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POST-EA INFORMATION PACKAGE INCLUDING AN UPDATED PROJECT DESCRIPTION ALL SEASON ROAD TO PRAIRIE CREEK MINE

APPENDIX 1-14

SUBMITTED IN SUPPORT OF:

Water Licences MV/PC2014L8-0006, and
Land Use Permits MV/PC2014F0013

SUBMITTED TO:

Mackenzie Valley Land and Water Board
Yellowknife, NT X1A 2N7

Parks Canada,
Nahanni National Park Reserve
Fort Simpson, NT X0E 0N0

SUBMITTED BY:

Canadian Zinc Corporation
Vancouver, BC, V6B 4N9

February 2019

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Engineering			
Allnorth initial design	April, 2015	Completion of representative preliminary road designs (21 km), conceptual major stream crossing designs; defining road design specifications, construction types and schedule.	DAR, Appendix 1, PR#56, http://reviewboard.ca/upload/project_document/EA1415-01_EA1415-01__DAR_Appendix_1_Vol_2.PDF
Allnorth additional information	September, 2015	Supplement to original submission. Includes clarifications for borrow, traffic, construction phases and schedule, permafrost, route options considered. Updated stream crossing designs and submission of management plans.	DAR Addendum, Appendix A, PR#101, http://reviewboard.ca/upload/project_document/EA1415-01_App_A_-_Allnorth_Road_Eng.PDF
Allnorth	2016-05-02	Responses to IR's regarding road impacts and risks identified by all parties effected by ASR project, and associated consultants, including barge operations, permafrost, sediment/erosion control, borrows, watercourse crossings, road operational risks.	PR#184, http://reviewboard.ca/upload/project_document/EA1415-01_Allnorth_Responses_to_Information_Requests.PDF
Allnorth	2016-08-17	Provide additional analysis for Lower Sundog alignment and footprint within active floodplain.	Technical Session Undertakings, PR#288, http://reviewboard.ca/upload/project_document/EA1415-01_Undertaking_responses_from_tech_session_-_Allnorth_19_23_24_.PDF
Allnorth	2016-10-07	IR2 responses to Oboni Riskope	PR#364, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Allnorth_Oboni_responses.PDF
Allnorth	2016-10-21	IR2 responses related to road design approach and road operational risks.	PR#350, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Allnorth_PCA_and_MVEIRB_responses.PDF
Oboni-Riskope	2016-11-18	ASR Risk assessment for MVRB	PR#324, http://reviewboard.ca/upload/project_document/EA1415-01_Risk_Assessment_Technical_Report_submitted_by_Oboni_Riskope.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
CZN	2016-12-05	Review comments and questions regarding the Oboni-Riskope risk assessment.	PR#380, http://reviewboard.ca/upload/project_document/EA1415-01_Letter_CanZinc_to_MVEIRB_re_Risk_Assessment_Dec_5_2016.PDF
Oboni-Riskope	2016-12-14	Reply to CZN's Dec. 5 letter.	PR#387, http://reviewboard.ca/upload/project_document/EA1415-01_Oboni_Riskope_response_to_08-Dec-2016_Notice_of_proceeding.PDF
CZN	2016-12-16	IR to Oboni-Riskope	PR#391, http://reviewboard.ca/upload/project_document/EA1415-01_Letter_CZN_to_MVEIRB_re_risk_assessment_Information_request_Dec_16_2016.PDF
Oboni-Riskope	2016-12-28	Response to CZN IR.	PR#393, http://reviewboard.ca/upload/project_document/EA1415-01_Oboni_Riskope_response_to_CanZinc_informaton_requests_28-Dec-2016.PDF
CZN	2016-02-07	Review comments regarding Oboni-Riskope's response to CZN's Dec 5, 2016 letter and Dec 16 IR.	PR#407, http://reviewboard.ca/upload/project_document/EA1415-01_Rsponse__2_to_risk_assessment_from_CanZinc_to_MVEIRB_7-Feb-_2017.PDF
Fish			
Hatfield	2017-03-09	Habitat loss and offset.	http://reviewboard.ca/upload/project_document/EA1415-01_Prairie_Creek_habitat_offsetting_memo_submitted_by_CanZinc.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Hatfield	2016-11-03	Hatfield 2016. Prairie Creek Mine, all season road undertaking 7 IR replies – PCA IRs. Memo to David Harpley, Canadian Zinc Corp, November 3, 2016. Attachment to CanZinc's response to Parks Canada's information requests relating to Undertaking #7/GNWT letter. http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Hatfield_PC_responses.PDF	http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Hatfield_PC_responses.PDF
Hatfield	2016-10-29	Attachment to CanZinc's response to DFN's information request in relation to undertaking #7/GNWT letter.	http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Hatfield_DFN_responses.PDF
Hatfield	2016-10-29	Attachment to CanZinc's response to DFO's information requests in relation to Undertaking #7/GNWT letter.	http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Hatfield_DFO_responses.PDF
Hatfield	2016-10-19	Attachment to CanZinc's information request response to MVEIRBs fish and fish habitat monitoring IR.	http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_Hatfield_MVEIRB_IR_response.PDF
Hatfield	2016-10-21	IR2 replies.	http://reviewboard.ca/upload/project_document/EA1415-01_Compiled_Round_2_information_requests_with_responses_and_attachments.PDF
Hatfield	2016-09-06	Supplementary habitat information.	http://reviewboard.ca/upload/project_document/EA1415-01_Supplementary_fish_habitat_report_06_Sep_16_undertaking_7_.PDF
Hatfield	2016-04-22	Responses to information requests.	http://reviewboard.ca/upload/project_document/EA1415-01_Hatfield_memo_fish_IR_responses.PDF
Hatfield	2015-09-02	Response to adequacy review – fish and fish habitat. DAR Addendum, Appendix C.	http://reviewboard.ca/upload/project_document/EA1415-01_App_C_-_Hatfield_aquatics.PDF
Hatfield	2014-09-25	Liard River Bathymetry And Bank Survey. DAR Appendix 11.	http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_11.PDF
Hatfield	2014-09-04	Review of stream crossings in NNPR. DAR Appendix 8.	http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_8.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Hatfield	2014-09-09	Habitat Assessment of Sundog Creek Channels for Realignment- . DAR Appendix 10.	http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_10.PDF
Hatfield	2015-03-12	Stream crossing habitat assessments, August and September, 2014. DAR Appendix 9.	http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_9.PDF
Hydrology			
Regional Streamflow Time Series Trend Analysis	2010-10-25	Time series trend analysis of long-term streamflow records in the Prairie Creek mine vicinity, with evaluations of normalized annual mean flow and normalized annual maximum daily flow.	MVLWB Registry, File Number MV2008L2-0002. http://registry.mvlwb.ca/Documents/MV2008L2-0002/Appendix%20M%20NHC%20analysis%20of%20streamflow%20trends%2025%20Oct%202010.pdf Links to two additional reports regarding the mine site outfall exfiltration design are at https://mvlwb.com/registry/documents?f[]=aid%253Acompany_name:Canadian%20Zinc%20Corporation
High Water Levels for Prairie Creek Mine Access Road Stream Crossings	2012-11-19	Design open water levels for seven stream crossings where bridges were proposed	Public Registry 68. http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_3.PDF
Protocol for Estimation of Real-Time Flows in Prairie Creek	2013-01-24	Methods are presented for estimating real-time flows in all seasons in Prairie Creek at the mine site, based on real-time water level data. The report includes plots of Prairie Creek recorded and estimated flows for all 16 years of historic record.	MVLWB Registry, File Number MV2008L2-0002. http://registry.mvlwb.ca/Documents/MV2008L2-0002/MV2008D0014%20MV2008T0012%20MV2008L2-0002%20-%20CZN%20-%20Final%20Report%20for%20Real-time%20Flow%20Estimate%20Protocol%20-%20Jan24-13.pdf
Stream Crossing Design Water Levels for Prairie Creek Mine Access Road	2014-12-18	Design open water levels for 18 stream crossings	Public Registry 118. http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_4.PDF
Response to Review Board Section 4.9 Comment on Sundog Creek	2015-07-23	Response to Review Board May 2015 EA Adequacy Review request regarding methods used to develop Q100 values, uncertainty, sedimentation, and channel stability	Public Registry 89. http://reviewboard.ca/upload/project_document/EA1415-01_App_B_-_Tetra_Tech_flood_estimation.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Sundog Creek Realignment Reach, KP 35-38, Hydrotechnical Assessment	2016-03-17	Response to Review Board Dec 2015 Adequacy Review Decision, providing hydrotechnical information including assessments of Sundog Creek hydrology and hydraulics, design flows and velocities, bed material, channel stability, and 2D hydraulic modeling of the proposed diversion reach.	Pages 4 to 20 of Public Registry 178. http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_responses_to_outstanding_adequacy_items.PDF (Warning - link can be very slow to open due to large file size)
Stream Crossing Design Water Levels for Prairie Creek Mine Access Road	2016-06-06	100-year design water levels are presented for Sundog Creek from road Kilometer Post (KP) 33.6 to 38.0 where the road alignment follows the channel south bank, and for a tributary channel crossing at KP 28.7.	Public Registry 218. http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_-_Tetra_Tech_memo_on_stream_crossing_design_water_levels_Jun_6_2016.PDF
Sundog Creek Realignment Reach, KP 35-38, Supplemental Assessment	2016-07-05	Further description of the stream geomorphology and processes in the reach of interest.	Pages 58 to 62 of Public Registry 282. http://reviewboard.ca/upload/project_document/EA1415-01_Letter_to_MVEIRB_re_Undertakings_from_Technical_Session_Aug_11_2016.PDF
Sundog Creek Realignment Reach, KP 35-38, Preliminary Design	2016-08-10	Preliminary design of realignment reach. Document includes upper reach stability assessment based on photos dated 2008-2016, and 2-year and 100-year inundation extents and flow velocities for existing and proposed conditions	Pages 63 to 82 of Public Registry 282. http://reviewboard.ca/upload/project_document/EA1415-01_Letter_to_MVEIRB_re_Undertakings_from_Technical_Session_Aug_11_2016.PDF
Responses to IRs re Sundog Realignment.pdf	2016-10-25	Responses to Information Requests from Dehcho First Nations and Parks Canada regarding channel stability, maintenance, and modeling.	Public Registry 357. http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_TetraTech_U_7.PDF
Responses to March 2017 Comments on Sundog Creek	2017-03-23	Responses to Recommendations from Fisheries and Oceans and Parks Canada regarding modeling, detailed designs, channel readjustment, and hydraulic calculations.	Pages 54 to 60 of Public Registry 484. http://reviewboard.ca/upload/project_document/EA1415-01_CZN_response_to_technical_reports_-_Apr_07_2017.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Record of 07Mar2017 meeting between DFO, PCA and CanZinc re Sundog low flow	2017-04-24	Notes from meeting(s) to discuss expected interaction between surface water and groundwater in Sundog diversion reach.	Public Registry 534. http://reviewboard.ca/upload/project_document/EA1415-01_Meeting_Record_for_7Mar17_meeting_between_DFO_PCA_and_CanZinc.PDF
Environment and Climate Change Canada Response to Undertaking 7	2017-05-18	Comment on ECCC response to Undertaking 7 regarding additional data flow data to be used for the Sediment and Erosion Control Plan for the road.	Pages 49 to 51 of Public Registry 553 http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_closing_arguments.PDF
Permafrost			
Golder Associates Ltd.	2010-03-22	Terrain assessment report.	EA0809-002, PR#256, DAR, Appendix 16, p. , http://reviewboard.ca/upload/project_document/EA0809-002_Developer_s_Assessment_Report__Vol_3_of_4_Appendices_11_to_18_.PDF
SNC-Lavalin Inc.	2012-11-16	Data report on 2012 ASR geotechnical investigation.	Submitted to Parks Canada. Available on request.
Tetra Tech EBA Inc.	2015-03-01	Geotechnical evaluation report including 2014 reconnaissance work.	PR#129, DAR Appendix 2, http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_2.PDF
Tetra Tech EBA Inc.	2015-12-03	Terrain mapping report.	PR#107, http://reviewboard.ca/upload/project_document/EA1415-01_Tetra_Tech_EBA_Mapping_Summary_Report_2015-12-03_IFU_1_.PDF
Tetra Tech EBA Inc.	2016-04-213	Response to IR's.	IR#188, p.97, http://reviewboard.ca/upload/project_document/EA1415-01_Compiled_attachment_responses_to_individual_IRs.PDF
Tetra Tech EBA Inc.	2016-04-29	Response to IR's.	PR#188, p.12, http://reviewboard.ca/upload/project_document/EA1415-01_Compiled_attachment_responses_to_individual_IRs.PDF
Tetra Tech EBA Inc.	2016-10-01	Response to EA1415-01 Information Request.	Tetra Tech EBA File: Y14103320.01-003

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Tetra Tech EBA Inc.	2016-10-24	Summary of permafrost areas and mitigations	IR2 reply, PR#344, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_TetraTech_Permafrost_summary_and_mitigation.PDF
Sediment and Erosion			
Allnorth Consultants Li	2015-08-24	2015 version of Sediment and Erosion Control Plan.	DAR Addendum, Appendix A, Appendix C, PR#101, http://reviewboard.ca/upload/project_document/EA1415-01_App_A_-_Allnorth_Road_Eng.PDF
Canadian Zinc Corpora	2012-04-01	Initial 2012 version of Sediment and Erosion Control Plan.	http://registry.mvlwb.ca/Documents/MV2012F0007/MV2012F0007_-_CZN_-_Application_-_Additional_Information_-_Apr05-12.pdf
Stability			
Golder Associates Ltd.	2010-03-22	Terrain assessment report.	EA0809-002, PR#256, DAR, Appendix 16, p. , http://reviewboard.ca/upload/project_document/EA0809-002_Developer_s_Assessment_Report__Vol_3_of_4__Appendice_s_11_to_18_.PDF
SNC-Lavalin Inc.	2012-11-16	Data report on 2012 ASR geotechnical investigation.	Submitted to Parks Canada. Available on request.
Tetra Tech EBA Inc.	2015-03-01	Geotechnical evaluation report including 2014 reconnaissance work.	PR#129, DAR Appendix 2, http://reviewboard.ca/upload/project_document/EA1415-01_Appendix_2.PDF
Tetra Tech EBA Inc.	2015-12-01	Mapping Summary Report.	IR#107, http://reviewboard.ca/upload/project_document/EA1415-01_Tetra_Tech_EBA_Mapping_Summary_Report_2015-12-03_IFU_1_.PDF
Tetra Tech EBA Inc.	2016-01-29	Permafrost-Karst Characterization.	PR#141, p.10, http://reviewboard.ca/upload/project_document/EA1415-01_Letter_CZN_to_MVEIRB_re_DAR_Adequacy_RfD_Jan_2016.PDF
Tetra Tech EBA Inc.	2016-04-18	Response to IR's from MVRB	IR#188, p.18, http://reviewboard.ca/upload/project_document/EA1415-01_Compiled_attachment_responses_to_individual_IRs.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Tetra Tech EBA Inc.	2016-05-04	Risk Analysis - Landslide Hazards.	PR#187, http://reviewboard.ca/upload/project_document/EA1415-01_TetraTech_EBA_Risk_analysis_-landslide_hazazrds.PDF
Tetra Tech EBA Inc.	2016-07-11	Discussion for Undertakings #36, 37, 40 and 44.	IR#282, p.85, http://reviewboard.ca/upload/project_document/EA1415-01_Letter_to_MVEIRB_re_Undertakings_from_Technical_Session_Aug_11_2016.PDF
Tetra Tech EBA Inc.	2016-10-24	Updated terrain maps	PR#360, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_TetraTech_terrain_stability_mapping.PDF
Tetra Tech EBA Inc.	2016-10-24	Borrow permafrost.	PR#351, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_TetraTech_borrow_sources.PDF
Tetra Tech Canada Inc.	2017-05-05	Consideration of Potential Debris Dam Formation Resulting from a Landslide	PR#539, p.5, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_hearing_undertaking_responses.PDF
Tetra Tech EBA Inc.	2016-10-24	Terrain stability.	PR#361, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_TetraTech_terrain_stability.PDF
Vegetation			
2009 Rare Plant and Wildlife Survey - Mine Area and Winter Road	2009-10	Summary of rare plant survey, incidental wildlife observ	Tetra Tech File: Y22101123
Reclamation Assessment, Invasive and Rare Plant Survey 2010 - Mine and Winter Access Road, NT	2011-04	Summary of invasive species and rare plant surveys	Tetra Tech File: Y22101185

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Invasive Species Management Framework - Proposed ASR	2016-04-27	Framework for the management of invasive species	IR#186, p.43, http://reviewboard.ca/upload/project_document/EA1415-01_TetraTech_EBA_Wildlife_Veg_IR1_responses.PDF
July 2016 Vegetation and Wildlife Baseline Surveys – ASR	2016-08-17	Summary of rare plant survey	PR#289, http://reviewboard.ca/upload/project_document/EA1415-01_Vegetation_and_Wildlife_Baseline_Survey_17_Aug_16.PDF
Wildlife			
Chillborne April 2007 Wildlife Reconnaissance Winter Road and Front Range Alignment	2007-05-X	Provides the results from the April 2007 aerial survey along the entire 1980s winter road and proposed winter alignment.	http://reviewboard.ca/upload/project_document/EA1415-01_Chillborne_April_2007_Wildlife_Road_and_Alternate_Route.PDF
Golder Modelling Caribou Occurrence along the ASR	2014-12-23	Caribou pellet survey was conducted, with transects perpendicular to the proposed road and stratified based on a summer caribou habitat suitability index model.	http://reviewboard.ca/upload/project_document/EA1415-01_Caribou_Occurrence.PDF
Golder Occupancy Pattern of Caribou, ASR and Surrounding Area	2014-06-25	A total of 8, multi-day, aerial caribou occupancy surveys were completed for Parks on pre-determined cells between December 1 to March 31, 2010/11 and 2014. The study area included the entire Access Road from the Mine to Nahanni Butte access road.	http://reviewboard.ca/upload/project_document/EA1415-01_Golder_Caribou_Occupancy_Survey_25_JUN_2014.PDF
TT IR1 Responses	2016-04-28	Caribou, effects assessments, noise.	http://reviewboard.ca/upload/project_document/EA1415-01_TetraTech_EBA_Wildlife_Veg_IR1_responses.PDF
TT July 2016 Vegetation and Wildlife Baseline Surveys, ASR	2016-08-17	July 2016 baseline survey results. 1) Black Bear habitat , 2) collared pika presence and relative abundance, 3) Peregrine Falcon scrape survey in Sundog Creek, 4) Harlequin Duck aerial survey, 5) Trumpeter Swan aerial presence and relative abundance, and 6) beaver reconnaissance.	http://reviewboard.ca/upload/project_document/EA1415-01_Vegetation_and_Wildlife_Baseline_Survey_17_Aug_16.PDF

APPENDIX 1-14: STUDIES TO DATE

Title/Author	Date	Summary of Contents	Location Link
Parks Canada	2016-02-12	Provides preliminary results from a caribou collaring program. A total of 18 caribou cows were fitted with GPS satellite collars in Feb and Dec 2015. A full year of collaring data was available for five caribou and approximately 2 months of data for the remaining 12 caribou. Remote cameras were also placed along the access road at km 17, 23, and 26.	http://reviewboard.ca/upload/project_document/EA1415-01_Preliminary_Data_Report-_Prairie_Creek_Caribou_Research.PDF
TT IR2 responses	2016-10-19	Bears, caribou, birds, pika.	PR#341, http://reviewboard.ca/upload/project_document/EA1415-01_CanZinc_IR2_response_attachment_-_TetraTech_wildlife_and_vegetation.PDF