management Branch by the Contractor, including the following details on procedures to conduct a field survey:

- area defined;
- nature of survey, documentation;
- report to be produced; and
- people/agencies to be advised.

Environmental Protection Procedures

All personnel shall be informed by the Contractor of their responsibility to report any unusual findings, and to leave such findings undisturbed. In the event of the discovery of historic, prehistoric or paleontological artifacts the following procedures shall apply:

- a) Under the Alberta Historical Resources Act, all archaeological & paleontological sites shall not be disturbed. The Contractor shall take all reasonable precautions to prevent employees or other persons from removing or damaging any such articles or sites. Personnel working in the vicinity shall be advised of the find. The site area shall be flagged for protection and avoidance.
- b) Archaeological materials encountered shall be reported initially to the Contractor's On-Site Supervisor, the Owner and immediately thereafter to Minister of Culture and Community Spirit (ACCS) by the Contractor and supplied with the following information:
 - Nature of construction activity;
 - Nature of the material discovered; and
 - Precise location of the find.
- c) All work shall cease in the immediate area of the discovery until the proper authorities are advised of the discovery and, in consultation with the Owner and its Resource Archaeologist and/or Paleontologist, authorize a resumption of the work. If required, a full assessment shall be conducted of the Site and immediate area prior to resumption of work.
- d) Following an assessment of the significance and mitigation needs, a report shall be made to the Owner and the Historic Resources Management Branch. Any proposed mitigation shall first be approved by the Historic Resources Management Branch.

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8.7 FIRE

Environmental Concerns

Activities related to the construction of the Project could cause a fire which could spread to the surrounding area.

Environmental Protection Procedures

The Contractor shall take all precautions necessary to prevent fire hazards when working at the Site. These include but are not limited to:

- a) Fires shall be reported immediately to the Contractor's On Site Supervisor. The Contractor's On-Site Supervisor shall act as the "On-Scene-Commander" for the purposes of controlling and reporting fires.
- b) The Pincher Creek Fire Department can be reached by dialing 911. The following information shall be provided:
 - i) name of the reporter and phone number;
 - ii) time of detection of the fire;
 - iii) size of the fire; and
 - iv) location of the fire.
- c) The Contractor shall then notify the Owner.
- d) A project specific Emergency Response and Fire Control Plan for this project will be provided to the appropriate regulatory authorities and discussed in detail at the pre-construction meeting with all contractors.
- e) The Contractor shall ensure that there is proper disposal of all flammable waste on a regular basis.
- f) The Contractor shall make available, in proper operating condition, sufficient firefighting equipment to suit its labor force and fire hazards in accordance with the guidelines specified in the Forest and Prairie Protection Act. Such equipment shall comply with, and be maintained to the manufacturer's standards.
- g) The Contractor shall train its personnel in the use of such equipment.
- h) In the event of a brush fire, the Contractor shall take immediate steps to contain or extinguish the fire.

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8.8 NATIVE PRAIRIE PROTECTION MEASURES

The boundaries of the right-of-way and temporary work spaces will be surveyed and clearly marked with stakes and ribbon by the Contractor before construction to ensure that construction vehicles do not trespass off the Project Site access roads, erection pad or underground cabling paths. Vehicles will proceed in single file where practicable.

- a) The boundaries of the right of way for access roads, underground electrical conductors, fiber optic cabling, crane pads, electrical substation and temporary work spaces will be surveyed and clearly marked with stakes and ribbon by the Contractor before construction to ensure that construction vehicles do not trespass off these marked paths. Vehicles will proceed in single file where practicable.
- b) The Owner shall monitor activities and ensure no vehicles leave the designated areas while constructing on native prairie.
- c) Construction related activities on native grassland areas will be conducted during suitably dry or frozen ground conditions, where practicable.
- d) The clearing of vegetation shall be restricted to the minimum areas needed for Project Work.
- e) The established sod layer on native prairie should not be scalped when moving topsoil and spoil during backfill. Special attention by experienced grader operators should be used in native prairie areas to minimize impacts to the sensitive native sod layer.
- f) Topsoil and subsoil will be replaced evenly over any exposed stripped portions of the right-of-way. In native range and tame pastures, a backhoe with a Prairie Protector Blade or similar device will be used where topsoil is stored on unstripped sod.
- g) Grading of slopes for the convenience of construction is not permissible, except as may be provided for in approved designs and plans. Construction plans will include sod and topsoil salvage and storage requirements, erosion control measures, and specific re-vegetation and erosion control measures. Topsoil will be salvaged from all areas for use during reclamation.
- h) To protect topsoil removed from native grassland sites, and the seed bank within, topsoil stockpiles will be protected from wind erosion. Protection will be accomplished by shortening the time between stripping and replacement as much as possible, and by the application of soil tackifiers to the piles and windrows where required.
- i) When re-vegetating areas of native grassland, the seed selection will be determined in consultation with AEP, the municipal agronomist if on MD right of ways and the landowner if on private lands.
- j) Seeding on areas of native grassland will be completed using a drill seeder.
- k) Seeding should be done only when the potential for seed germination is high (i.e., spring or fall).
- l) Areas of native grassland that have been reseeded will be protected from wind erosion by the use of tackifier and/or erosion control fabric.

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
Alberta, Canada

- m) The right-of way will be checked after reclamation to evaluate the success of seed germination and seedling establishment, and if weed invasion is occurring.
- n) Ditch line and cable vault locations on native grassland will be stripped according to *AENV Native Plant Revegetation Guidelines for Alberta, February 2001* standards. Top soil and sod will then be used at other sites for reclamation.
- o) Prior to proceeding from cultivation, tame pasture or hay land, the Contractor shall ensure that all dirt and vegetative debris will be removed from the equipment before entering native rangeland.
- p) The established marshaling yard required for mobilization and demobilization sites for construction equipment will be located on previously disturbed areas and not on undisturbed native rangeland.
- q) Activity on native prairie shall be suspended during times of adverse ground conditions (i.e. too wet) if the activity has potential to cause unacceptable damage to soils and vegetation.
- r) For turbines, access road and collector lines that will infringe into native grassland areas, construction activities shall not occur during the nesting season from March 15th – August 31st.

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
Alberta, Canada

8.9 WETLAND PROTECTION MEASURES

While most wetlands have been avoided during the planning of the Project, some wetlands and recommended wetland setbacks may be impacted by the development of the Project. Wetlands may serve as breeding and staging areas for birds and waterfowl as well as provide habitat for amphibians and other aquatic organisms.

- a) For turbines, access road and collector lines that will be located inside the recommended wetland setback, mitigation shall include silt fences, limiting work areas, erosion control measures, prompt reclamation and seeding to maintain ecological function of the wetland.
- b) For any turbines, access road and collector lines that may infringe into an identified wetland, construction activities shall not occur during the nesting season from March 15th – August 31st.
- c) The boundaries of the right-of-way and temporary work spaces will be surveyed and clearly marked with stakes, ribbon and fencing by the Contractor before construction to ensure that construction vehicles do not trespass off the Project Site access roads, erection pad or underground cabling paths.
- d) The Owner shall monitor activities and ensure no vehicles leave the designated areas while constructing on native prairie. Vehicles will proceed in single file where practicable.
- e) Construction related activities in wetland setback areas will be conducted during suitably dry or frozen ground conditions, where practicable.
- f) The clearing of vegetation within wetlands setbacks shall be restricted to the minimum areas needed for Project Work.
- g) Vehicle and equipment activity shall be restricted to established and existing access and disturbances. No vehicles or equipment activity will be permitted outside an established construction right of way.
- h) Disturbance shall only be considered in wetlands approved through an Alberta *Water Act* Clearance and in accordance with the directives of Alberta Environment and Parks.

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
 Alberta, Canada

9. Permits, Approvals And Authorizations

The table below lists the permits, approvals and authorizations which may be required and will be obtained for the construction and operation of the Project. The Owner will be responsible for the permits in Table 8.1.

Table 8.1 Permits and Authorizations that may be required by Owner

Permit, Approval or Authorization	Issuing Agency
Provincial	
Signoff Letter	Alberta Environment and Parks
Power Plant Approval	Alberta Utilities Commission (AUC)
Historical Resources Act Clearance	Historic Resources Management Branch, Alberta Culture (AC)
Federal	
Safety Lighting for Wind Turbine Operators	Transport Canada
Aeronautical Obstruction Clearance Form	NavCanada
Municipal	
Development Permit	Municipal District of Pincher Creek No. 9
Road Use Agreement	Municipal District of Pincher Creek No. 9

The Contractor shall be responsible for obtaining all other permits, approvals and authorizations required for the construction of the Work including, but not limited to, Municipal, Provincial and Federal permits.

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
Alberta, Canada

10. Contacts List

Emergency Information

For Fire / Emergency

Pincher Creek Emergency Services (Fire/EMS)

911

RCMP (Police)

911

For Hazardous Material and Fuel Spills

Alberta Environment Support and Environmental Response Team (ASERT)

1-800-222-6514

Non-Emergency Information

Pincher Creek Emergency Services (Fire/EMS)

655 Charlotte Street (or Box 1086)

Pincher Creek, AB

TOK 1W0

Non-Emergency Tel: (403) **627-5333**

Royal Canadian Mounted Police (RCMP) – Pincher Creek Detachment

659 Main Street (Box 1118)

Pincher Creek, AB

TOK 1W0

Non-Emergency Tel: (403) 562-2867

Spills and Hazardous Materials

Alberta Environment Environmental 24 Hour Hotline

1-800-222-6514

Available Internet: <http://environment.alberta.ca/2860.html>

Municipal District of Pincher Creek No.9 - Public Works Office

1051 Macleod Street

Pincher Creek, Alberta, Canada

Phone: (403) 627-3484

Fax: (403) 627-3474

Municipal District of Pincher Creek No.9 – Agricultural Services Board Headquarters

Pincher Creek Municipal Airport

1001 Township Road 7-0

Pincher Creek, Alberta, Canada

TOK 1W0

Phone: (403) 627-4151

Fax: (403) 627-3075

Subject: Environmental Protection Plan – 115 MW Riverview Wind Project,
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Minister of Culture and Community Spirit – Historic Resources Management

Historic Resources Management Branch
Old St. Stephen's College
8820 - 112 Street NW
Edmonton, Alberta, Canada
T6G 2P8
Tel: (780) 431-2300

Alberta Environment and Parks

Environment and Parks
2nd Floor, Avail Building
530-8th St. South
Lethbridge, AB T1J 2J8
(403)-388-5326 (Kristin Cline – Wildlife Biologist)



**R i v e r v i e w F i n a n c i a l P r i o r s d
C o n s t r u c t i o n M o n**

Final

May 11, 2018

Prepared for:

Riverview Limited Partnership
1110-1255 Robert-Bourassa Blvd.
Montreal, Quebec Canada
H3B 3W7

Prepared by:

Stantec Consulting Ltd.

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Abbreviations

AEP	Alberta Environment and Parks
COD	Commercial Operation Date
CWS	Canadian Wildlife Service
ECCC	Environment and Climate Change Canada
ESRD	Alberta Environment and Sustainable Resource Development
FWMIS	Fisheries and Wildlife Management Information System
GOA	Government of Alberta
GPS	Global Positioning System
m	metre
km	kilometre
MW	Megawatt
PCMP	Post-Construction Monitoring Plan
REP	Renewable Electricity Program
RPM	Rotations Per Minute
SARA	Species at Risk Act
SCADA	Supervisory Control and Data Acquisitions
SOMC	Species of Management Concern

G l o s s a r y

Barotrauma	Injuries (most notably to bats) caused by a rapid change in air pressure surrounding a rotating turbine blade.
Curtailement	The act of limiting the supply of electricity to the grid during conditions when it would normally be supplied. This is usually accomplished by cutting-out the generator from the grid and/or feathering the turbine blades.
Cut-in Speed	The wind speed at which the generator is connected to the grid and producing electricity. The manufacturer's set cut-in speed for most modern turbines is between 3.0 and 4.0 m/s. For some turbines, their blades will spin at full or partial RPMs below cut-in speed when no electricity is being produced.
Feathering	Adjusting the angle of the rotor blade parallel to the wind, or turning the whole unit out of the wind, to slow or stop blade rotation. Normally operating turbine blades are angled perpendicular to the wind at all times.
Free-wheeling	Blades that are allowed to slowly rotate even when fully feathered and parallel to the wind. In contrast, blades can be "locked" or 'braked" to prevent auto-rotation, which is a mandatory situation when turbines are being accessed by operations personnel.
Increasing Cut-in Speed	The turbine's computer system (referred to as the Supervisory Control and Data Acquisitions or SCADA system) is programmed to a cut-in speed higher than the manufacturer's set speed, and turbines are programmed to stay feathered at 90 degrees until the increased cut-in speed is reached over some average number of minutes (usually 10 minutes), thus triggering the turbine blades to pitch back into the wind and begin to spin normally.
Search Area	A radius around the turbine equal to half the maximum height of the turbine (measured from tip of blade to the ground).
Smart Mitigation	Curtailement that utilizes site-specific bat activity and mortality data linked to any combination of site-specific meteorological conditions (e.g., temperature, wind speed, wind direction, barometric pressure, etc.).

RIVERVIEW WINDS ~~CON~~STRUCT ~~ON~~TORING PLAN

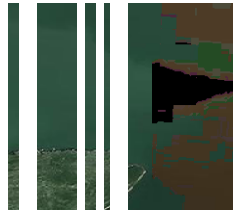
Introduction
May 11, 2018

1.0 INTRODUCTION

Consistent with the *Wildlife Directive for Alberta Wind Energy Projects* (GOA 2017), this report provides a detailed project Post-Construction Monitoring Plan (PCMP) required to obtain a *Renewable Energy Referral Report* from Alberta Environment and Parks (AEP). Stantec Consulting Ltd. (Stantec) has prepared this PCMP on behalf of Riverview Limited Partnership, (owner of the project), and Enel Alberta Wind Inc. (Enel), managing general partner, to support their Alberta Utilities Commission (AUC) application amendment to construct and operate the Riverview Wind Farm (the Project). This PCMP provides site specific monitoring protocols consistent with the Standards identified in Stage 4 of the 2017 Directive, which includes details related to survey area, number of turbines monitored, search methods, search interval, data analysis and mitigation commitments.

1.1 PROJECT DESCRIPTION

Enel is proposing to construct, operate and maintain the Riverview Wind Farm in the MD of Pincher Creek, approximately 6 kilometres (km) north of Pincher Creek, Alberta. The Project Area is comprised of 1,645 hectares (ha) (Figure 1). The proposed Project is expected to be 115 megawatts (MW) and comprised of 28 Vestas V136 (4.2 MW) turbines (132 m blade diameter and 82 m hub height), access roads and a buried cable electrical system.



Project Location

Client/Project

Figure No.

1

Title

Background
May 11, 2018

2.0 BACKGROUND

2.1 POTENTIAL SOURCES OF WILDLIFE MORTALITY

There are four main sources of potential wildlife mortality that may be observed at an operating wind project facility: 1) collisions with turbines; 2) barotrauma (bats only); 3) linear features (e.g., collisions with collector lines and vehicles); and 4) background mortality (i.e., natural mortality sources such as predation). Since Project design incorporates buried collector lines, collector lines are not considered a source of potential mortality for the Project. In addition, vehicle speed limits on access roads are expected to be low (maximum of 30 km/h) with low potential for mortality. Therefore, the PCMP only incorporates parameters to sample primary sources of potential mortality including collisions with turbines and barotrauma to determine where mitigation or avoidance efforts would be most effective, should found fatality rates require mitigation.

Spring and fall bird migration surveys conducted in 2017 suggested the Project Area would pose low to moderate risk to migrating shorebirds, waterfowl, raptors and landbirds based on the level of bird activity during migration, overwintering concentrations, and migration altitude relative to the Rotor Swept Area (RSA; Anatum 2018).

Turbine siting has avoided development on native prairie by siting turbines in cultivation. Consequently, potential mortality effects to grassland nesting songbird Species of Management Concern (SOMC) such as Sprague's pipit or other SARA-listed species (e.g., Baird's sparrow) during the breeding period from Project development has been reduced. Any effects on songbirds nesting in cultivated lands is largely dependent on crop rotation. Breeding bird surveys will be conducted in late spring and early summer using the same methodology as pre-construction surveys. The same surveys sites (point count stations) established during the pre-construction phase will be revisited during the post-construction survey.

Sharp-tailed grouse leks were not identified during the pre-construction surveys; therefore, no sharp-tailed grouse lek monitoring is included in this PCMP. Although all raptor nests were avoided by adhering to required setbacks (GOA 2017), five raptor pairs of four different species were identified occupying traditional nest sites in and adjacent to the Project Area and will be monitored to comply with Standard 100.4.3 of the Wildlife Directive (GOA 2017).

Fall bat activity rates identified during the pre-construction bat acoustic surveys indicated the Project poses "potentially moderate risk" at one of the turbine locations (T6) with 1.9 migratory bat passes/detector-night (at turbine level from August 1 to September 10) whereas the detector installed at T13 and T37 showed a relatively greater activity rate for migratory bats with 7.4 and 3.4 migratory bat passes per detector night (at turbine level), respectively (i.e., potentially high risk) (Anatum 2018). Overall, the 4.2 migratory bat passes per detector night (at turbine level) suggests the Project poses potentially high risk of bat fatalities at these locations as defined by the *Bat Mitigation Framework for Wind Development* (ESRD 2013a).

RIVERVIEW WINDS ~~CON~~STRUCTION MONITORING PLAN

Goal of the PCMP
May 11, 2018

3.0 GOAL OF THE PCMP

The primary goal of the Project's PCMP is to evaluate the mortality risk to bats and birds using empirical data collected during Project operation. Corrected fatality rates for bats will be compared to threshold values for bat fatality in Alberta as described in the *Bat Mitigation Framework for Wind Power Development* (ESRD 2013a). Secondary objectives of the proposed PCMP are to: 1) evaluate spatial or temporal/seasonal patterns of bird and bat mortality; and 2) evaluate which species and/or taxonomic groups are at risk of mortality.

The PCMP includes four main components:

- x Carcass surveys targeting bats and birds
- x Searcher efficiency trials
- x Carcass persistence trials
- x Bat acoustic monitoring

Details of the PCMP are summarized in Table 1. The PCMP will be conducted under a valid Wildlife Research Permit and Collection License, to be acquired from AEP by the team conducting the surveys. Further, a Canadian Wildlife Service (CWS) permit, for the collection and possession of dead migratory birds, will be obtained from Environment and Climate Change Canada (ECCC).

Table Postconstruction Monitoring Plan Comp

Plan Component	Proposed Execution	Comments
Carcass Searches		
Duration	Three years	Three full calendar years
Timing	March 1 to October 30 (35 weeks)	Encompassing the spring and fall bird and bat migrations, and breeding bird period in all years
Frequency	Once every week from March 1 to October 30 (35 weeks)	Every week for the duration of the program for the spring – fall season
Extent (Sample Size)	n = 20 turbines	The number of turbines for the Project (28) is above the minimum number (20); therefore, 20 turbines will be monitored.
Search Area	Surveys completed around the entire turbine at a radius of 74 m for Vestas V136 turbine model	Search area is half the maximum height of the turbine, measured from tip of blade to the ground ($(82\text{ m} + 66\text{ m})/2$)
Searcher Efficiency Trial	Three trials, one per season	Additional trial to be conducted if staff changes occur. A minimum of 20 carcasses per trial, per person.
Carcass Persistence Trials	Three trials, one per season	A minimum of 20 carcasses per trial.
Bat Acoustic Monitoring	At least three detectors will be installed in the Project Area directly on turbine nacelles and monitored during the spring (May 1 to 31) and fall migration period (July 15 to October 15)	To be conducted during the peak activity periods for <i>Myotis</i> spp. silver-haired bat, big brown bat and hoary bat observed during pre-construction surveys.

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Carcass Searches
May 11, 2018

Table Postconstruction Monitoring Plan Comp

Plan Component	Proposed Execution	Comments
Raptor Nest Monitoring	Five raptor nests identified in the Project Area during the 2017 pre-construction surveys will be monitored during the breeding period (March 15 to July 15) for three years.	Nests will be monitored during the breeding period to determine status (active/unoccupied) and number of fledged young. The five nests were occupied by four species including ferruginous hawk, prairie falcon, Swainson's hawk, and red-tailed hawk. Surveys for the ferruginous hawk nest will focus on re-occupancy and productivity.
Breeding Bird	Two breeding bird surveys will be conducted: May 1 to July 15 (early) and June 16 to July 15 (late)	Post-construction survey results will be compared to pre-construction survey results.

4.0 CARCASS SEARCHES

4.1 DURATION

Consistent with the Directive (GOA 2017), Enel proposes to conduct carcass surveys targeting bats and birds during periods of greater potential risk (i.e., spring migration, breeding season and fall migration) for three full consecutive years after Project commercial operation date (COD) is achieved.

4.2 TIMING

Construction is anticipated to commence in fall 2018 and is targeted for completion by December 1, 2019. Therefore, post-construction monitoring surveys will likely be initiated in the spring through fall of 2020. Surveys will commence the week of March 1 and continue through to the end of October (35 weeks), to include the periods of highest bat and bird activity, consistent with the Directive (GOA 2017). Monitoring will commence on March 1 in the year following commissioning. If commissioning is completed prior to October 30, 2019, monitoring will be initiated immediately after commissioning and Enel will work with AEP to adjust the monitoring plan to accommodate the partial year(s) of monitoring.

4.3 FREQUENCY

Carcass searches will be conducted in a weekly search interval for the duration of the monitoring plan (March 1 to October 30), consistent with the Directive (GOA 2017).

Carcass Searches
May 11, 2018

4.4 SAMPLE SIZE

The objective of a sample is to provide an estimate for a parameter that can be used to provide inference about a target population (i.e., all turbines in the Project Area). The Directive states that a minimum of 20, stratified randomly-selected turbines or one-third of the turbines (whichever is greater) should be searched (GOA 2017) that represent all habitat types and must include a mix of edge turbines. As such, 20 proposed project turbines will be searched. The turbines selected for the carcass searches will be reviewed with AEP prior to commencement.

4.5 SEARCH AREA

Search areas for carcass collection will include a radius around the turbine equal to half the maximum height of the turbine (measured from tip of blade to the ground), which is consistent with current Directive (GOA 2017). The Project plans to utilize the Vestas V136 turbine (hub height 82 m, blade length 66 m). Therefore, the search area (radius) will be 74 m from the base of the turbine. Should the turbine model or parameters change (i.e. hub height and/or blade length) between the creation of this plan and project construction, the search area will be adjusted accordingly.

4.6 SURVEY METHODS

Carcass searches will be conducted by walking systematically spaced transects within search plots around all turbines. Spacing between transects will be between 7 and 10 m apart, depending on habitat type, terrain and visibility (Baerwald and Barclay 2015). Enel will also manage the vegetation, where feasible, within the mortality search plots, to increase searcher efficiency.

All specimens observed during the carcass searches will be recorded in the field, including spatial data (collected by a GPS or comparable device). Carcasses will then be labeled, bagged and frozen for further analysis by a wildlife biologist. Following analysis of carcasses collected, all specimens (not including species at risk) will be re-frozen and submitted to AEP (O. S. Longman Building) except for specimens kept for use in searcher efficiency and carcass persistence trials. Any raptor carcasses found in good condition (i.e., low decomposition rate) will be submitted to the AEP office in Edmonton immediately. Complete data records for all specimens will be submitted to AEP in the appropriate format for uploading into FWMIS (Fisheries and Wildlife Management Information System).

Weather conditions can affect searcher efficiency; therefore, carcass searches will be suspended when fresh snowfall (<12 hours) inhibits a clear view of the ground, during periods of heavy rain, or during high winds (>50 km/hr).

Carcasses found incidentally (i.e., in non-survey sampling units) while traveling within the Project footprint will be collected. Observations of bat or bird fatality will be recorded and carcasses collected regardless of whether they are thought to be a result of turbine collision or other sources (e.g., vehicle collision). Carcasses will be collected, bagged, tagged, and provided to AEP except if used in scavenger or searcher efficiency trials. Incidentals will also be documented in reporting but not used to estimate annual turbine collision mortality. All site personnel are to report any observed carcasses to the Enel Project

Searcher Efficiency Trials
May 11, 2018

Manager to ensure all fatalities are reported to AEP and to assist in the identification of large mortality events, should they occur. Carcasses observed by site personnel (except for carcass searchers) should be left in place to prevent bias with searches or trials.

5.0 SEARCHER EFFICIENCY TRIALS

Searcher efficiency trials will test every individual involved in searching for carcasses, using a subset of sampling units and visibility types. Searcher efficiency trials involve the distribution of marked carcasses within the search area without searchers being aware of the locations. The frequency with which carcasses are detected is used to adjust survey results to reflect the efficiency of carcass detection by each searcher. Three searcher efficiency trials incorporating at least 20 carcasses per trial (per searcher) will be conducted in each season including spring (March 1 to May 31), summer (June 1 to August 31, and fall (September 1 to October 30). The trials will be timed randomly, with a sufficient number of trials placed in each visibility type (e.g., easy, moderate, and difficult), to provide a representative sample of the visibility types available in the search area (Huso et al. 2010). Carcasses will not be anchored to the ground (e.g., with rocks, string, or other means); thus, a potential for trials to be scavenged exist, which will require additional trials to be placed to meet the minimum, if scavenging occurs.

The trials are intended to determine searcher effectiveness under varying vegetation conditions. All carcasses kept for searcher efficiency trials will be submitted to AEP at the end of each year (including raptors), except those removed by scavengers. If insufficient carcasses are collected on-site to complete the searcher efficiency and carcass persistence trials, AEP will be contacted to supply additional carcasses. If AEP is not able to provide additional carcasses, suitable surrogates include dark mice, dark gerbils, or darkly feathered one-day old chicks that can be obtained from sources such as pet stores, farms, exterminators, or university labs.

6.0 CARCASS PERSISTENCE TRIALS

Carcass persistence trials will be conducted to correct for carcasses that may be missed during carcass searches due to scavenger removal or carcass decomposition. As part of the carcass persistence trial, a minimum of 20 carcasses will be laid out per season per year in the search area, georeferenced by GPS, and checked daily to determine carcass persistence rates. Carcasses will not be anchored to the ground. Trials should be monitored for a period equal to the search period, up to two weeks (Environment Canada 2007). Where possible, carcass persistence trial inspections will be completed in conjunction with carcass surveys. Three carcass persistence trials will be conducted, one per season in spring (March 1 to May 31), summer (June 1 to August 31, and fall (September 1 to October 30).

Bat Acoustic Surveys
May 11, 2018

7.0 BAT ACOUSTIC SURVEYS

Concurrent with the carcass searches, acoustic bat monitoring will be conducted during spring (May 1-31) and fall (July 15 to October 15) to align with the Directive (GOA 2017) and to encompass the spring and fall bat migration period. Surveys will be conducted to provide complimentary bat activity data that can be used in conjunction with data collected during carcass searches. Post-construction bat acoustic surveys station will be selected based on similar detector placement and number of detectors used in the pre-construction surveys (Anatum 2018).

8.0 DATA ANALYSIS

All fatality estimates will be calculated using the Huso (2010) estimator considering relevant updates or revisions (e.g., bleed-through and Huso et al. [2012], as well as 90% confidence interval using bootstrapping [Manly 1997]). The use of the Huso (2010) estimator is consistent with the standard for fatality rate calculation in Alberta at operational wind projects (ESRD 2013, GOA 2017). The Huso (2010) estimator uses a binomial model to estimate the probability of carcass detection. The binomial carcass detection model could be used to calculate fatalities at Project linear features (fence, overhead lines) or during conventional transect at search turbines.

Bootstrapping is a resampling method used to calculate variances and confidence intervals for parameter estimates when distributional assumptions might not be met (Manly 1997). Bootstrapping is used to generate estimates of variance for each variable, including searcher efficiency, probability of a carcass persisting to the next search, adjusted search interval and observed fatalities from a sample of the facility. From these bootstrap samples, the probability of available and detected carcasses will be calculated and applied to the bootstrapped observed fatalities. The lower 5th and upper 95th percentiles of the bootstrap replicates provide estimates of the lower limit and upper limit of an approximate 90% confidence interval on all parameter estimates.

Should high fatality numbers be found at individual turbines, an alternate to the Huso (2010) estimator will be sought to calculate individual turbine corrected fatality rates. If the statistical estimator is substituted for a different analysis, AEP will be consulted and provided with rationale for the change.

9.0 REPORTING

Results of the first year's investigations will be provided to AEP in a summary report. The report will include a detailed summary of methods analysis and results. The following items will be included as part of data analysis and reporting:

1. Raw data, which will be submitted to FWMIS
2. Detailed description of survey methods

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Mitigation

May 11, 2018

3. Results of searcher efficiency trials and carcass persistence trials
4. The uncorrected fatality rate for bats and birds expressed as: number of mortalities/turbine/year, and number of mortalities/MW/year;
5. Estimated (corrected) fatality rate for bats and birds expressed as: number of mortalities/turbine/year, and number of mortalities/MW/year as per Huso (2010) and Huso et al. (2012), or other available updates or acceptable alternatives;
6. Summary of species killed including location, condition, and likely cause of death
7. Evaluation of spatial or temporal/seasonal patterns of bat and bird mortality
8. Results of pre-construction wildlife surveys
9. Analysis of the bat acoustic monitoring data comparing:
 - a) Bat activity from the detectors versus bat fatalities (weekly); and
 - b) Pre-construction versus post-construction bat activity.

Results of the first year of monitoring will contribute to the design and execution of subsequent year's programs. Any planned modifications to the PCMP will be determined in consultation with AEP and approved in writing. To facilitate timely decision making and to allow the results of the monitoring to influence the subsequent years' program, Enel commits to the submission of annual monitoring results to AEP as early as possible, but no later than January 31 of the year following data collection. AEP will be notified promptly should species at risk or high levels of mortality be observed.

10.0 MITIGATION

Enel is committed to working with AEP and will consult with the department to determine if mitigation measures are needed based on annual results. If required, Enel will consult with AEP-Wildlife Management to discuss and implement site-specific mitigation measures to reduce such mortality, if annual post-construction bird and bat mortality monitoring determines it is required. The Bat Mitigation Framework for Wind Power Development (ESRD 2013b) will be used to guide mitigation discussions regarding bats with AEP. Likewise, possible mitigation measures for birds will be determined on a case by case basis in consultation with AEP. Mitigation measures may include, but are not limited to, curtailment, increasing the cut-in speed, and feathering blades. Enel confirms that the turbine software and components will be able to handle or manage the potential mitigation.

References
May 11, 2018

12.0 REFERENCES

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Figure No.

Title



Client/Project

Project Location

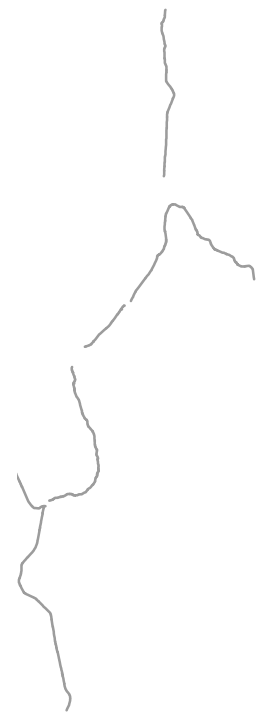


Figure No.

Title

Client/Project

Project Location

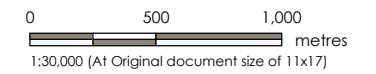




Riverview Limited Partnership
Riverview Wind Power Plant

118212101 REVA

Municipal District of Pincher Creek
Alberta, Canada



Legend

- Project Location
- Facilities**
- Existing**
- Castle Rock Substation
- Castle Rock Ridge
- Oldman 1
- Oldman 2
- Optimist
- Sinnot Turbine
- Altalink OH Transmission Line
- Overhead Low Voltage Power Line
- Class II (Temporary)
- Class III (Seasonal)
- Class IV (Semi-perma...)
- Class V (Permanent)
- Dugout / Reservoir
- Railway
- Major Road
- Minor Road
- Urban Municipality
- Township
- Section
- Qtr Section
- Watercourse
- Waterbody
- Class I (Ephemeral)

1. Coordinate System: NAD 1983 UTM Zone 12N

TWP: R1:29
W4:W

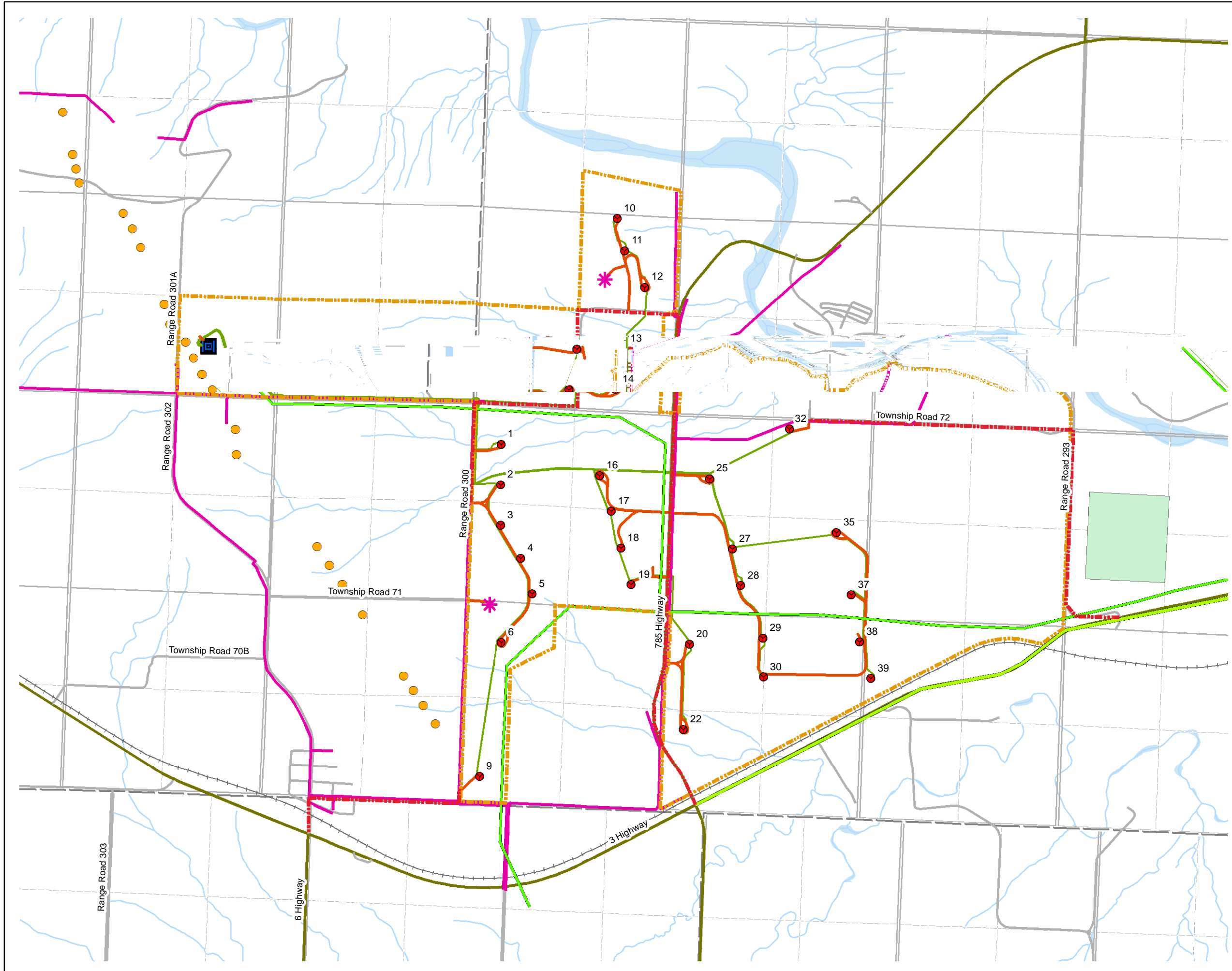


Figure No. _____

Title _____

Client/Project _____

Project Location _____

T:\18212101\90 CIVIL\GIS\map_mxd\Transportation Plan\Figure5.mxd Revised: 2018-05-23 By: dimunice

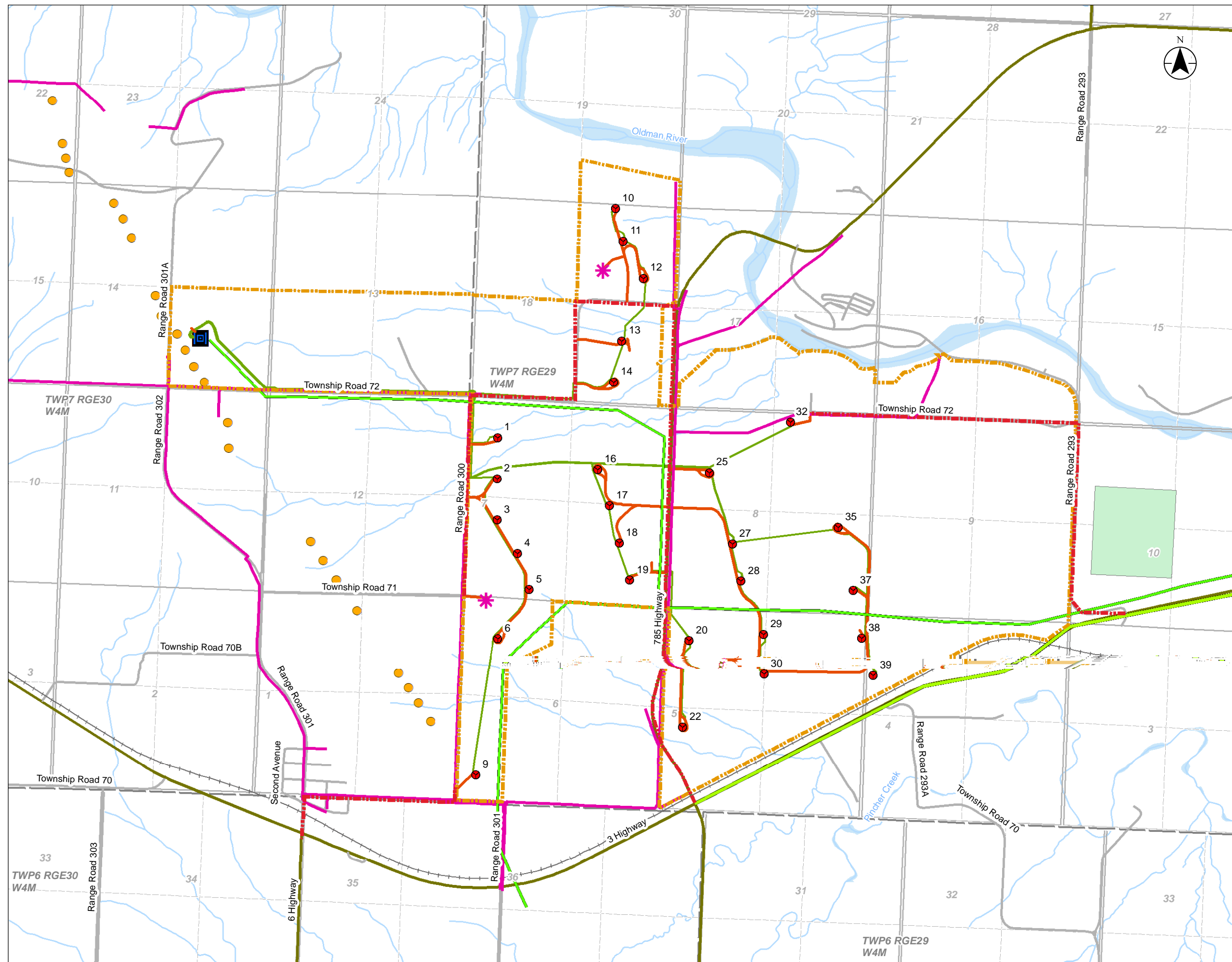


Figure No. **5**
 Title **Layout 031
 Light Vehicle Route**

Client/Project
 Riverview Limited Partnership
 Riverview Wind Power Plant

Project Location
 Municipal District of Pincher Creek
 Alberta, Canada

118212101 REVA
 0 500 1,000 metres
 1:30,000 (At Original document size of 11x17)

Legend

	Layout 031 - V136 4.2MW - 82m HH		Proposed Haul Routes
	Light Vehicle Route		North Route
	Project Location		Laydown Area
	Met Tower		Railway
	Altalink OH Transmission Line		Major Road
	Overhead Low Voltage Power Line		Minor Road
	Access Road		Urban Municipality
	Collector		Township
	Castle Rock Substation		Section
	Castle Rock Ridge Phase 1		Qtr Section
			Watercourse
			Waterbody

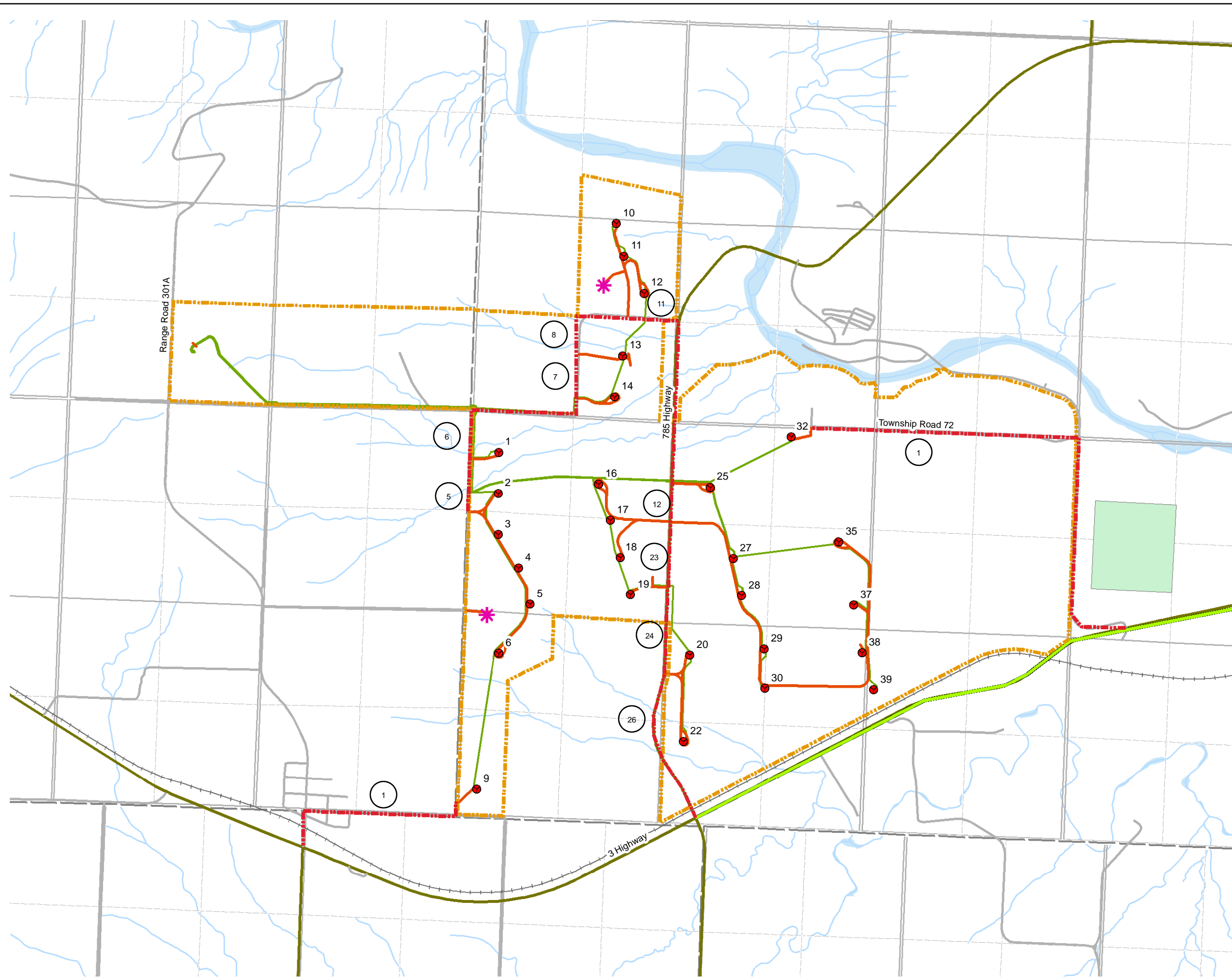
Notes
 1. Coordinate System: NAD 1983 UTM Zone 12N

Figure No.

Title

Client/Project

Project Location



Vestas[®]

Wind. It means the world to us.[™]

Are you looking for the maximum return on **your investment** in wind energy?

Wind energy means the world to us. And we want it to mean the world to our customers, too, by maximising your profits and strengthening the certainty of your investment in wind power.

That's why, together with our partners, we always strive to deliver cost-effective wind technologies, high quality products and first class services throughout the entire value chain. And it's why we put so much emphasis on the reliability, consistency and predictability of our technology.

We have more than 35 years' experience in wind energy. During that time, we've delivered 92 GW of installed capacity in 79 countries. That is more than anyone else in the industry. We currently monitor over 33,000 wind turbines across the globe. All tangible proof that Vestas is the right partner to help you realise the full potential of your wind site.

What is the 4 MW Platform today?

The Vestas 4 MW platform* was introduced in 2010 with the launch of the V112-3.0 MW[®]. Over 18 GW of the 4 MW platform has been installed all over the world onshore and offshore making it the obvious choice for customers looking for highly flexible and trustworthy turbines.

Since then the 4 MW platform was upgraded and new variants were introduced utilising untapped potential of the platform. All variants carry the same nacelle design and the hub design has been re-used to the largest extent possible. In addition, our engineers have increased the nominal power across the entire platform improving your energy production significantly.

With this expansion, the 4 MW platform covers all IEC wind classes with a variety of rotor sizes and a higher rated output power of up to 4.2 MW.

You can choose from the following turbines on the 4 MW platform:

- V105-3.45 MW[™] – IEC IA
- V112-3.45 MW[®] – IEC IA
- V117-3.45 MW[®] – IEC IB/IEC IIA
- V117-4.2 MW[™] – IEC IB/IEC IIA/IEC S
- V126-3.45 MW[®] – IEC IIB/IEC IIA
- V136-3.45 MW[®] – IEC IIB/IEC IIIA
- V136-4.2 MW[™] – IEC IIB/IEC S
- V150-4.2 MW[™] – IEC IIIB/IEC S

All variants of the 4 MW platform are based on the proven technology of the V112-3.0 MW[®] with a full-scale converter, providing you with superior grid performance.

Our 4 MW platform is designed for a broad range of wind and site conditions, enabling you to mix turbines across your site or portfolio of sites, delivering industry-leading reliability, serviceability and exceptional energy capture, optimising your business case.

All turbine variants are equipped with the same ergonomically designed and very spacious nacelle which makes it easier for maintenance crews to gain access, so they can reduce the time spent on service while maximizing the uptime without compromising safety. All turbines can be installed and maintained using standard installation and servicing tools and equipment further reducing the operation and maintenance costs by minimising your stock level of spare parts.

* Formerly named the Vestas 3 MW platform

How does our technology generate **more energy?**

More power for every wind site

V112-3.45 MW[®], V117-3.45 MW[®], V117-4.2 MW[™], V126-3.45 MW[®], V136-3.45 MW[®], V136-4.2 MW[™] and V150-4.2 MW[™] are available with several Sound Optimised Modes to meet sound level restrictions with an optimised production. The power system enables superior grid support and it is capable of maintaining production across severe drops in grid voltage, while simultaneously minimising tower and foundation loads. It also allows rapid down-rating of production to 10 per cent nominal power.

Proven technologies - from the company that invented them

The 4 MW platform is a low-risk choice. It is based on the proven technologies that underpin more than 64,000 Vestas turbines installed around the world. Using the best features from across the range, as well as some of the industry's most stringently tested components and systems, the platform's reliable design minimises downtime – helping to give you the best possible return on your investment.

With an operating range that covers all wind classes, our 4 MW platform delivers unrivalled energy production. The proven blade technology from the V112-3.0 MW[®] is used on the V105-3.45 MW[™], the V112-3.45 MW[®], V117-3.45 MW[®] and V117-4.2 MW[™]. The industry known structural shell blades are used on the V126-3.45 MW[®], V136-3.45 MW[®], V136-4.2 MW[™] and V150-4.2 MW[™] - a technology which is also used on the 2 MW V110-2.0 MW[®], V116-2.0 MW[™] and V120-2.0 MW[™] variants.

Reliable and robust

The Vestas Test Centre is unrivalled in the wind industry. We test most nacelle components using Highly Accelerated Life Testing (HALT) to ensure reliability. For critical components, HALT identifies potential failure modes and mechanisms. Specialised test rigs ensure strength and robustness for the gearbox, generator, yaw and pitch system, lubrication system and accumulators. Our quality-control system ensures that each component is manufactured to design specifications and performs at site. We systematically monitor measurement trends that are critical to quality, locating defects before they occur.

The 4 MW platform covers all wind segments enabling you to find the best turbine for your specific site.

WINDCLASSES - IEC

TURBINE TYPE	IEC III (6.0 - 7.5 m/s)	IEC II (7.5 - 8.5 m/s)	IEC I (8.5 - 10.0 m/s)
4 MW TURBINES			
V105-3.45 MW™ IEC IA			Standard IEC conditions
V112-3.45 MW® IEC IA			Standard IEC conditions
V117-3.45 MW® IEC IB/IEC IIA		Standard IEC conditions	Standard IEC conditions
V117-4.2 MW™ IEC IB/IEC IIA/IEC S		Standard IEC conditions	Standard IEC conditions
V126-3.45 MW® IEC IIA/ IEC IIB	Standard IEC conditions	Standard IEC conditions	Site dependent
V136-3.45 MW® IEC IIB/ IEC IIIA	Standard IEC conditions	Standard IEC conditions	Site dependent
V136-4.2 MW™ IEC IIB/IEC S	Standard IEC conditions	Standard IEC conditions	Site dependent
V150-4.2 MW™ IEC IIIB/IEC S	Standard IEC conditions	Site dependent	Site dependent

■ Standard IEC conditions ■ Site dependent

Options available for the 4 MW platform

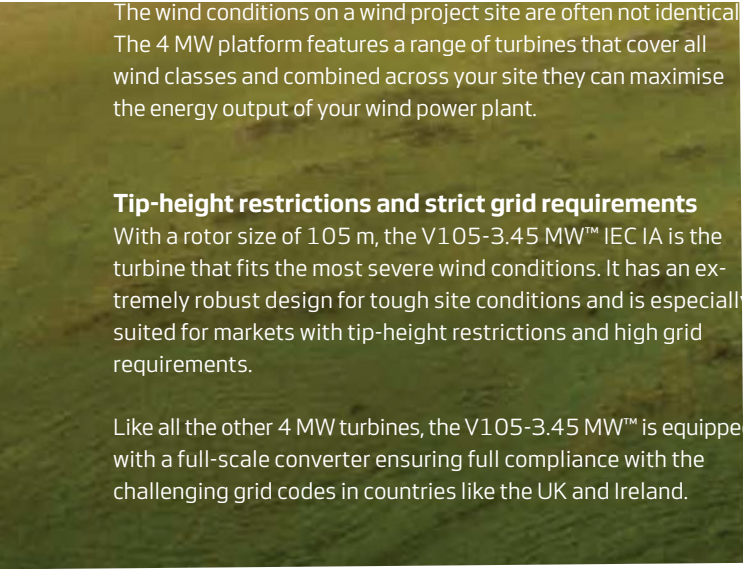
An option is an extra feature that can be added to the turbine to suit a project's specific needs. By adding options to the standard turbine, we can enhance the performance and adaptability of the wind power project and facilitate a shorter permitting cycle at restricted sites. The options can even be a decisive factor in realising your specific project, and the business case certainty of the investment.

Here is a list of the options available for the 4 MW platform:

- Power Optimised Modes
- Load Optimised Modes
- Condition Monitoring System
- Service Personnel Lift
- Vestas Ice Detection
- Vestas De-Icing
- Low Temperature Operation to - 30°C
- Fire Suppression
- Shadow detection
- Increased Cut-In
- Aviation Lights
- Aviation Markings on the Blades
- Vestas IntelliLight™

Life testing

The Vestas Test Centre has the unique ability to test complete nacelles using technologies like Highly Accelerated Life Testing (HALT). This rigorous testing of new components ensures the reliability of the 4 MW platform.



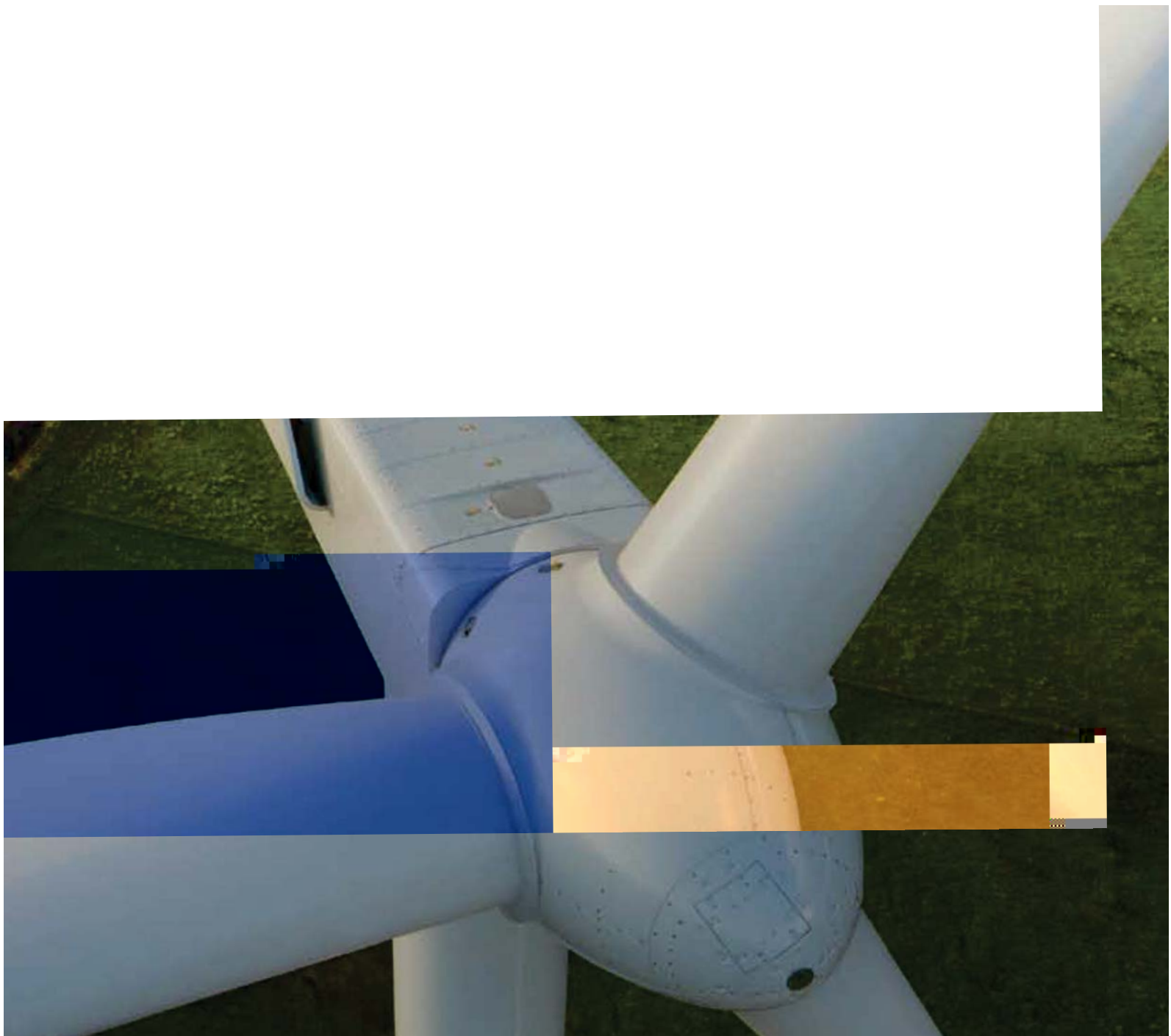
The wind conditions on a wind project site are often not identical. The 4 MW platform features a range of turbines that cover all wind classes and combined across your site they can maximise the energy output of your wind power plant.

Tip-height restrictions and strict grid requirements

With a rotor size of 105 m, the V105-3.45 MW™ IEC IA is the turbine that fits the most severe wind conditions. It has an extremely robust design for tough site conditions and is especially suited for markets with tip-height restrictions and high grid requirements.

Like all the other 4 MW turbines, the V105-3.45 MW™ is equipped with a full-scale converter ensuring full compliance with the challenging grid codes in countries like the UK and Ireland.





and most important steps is to identify the most suitable location for your wind power plant. Vestas' SiteHunt® is an advanced analytical tool that examines a broad spectrum of wind and weather data to evaluate potential sites and establish which of them can provide optimum conditions for your project.

In addition, SiteDesign® optimises the layout of your wind power plant. SiteDesign® runs Computational Fluid Dynamics (CFD) software on our powerful in-house supercomputer Firestorm to perform simulations of the conditions on site and analyse their effects over the whole operating life of the plant. Put simply, it finds the optimal balance between the estimated ratio of annual revenue to operating costs over the lifetime of your plant, to determine your project's true potential and provide a firm basis for your investment decision.

Identifying grid codes early in the project phase, extreme operating conditions, Electrical PreDesign with an ideal way to build a grid compliant, profitable wind power plant. It allows customised cabling, substation protection and reactive power which boost the cost efficiency of your business.

Advanced monitoring and real-time plant

All our wind turbines can benefit from VestasOnline, the latest Supervisory Control and Data Acquisition system for modern wind power plants.

This flexible system includes an extensive range of and management functions to control your wind power plant. VestasOnline® Business enables you to optimise p

customisable configuration, allowing you to implement any control concept needed to meet local grid requirements.

Surveillance, maintenance and service

Operating a large wind power plant calls for efficient management strategies to ensure uninterrupted power production and to control operational expenses. We offer 24/7 monitoring, performance reporting and predictive maintenance systems to improve turbine performance and availability. Predicting faults in advance is essential, helping to avoid costly emergency repairs and unscheduled interruptions to energy production.

Our Condition Monitoring System (CMS) assesses the status of the turbines by analysing vibration signals. For example, by measuring the vibration of the drive train, it can detect faults at

Additionally, our Active Output Management® (AOM) concept provides detailed plans and long term agreements for service and maintenance, online monitoring, optimisation and troubleshooting. It is possible to get a full scope contract, combining your turbines' state-of-the-art technology with guaranteed time or energy-based availability performance targets, thereby creating a solid base for your power plant investment. The Active Output Management® agreement provides you with long term and financial operational peace of mind for your business case.



V136-4.2 MW™

IEC IIB/IEC S

Facts & figures

POWER REGULATION

Pitch regulated with variable speed

OPERATING DATA

Rated power	4,000 kW/4,200 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Re cut-in wind speed	23 m/s
Wind class	IEC IIB/IEC S
Standard operating temperature range from -20°C* to +45°C with de-rating above 30°C (4,000 kW)	

*subject to different temperature options

SOUND POWER

Maximum 103.9 dB(A)**

**Sound Optimised modes dependent on site and country

ROTOR

Rotor diameter	136 m
Swept area	14,527 m ²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage
------	--

TOWER

Hub heights	Site and country specific
-------------	---------------------------

NACELLE DIMENSIONS

Height for transport 3.4 m

Height installed ighhtOWERLength260CET q 1 0 0 1 49.479 40.668 cm /CS0 CS 0.75 0.68 0.67 0.902 SCN 0.499 w 0 0 m 113.143 0 1240.4

HUB DIMENSIONS

Max. transport height	3.8 m
Max. transport width	3.8 m
Max. transport length	5.5 m

BLADE DIMENSIONS

Length	66.7 m
Max. chord	4.1 m

Max. weight per unit for transportation	70 metric tonnes
---	------------------

TURBINE OPTIONS

- High Wind Operation
- 4.2 MW Power Optimised Mode (site specific)
- Load Optimised Modes down to 3.6 MW
- Condition Monitoring System
- Service Personnel Lift
- Vestas Ice Detection
- Low Temperature Operation to - 30°C
- Fire Suppression
- Shadow detection
- Increased Cut-In
- Aviation Lights
- Aviation Markings on the Blades
- Vestas IntelliLight®

ANNUAL ENERGY PRODUCTION

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Tel: +45 9730 0000 . Fax: +45 9730 0001
vestas@vestas.com . vestas.com

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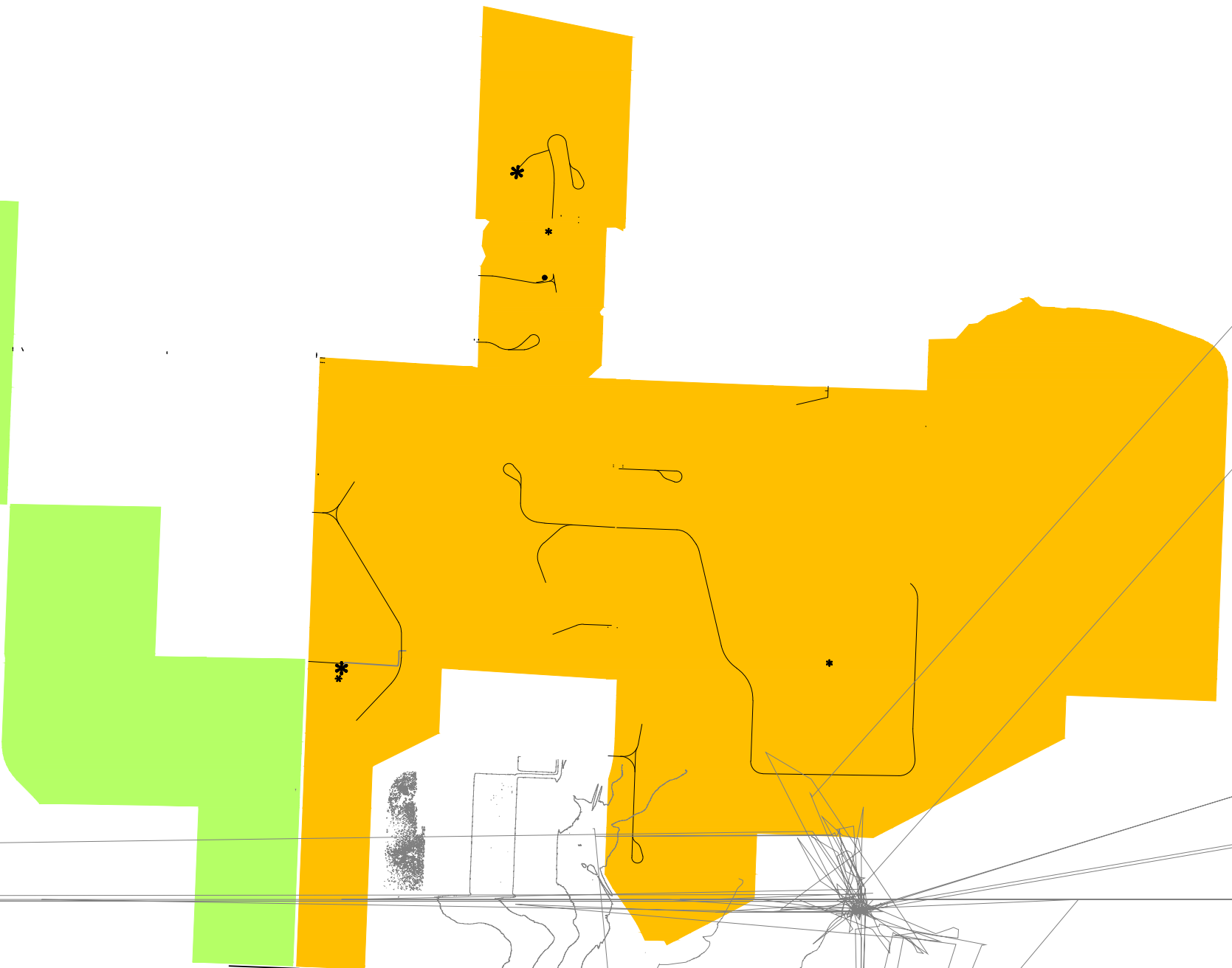
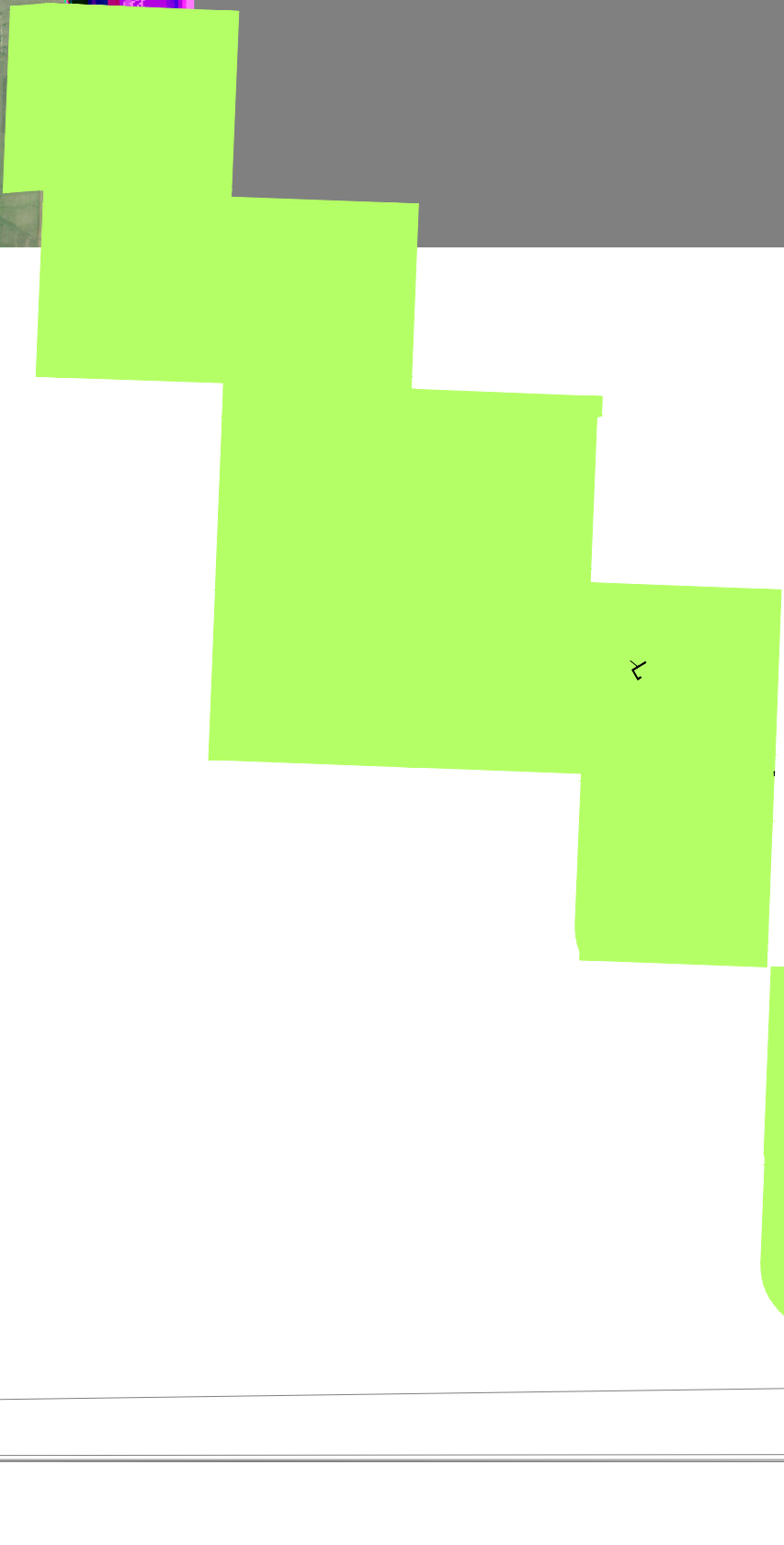
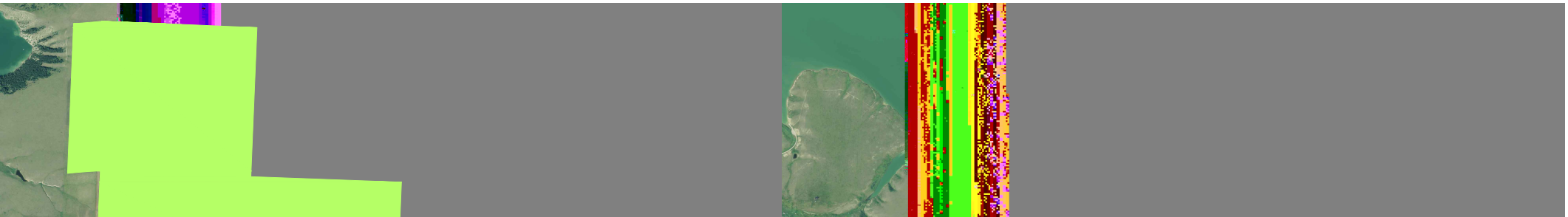
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📎 2 attachments (5 MB)

Project: Riverview Wind Power Plant

Proponent: Riverview, L.P., by its general partner Enel Alberta Wind Inc.

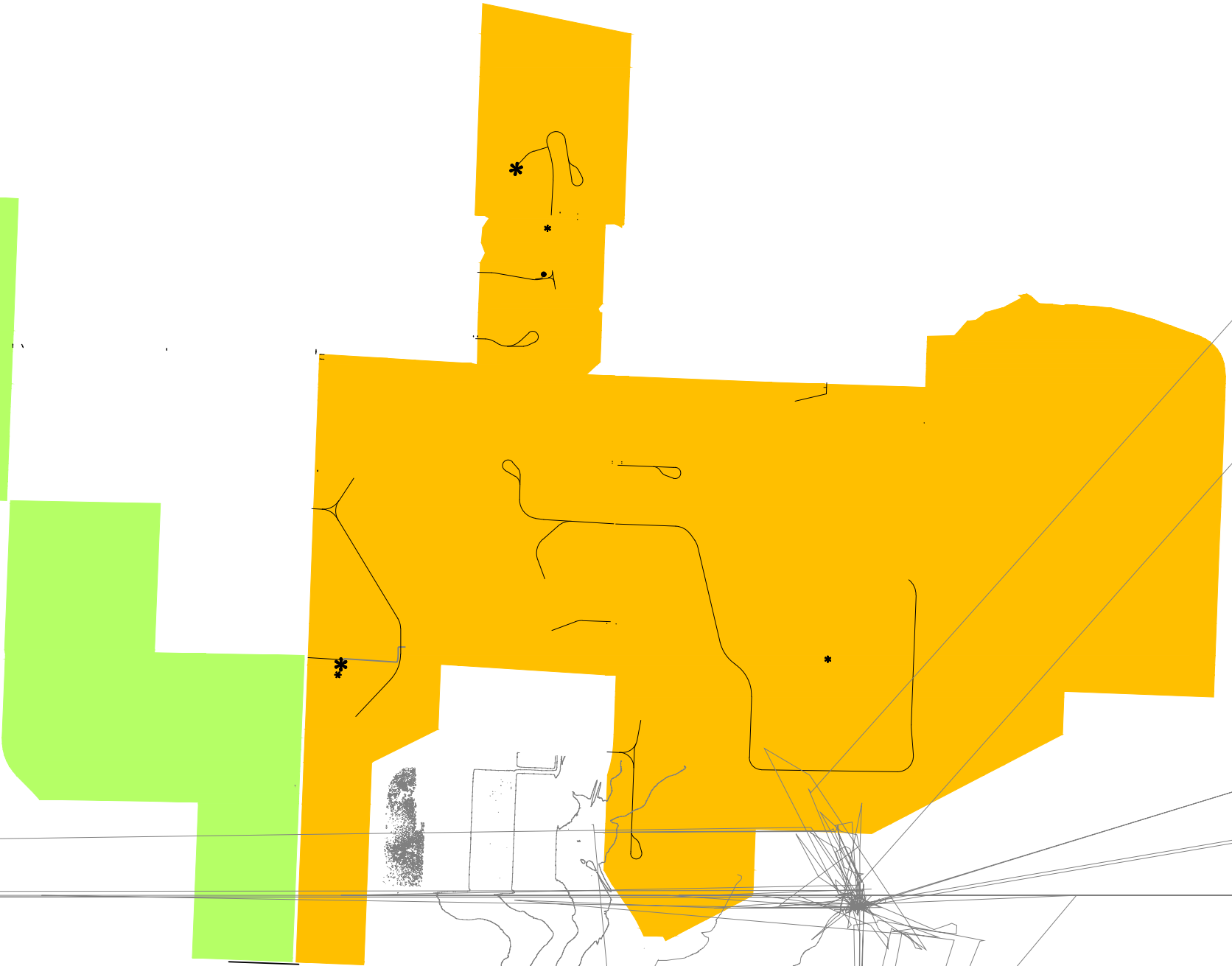
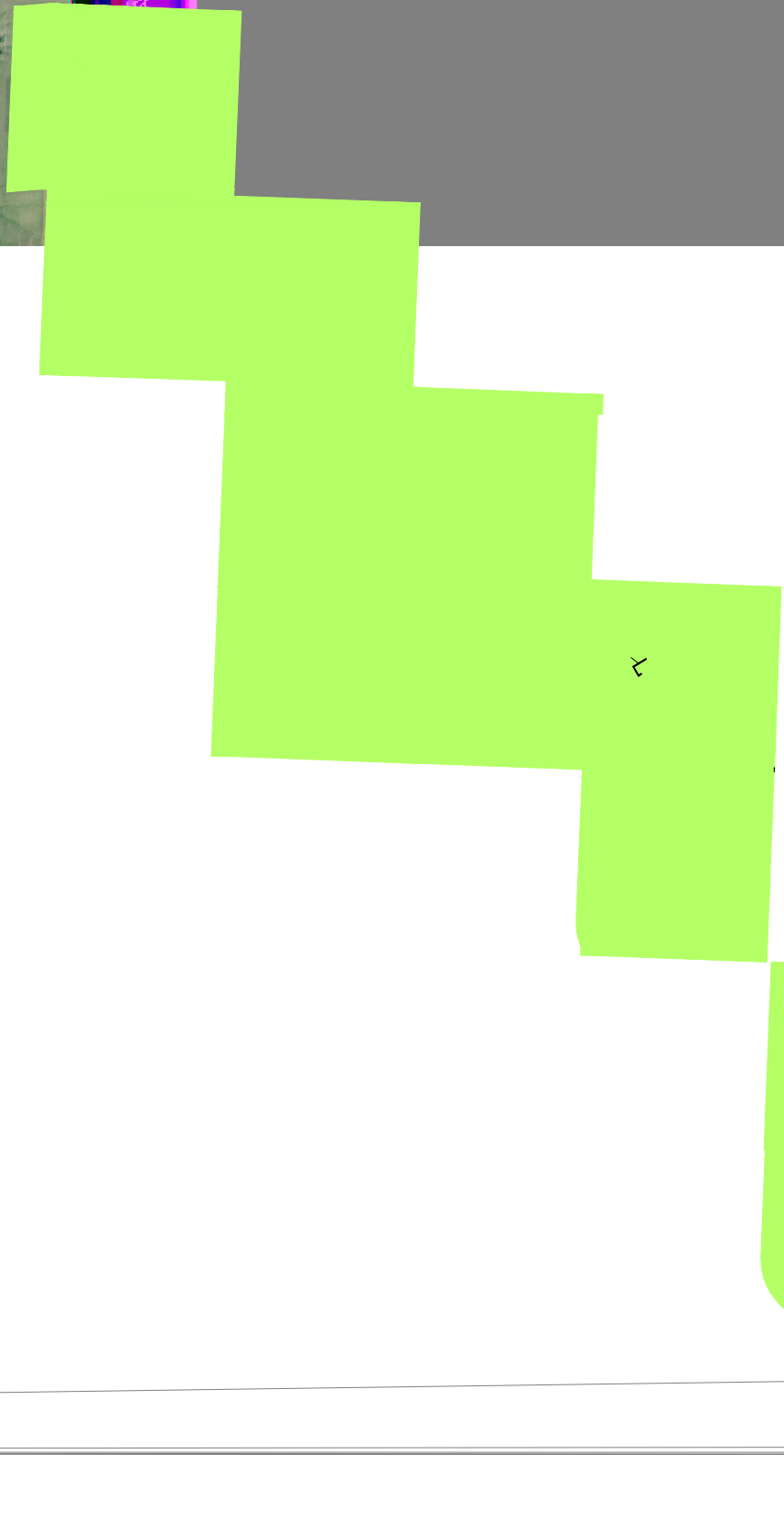
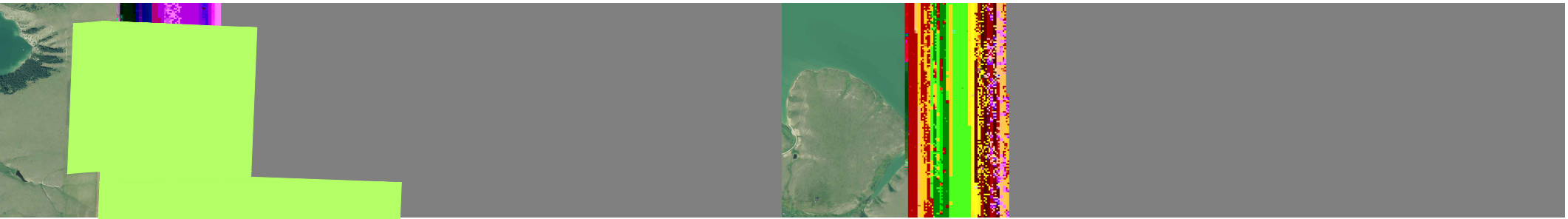
Turbine Information		
Turbine Name	LAT dd mm ss.ssss	LONG -ddd mm ss.ssss
1	49 33 05.36	-113 55 31.02
2	49 32 51.99	-113 55 39.83
3	49 32 41.32	-113 55 39.19
4	49 32 32.82	-113 55 30.57
5	49 32 23.47	-113 55 25.24
6	49 32 10.28	-113 55 37.14
9	49 31 34.61	-113 55 43.86
10	49 34 03.75	-113 54 56.57
11	49 33 55.33	-113 54 52.88
12	49 33 45.93	-113 54 44.26
13	49 33 29.31	-113 54 51.93
14	49 33 18.49	-113 54 54.52
16	49 32 55.53	-113 54 59.62
17	49 32 46.21	-113 54 54.39
18	49 32 36.47	-113 54 49.88
19	49 32 26.85	-113 54 44.98
20	49 32 11.70	-113 54 20.34
22	49 31 49.09	-113 54 21.53
25	49 32 55.82	-113 54 14.74
27	49 32 37.39	-113 54 04.39
28	49 32 27.78	-113 54 00.34
29	49 32 14.10	-113 53 50.52
30	49 32 03.72	-113 53 49.71
32	49 33 09.77	-113 53 42.96
35	49 32 42.80	-113 53 22.10
37	49 32 26.38	-113 53 15.21
38	49 32 14.11	-113 53 11.07
39	49 32 04.40	-113 53 05.86
MET 1	49 33 47.49	-113 55 00.43
MET 2	49 32 19.99	-113 55 42.20



Appendix Department of National Defence

The Project has submitted an application on May 25, 2018 and expects to receive a letter of non-objection for the Project.

📎 2 attachments (5 MB)



Project: Riverview Wind Power Plant

Proponent: Riverview, L.P., by its general partner Enel Alberta Wind Inc.

Turbine Information		
Turbine Name	LAT dd mm ss.ssss	LONG -ddd mm ss.ssss
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39	49 32 04.40	-113 53 05.86
MET 1	49 33 47.49	-113 55 00.43
MET 2	49 32 19.99	-113 55 42.20

Appendix S Environment and Climate Change Canada

The Proponent has submitted to ECCC on May 25, 2018 and expects to receive a letter of non-objection for the Project.

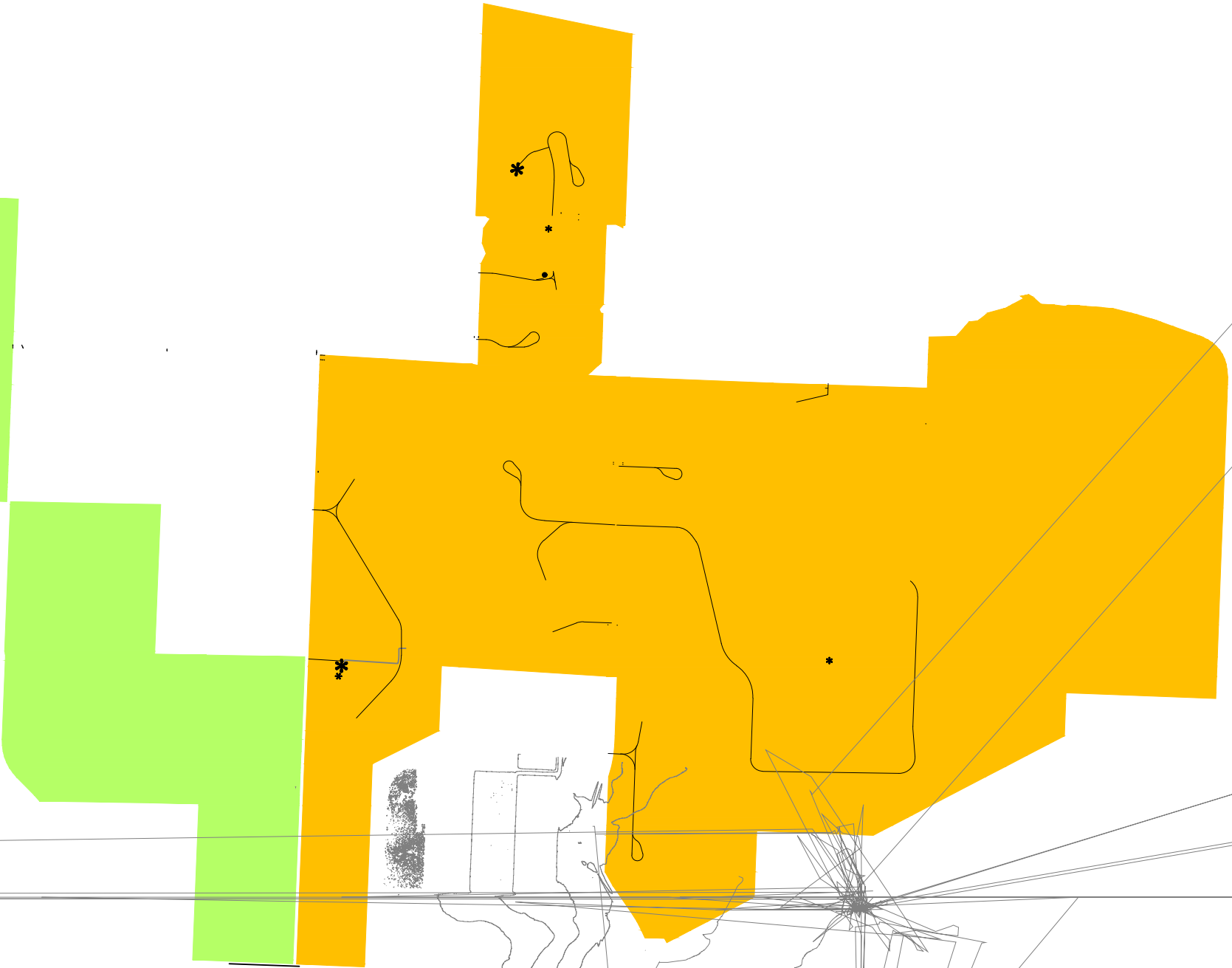
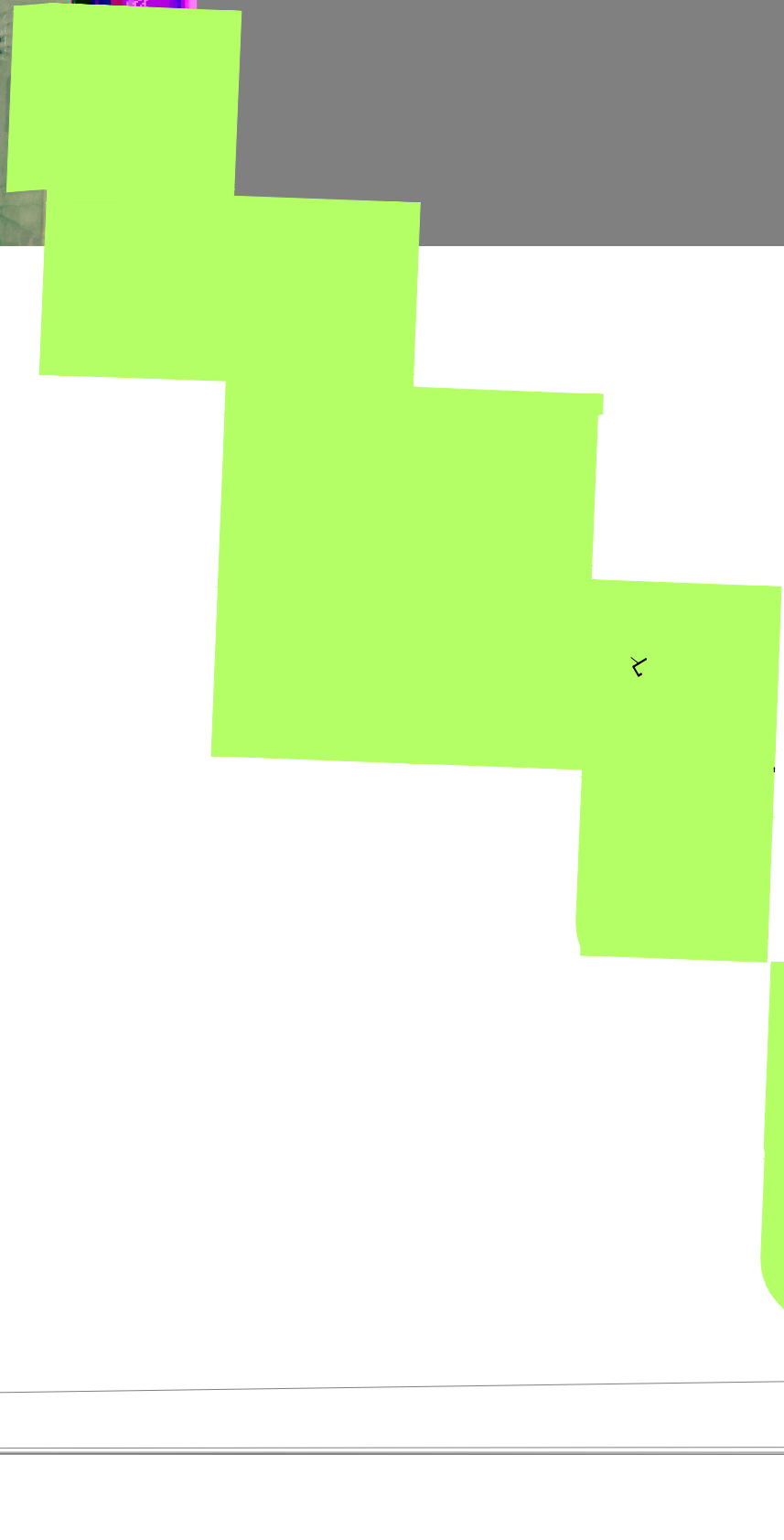
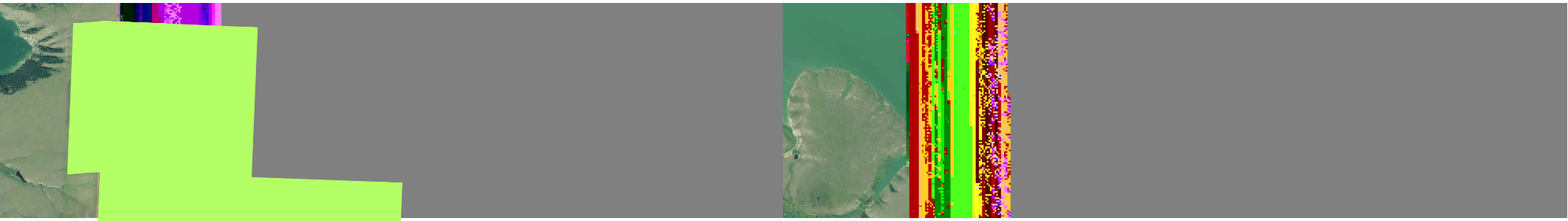
Jason La

o Radar t o Weather Radar (EC) ec.radar.meteo-weatherradar.ec/canada.ca

Cc ictor.Engel@enel.com ictor.Engel@enel.com A hle .mith@enel.com A hle .mith@enel.com riverviewwind@enel.com
riverviewwind@enel.com Pa la c@arrigle.Pmcgarrigle@olaenergyconsulting.com

attachment ()

R rbine Location . A . I -Plan-R -A - . d



Project: Riverview Wind Power Plant

Proponent: Riverview, L.P., by its general partner Enel Alberta Wind Inc.

Turbine Information		
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11	49 33 55.33	-113 54 52.88
12	49 33 45.93	-113 54 44.26
13	49 33 29.31	-113 54 51.93
14	49 33 18.49	-113 54 54.52
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27	49 32 37.39	-113 54 04.39
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29	49 32 14.10	-113 53 50.52
30	49 32 03.72	-113 53 49.71
32	49 33 09.77	-113 53 42.96
35	49 32 42.80	-113 53 22.10
37	49 32 26.38	-113 53 15.21
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