RioTinto

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Mr. Mason Mantla, Chair
Wek'èezhìi Land and Water Board
Box 32
Wekweètì, NT X0E 1W0

2 May 2022

Dear Mr. Mantla:

Subject: 2017 to 2019 Aquatic Effects Re-evaluation Report Version 1.0 Addendum

Please find attached Diavik Diamond Mines (2012) Inc.'s (DDMI) 2017 to 2019 Aquatic Effects Re-evaluation Report Version 1.0 Addendum. This submission addresses the Wek'èezhìi Land and Water Board (WLWB or the Board) Directives and Decision[1] issued on 31 January 2022 following its review of DDMI's 2017 to 2019 Aquatic Effects Re-evalution Report Version 1.0.

Requirements of the addendum as specifid by the Board in its Decision and DDMI's detailed responses are presented in Table 1 of the attached.

Please do not hesitate to contact the undersigned or Kyla Gray (kyla.gray@riotinto.com) if you have any questions related to this submission.

Yours sincerely,

Kofi Boa-Antwi
Superintendent, Environment

cc: Marie-Eve Cyr, WLWB
Anneli Jokela, WLWB

Attachments:

- 2017 to 2019 Aquatic Effects Re-evaluation Report, Version 1.0 Addendum

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[1] Diavik - Aquatic Effects Re-eval WLWB Reasons for Decision 31 January 2022

Diavik Diamond Mines (2012) Inc.

2017 to 2019 Aquatic Effects Re-Evaluation Report Addendum

Submitted to:

Wek'èezhìi Land and Water Board

Submitted by:

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22511717-2329-L-Rev0-1000

29 April 2022

1.0 BACKGROUND

In accordance with the Wek'èezhìi Land and Water Board (WLWB) Reasons for Decision issued on 31 January 2022, Diavik Diamond Mines (2012) Inc. (DDMI) has prepared an addendum for the *2017 to 2019 Aquatic Effects Re-evaluation Report*. The Addendum consists of Table 1 and the Supporting Information provided in Section 2.0.

Table 1: Required Items per WLWB 31 January 2022 Reasons for Decision re. *2017 to 2019 Aquatic Effects Re-evaluation Report* under Water Licence W2015L2-0001

Directive Number	Edit Suggested by DDMI in Revised Document or Requested by the Board based on DDMI's Response	DDMI Response
1	Rationale for why particular parameters (i.e., TP, OP, N+N, ammonia, lead, and aluminum) are included in detailed analyses for snow chemistry surveys and rationale why all parameters identified as substances of interest (SOIs) for water and sediment quality are not included in the detailed analyses	Snow water chemistry analytes of interest are determined by including those variables with effluent quality criteria (EQC; i.e., aluminum, ammonia, arsenic, cadmium, chromium, copper, lead, nickel, nitrite, and zinc) or a load limit (i.e., phosphorus) specified in the Type A Water Licence (W2015L2-0001, formerly W2007L2 0003). The process is entirely separate from the substances of interest (SOI) selection process that is undertaken as part of the water quality component of the Aquatic Effects Monitoring Program (AEMP).
2	Address the Board's previous direction from the 2014 to 2016 Re-evaluation Report related to the change in sediment sampling methods (i.e., requirement 5E). DDMI must explicitly address the implications, if any, of the sediment methodology changes and consider ways in which it can overcome these implications	As described in Section 6.2.2.2 of the 2017 to 2019 Re-evaluation report, most changes in sampling methods occurred between 2010 and 2013 sampling programs. The implications of such changes in the interpretation of results were discussed for the parameters affected by the methodological change (i.e., particle size, total organic carbon [TOC], total nitrogen [TN] and phosphorus) in Section 6.3.3 of the 2014 to 2016 and the 2017 to 2019 Re-evaluation reports. The most recent methods and associated results (i.e., 2019) are best suited to meet the objectives of the program as they reflect the most recent depositional conditions. In brief, total phosphorus results in 2013 and 2016 were slightly lower than in previous years, but in 2019 were within the same range as earlier years' results. For particle size, TOC and TN, there was no indication that the change in methods affected data interpretation. DDMI is confident that there are no implications to overcome as a result of these changes in sediment sampling methods. These changes have been acknowledged in the reports, and will continue to be, in order to provide clarity on the methods utilized over time as part of the AEMP.
3	Provide either a revised conclusion about the role of a laboratory change on nitrogen concentrations in Section 7.3.3.2 of the Report (and anywhere else this is mentioned) or, if DDMI maintains there is an effect on nitrogen from a change in labs, that a review and discussion of the appropriateness of the normal ranges for nitrogen be provided to response to EMAB's recommendation (comment 18)	The sentence "The elevated concentrations at several NF, MF and FF stations after 2012 may in part reflect the change in labs from UofA to Maxxam (now BV labs) that occurred in 2013 (Golder 2016a)" should be disregarded. Upon further review of the TN data and the evaluation of the analytical methods as described in response to EMAB-18, DDMI no longer thinks there is sufficient indication that a change in laboratories notably affected the TN dataset. Further review of the TN data from 2007 to 2019 confirms that the elevated TN concentrations after 2012 likely reflect the influence of effluent discharge to Lac de Gras. The elevated TN concentrations are consistent with the expectation that nitrogen in effluent will result in TN concentrations in Lac de Gras to increase over time and to spread across the lake over time. The elevated TN concentrations in the open-water season in 2013, and the possible link to the change in analytical laboratories, were first noted in the 2011 to 2013 Aquatic Effects Re-evaluation Report (Golder 2016). Figure 6-7 of this report showed open-water TN concentrations were more variable, and higher at some stations and areas, particularly in the near-field (NF) area. No consistent increasing or decreasing trends in TN concentrations were observed from 2007 to 2013, with the exception of a significant decreasing trend at station FF2-2 in the open-water season, which may have reflected a decrease in effluent loads and concentrations over that period (Golder 2016). The same comment about the elevated TN concentrations since 2013 was

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3	Provide either a revised conclusion about the role of a laboratory change on nitrogen concentrations in Section 7.3.3.2 of the Report (and anywhere else this is mentioned) or, if DDMI maintains there is an effect on nitrogen from a change in labs, that a review and discussion of the appropriateness of the normal ranges for nitrogen be provided to response to EMAB's recommendation (comment 18)	made in the 2014 to 2016 Aquatic Effects Re-evaluation Report (Golder 2019), because the TN concentrations appeared similar to those in 2013, with higher and more variable concentrations in the far-field (FF) areas than those observed prior to 2013. Similar to the 2011 to 2013 re-evaluation, no apparent trends or only shallow trends were observed in the 2007 to 2016 open-water TN data (Golder 2019). With the addition of three more years of NF, mid-field (MF), and LDG-48 TN data, and one more year of FF data, the trend of increasing TN concentrations in Lac de Gras is more obvious (see Figure 7-22 of the 2017 to 2019 Aquatic Effects Re-evaluation Report [Golder 2020]), and the parabolic models fitted to the open-water TN data suggest an increasing trend from 2013 to 2019 in all sampling areas and at LDG-48 (Figure 7-23 of Golder 2020). TN concentrations in the open-water season have typically exceeded the normal range in the NF and MF areas between 2007 and 2019, and concentrations were more frequently above normal range in the FF areas and LDG-48 after 2013 (Golder 2020). These results are consistent with increasing TN in Lac de Gras over time and across the lake due to effluent discharge. In response to EMAB-18, the analytical methods used by UofA and Maxxam for nutrient analysis were reviewed, and further evaluation was done to evaluate whether the change in analytical laboratory would affect the use of the normal ranges per the AEMP Reference Conditions Report Version 1.4. Based on this evaluation, there is no indication in the nutrient data that this change in analytical laboratory has appreciably influenced the dataset such that the new data cannot be compared to the old. Specifically, analytical methods are broadly the same and there are no obviously large and systematic differences in results before and after the laboratory change. For TN in particular, the measured concentrations are well above the detection limit and so outside of the range of higher analytical uncertainty (e.g., five times the detection limit). As described above, the increasing trend in TN concentrations during the open-water season is consistent with the influence of effluent discharge to Lac de Gras. Overall, the evaluation determined that the approved normal ranges remain appropriate for use in the AEMP.
4	Clarify why particular parameters were not included in the Cumulative Effects assessment based on the approach described in Version 5.2 of the AEMP Design Plan	Cumulative effects were assessed for water quality SOIs and eutrophication indicators along the gradient of exposure at stations in the MF3, FFB and FFA areas and at Station LDG-48. To assess cumulative effects, there must be an effect present at these areas/stations. Magnitude of effects is evaluated by comparing concentrations to the normal range (Golder 2019); therefore, only variables that have concentrations greater than the normal range in the far-field areas (FFA and FFB areas) or at Station LDG-48 were included in the cumulative effects assessment. Variables must also be consistently measured by both AEMP programs (i.e., Diavik and Ekati) in Lac de Gras to be included in the assessment.
5	Analyze trends in metals concentrations for Al, As, Mg, Ni, K, Ru, Ti, and U, both with and without the 2007 data to assess any potential impacts of the 2007 laboratory change	Based on the re-assessment as directed by the WLWB, the change in analytical laboratory from ALS Edmonton in 2007 to ALS Burnaby from 2013 to 2019 had a negligible effect on the interpretation of temporal trends in the *2017 to 2019 Aquatic Effects Re-evaluation Report*. Overall, the exclusion of 2007 fish tissue data did not change the significance of the temporal trends or their interpretation in the NF area. Please see the complete response for this item in Section 2.1 below.
6	Provide a discussion on the use of the quadratic term in temporal analysis of mercury	The model with a quadratic term was developed following an assessment of residuals for a model with the same structure but a linear temporal trend (i.e., a multiplicative effect of lake and time and an additive effect of fork length). The plotted residuals showed a trend in relation to time. Therefore, a quadratic term of the temporal effect was included in the model. The quadratic-term model was used for interpretation because it provided a significant improvement over the linear model (F test, $P<0.001$).

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Directive Number	Edit Suggested by DDMI in Revised Document or Requested by the Board based on DDMI's Response	DDMI Response
7	Assess whether the current mercury guideline for fish tissue analyses is appropriate in consideration of available literature and guidelines, including rationale	In the 2017 to 2019 Aquatic Effects Monitoring Re-evaluation Report, tissue concentrations of mercury in Lake Trout muscle were compared to two concentration thresholds. These included the Health Canada (2007) mercury commercial consumption guideline of 0.5 mg/kg wet weight (ww), and the lowest observable adverse effect level (LOAEL) for mercury in fish of 0.5 to 1.0 mg/kg ww (Sandheinrich and Wiener [2011], cited in ECCC [2016]). It is important to note that neither of these concentration thresholds were considered as regulatory guidelines pertaining to Lake Trout in Lac de Gras, but were instead included to provide a point of reference for comparison with observed concentrations, consistent with historical reports. The Health Canada (2015) guideline of 0.5 mg/kg is specific to the commercial sale of edible fish products and is intended to minimize potential risks to human health based on regular consumption. It does not consider mercury concentrations in natural populations, which may exceed this guideline for large piscivorous fish, such as Lake Trout, nor does it consider how concentrations of mercury affect fish health. The LOAEL for mercury of 0.5 to 1.0 mg/kg presented by ECCC (2016) is the lowest concentration observed to produce adverse effects on the growth, health, reproduction, or behavior of fish. This represents a conservative estimate for identifying concentrations with the potential to impact the health of fish as it is the lowest observed effect based on toxicity testing using a variety of fish species and is not specific to Lake Trout. This LOAEL does not consider potential risks to human health via consumption, or concentrations in natural fish populations that may exceed this threshold for large piscivorous fish, such as Lake Trout. Based on this information, comparisons of fish tissue concentrations of mercury to the Health Canada (2015) guideline of 0.5 mg/kg provides valuable context for fish consumers. As this guideline is at or below the LOAEL for fish of 0.5 to 1.0 mg/kg, it is also protective of fish health. While alternative guidelines could be considered for comparison, it is important to note that these guidelines are not used to assess potential impacts from the Mine, which are evaluated through the Action Level assessment and additional analyses, but are intended to provide a relevant point of reference for comparison, and are used consistently over time in the AEMP. **References:** Health Canada. 2015. Health Canada's Maximum Levels for Chemical Contaminants in Foods. Canadian standards (Maximum Levels) for various chemical contaminants in foods. Retrieved from: https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/maximum-levels-chemical-contaminants-foods.html ECCC (Environment and Climate Change Canada). 2016. Canadian Mercury Science Assessment Report. Environment and Climate Change Canada, Ottawa, ON. 795 pg. Sandheinrich MB, and Wiener JG. 2011. Methylmercury in fish: Recent advances in assessing toxicity of environmentally relevant exposures. In: Beyer WN, Meador JP, editors. Environmental Contaminants in Biota: Interpreting Tissue Concentrations. CRC Press, Boca Raton, pp. 169-190

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Directive Number	Edit Suggested by DDMI in Revised Document or Requested by the Board based on DDMI's Response	DDMI Response
8	Address Decision 3C from the Board's decision on Version 5.1 of the AEMP Design Plan	The triggers for a large-bodied fish health survey would be based on science, using the data collected from the AEMP, and would primarily be based on the results of the Action Level assessment. For example, if an Action Level was triggered for fish health that indicated toxicological impairment, and results of the fish tissue survey indicated an increasing trend in mercury concentrations close to the Mine, then a large-bodied fish survey would be considered in the Response Plan. In general, if potential risks were identified for large-bodied fish in the AEMP, a large-bodied fish survey would be initiated. In addition to the AEMP response framework, a large-bodied fish health survey would also be considered if potential risk to large-bodied fish, or human health associated with the consumption of large-bodied fish, were identified in relation to Mine activities. Examples include large magnitude changes and increasing trends in mercury concentrations in water, sediment or fish tissue (i.e., Slimy Sculpin sampled as part of the AEMP or Lake Trout sampled during the fish palatability study). Similarly, a large-bodied fish health survey would be considered in response to changes in other metals with known toxicity (e.g., arsenic) in water, sediment or fish tissue that may be of concern to large-bodied fish or people who consume the fish.
9	Provide additional discussion of the methods for determining influential observations	The removal of influential observations is required for correct (i.e., accurate) modelling of the data. In the *2017 to 2019 Aquatic Effects Re-evaluation Report*, influential observations were identified using Cook's distance, which evaluates how much the fitted values change with the removal of each individual observation in the dataset. The calculated Cook's distance values were assessed relative to a cutoff value based on an internal scaling of the sample.

EQC = effluent quality criteria; SOI = substances of interest; AEMP = Aquatic Effects Monitoring Program; TOC = total organic carbon; TN = total nitrogen; EMAB = Environmental Monitoring Advisory Board; DDMI = Diavik Diamond Mine Inc; NF = near-field; FF = far-field; MF = mid-field; LDG = Lac de Gras; WLWB = Wek'èezhìi Land and Water Board; LOAEL = lowest observed adverse effect level; ECCC = Environment and Climate Change Canada.

2.0 SUPPORTING INFORMATION

2.1 WLWB Directive 5 – Impacts of the 2007 Laboratory Change on Fish Tissue Results

In 2007, fish tissue chemistry data for Slimy Sculpin were analyzed by ALS Edmonton. In subsequent years, these analyses were completed by ALS Vancouver (i.e., 2013, 2016, and 2019). In April 2022, Amber Springer at ALS Vancouver was contacted to investigate potential differences in analytical methods used between the two laboratories in 2007. While analytical methods are largely standardized across ALS locations, a difference was identified in the sample digestion process, with ALS Edmonton digesting samples using hydrofluoric acid, with the potential to bias results towards greater concentrations for some parameters (A. Springer, ALS Environmental, personal communication, 1 April 2022). Based on this information, the 2007 data will be omitted from future temporal comparisons for fish tissue chemistry.

In accordance with the WLWB directive, trends in concentrations for aluminum, arsenic, magnesium, nickel, potassium, rubidium, titanium, and uranium were analyzed both with and without the 2007 data. While the stated objective of the WLWB directive was to assess any potential impacts of the 2007 laboratory change, these comparisons were confounded by potential changes in fish tissue concentrations of these parameters, as well as changes in laboratory methods, over time (i.e., between 2007 and 2013). It was not possible to control for the influence of these factors in the analysis and interpretation of the data.

An in-depth presentation of results of the temporal analysis of data with the 2007 fish tissue data included in the dataset was provided in the *2017 to 2019 Aquatic Effects Re-evaluation Report* (Golder 2020). Results both with and without 2007 data are presented below for completeness, but this section focuses on results without 2007 data and highlights differences between results without 2007 data and results with 2007 data.

Overall, all eight variables had either a significant interaction or a significant year effect. Of the variables tested, only arsenic did not have a significant interaction between year and area for the analysis of data without 2007 samples (Table 2). Arsenic did, however, have a significant effect of year ($P<0.001$). Temporal trends are presented in Table 3 and Figures 1 to 8. The significance of temporal comparisons was identical for the datasets with and without 2007, with five exceptions:

1) Potassium in FFA had a significant increase between 2016 and 2019 in the dataset without 2007 samples but not in the dataset with 2007 samples.
2) Titanium in FFA had a significant increase between 2016 and 2019 in the dataset without 2007 samples but not in the dataset with 2007 samples.
3) Titanium in FF1 had a significant increase between 2016 and 2019 in the dataset without 2007 samples but not in the dataset with 2007 samples.
4) Uranium in FF1 had a significant increase between 2013 and 2019 in the dataset without 2007 samples but not in the dataset with 2007 samples.
5) Uranium in MF3 had a significant increase between 2013 and 2016 in the dataset without 2007 samples but not in the dataset with 2007 samples.

With respect to the interpretation of the fish tissue chemistry data presented in the *2017 to 2019 Aquatic Effects Re-evaluation Report,* significant, increasing trends at the near-field (NF) area were estimated between 2016 and 2019 for 10 parameters: aluminum, arsenic, cesium, magnesium, nickel, potassium, rubidium, thallium, titanium, and vanadium. Of these, mean concentrations for five of these parameters were below mean concentrations observed in 2007: aluminum, arsenic, magnesium, rubidium, and vanadium. Of these, concentrations of three parameters were not significantly different from 2013: arsenic, magnesium, and rubidium. Concentrations of aluminum and vanadium were greater in 2019 compared to 2013 and 2016; however, similar increases were also observed in the other sampling areas and a spatial gradient was not observed for these parameters, as discussed in Section 10.5.2.1 (Golder 2020). Differences in detection limits were observed among years, which resulted in the 2007 data being excluded in the temporal analysis of cesium, molybdenum, thallium, and tin, due to the high proportion on non-detects, as noted in Section 10.3.2.2 (Golder 2020). These changes more likely reflect improvements in analytical methods over time, rather than the location where the samples were analyzed by ALS.

Overall, the exclusion of 2007 fish tissue data did not change the significance of the temporal trends or their interpretation in the NF area. Of the five differences in temporal trends observed, four occurred in the FF areas. The remaining difference for uranium in MF3 did not affect interpretation of the results since a significant increase had been previously observed between 2016 and 2019 when the 2007 data were included in the analysis (Golder 2020). Removal of the 2007 dataset did not significantly affect the interpretation of increased metal concentrations in the NF area, as those metals with mean concentrations below the 2007 mean were either not significantly different from concentrations observed in 2013 or, in the case of aluminum and vanadium, were observed to increase in all sampling areas, and did not exhibit a spatial gradient in 2019. Based on the assessment presented herein, the change in analytical laboratory from ALS Edmonton in 2007 to ALS Burnaby from 2013 to 2019 likely had a negligible effect on the interpretation of temporal trends in the *2017 to 2019 Aquatic Effects Re-evaluation Report*.

Table 2: Results of Trend Analysis of Slimy Sculpin Tissue Chemistry, with and without 2007 Data

Variable	With or Without 2007 Data	Yeo-Johnson Transformation[(a)]	Coefficient	DF	F-value	*P*-value
Aluminum	With 2007 data	0	Area	4	9.8	**<0.001**
			Year	3	90.4	**<0.001**
			Area × Year	11	1.8	0.056
	Without 2007 data	0	Area	4	9.7	<0.001
			Year	2	54.6	<0.001
			Area × Year	8	2.2	**0.033**
Arsenic	With 2007 data	0	Area	4	21.3	<0.001
			Year	3	86.3	<0.001
			Area × Year	11	2.4	**0.011**
	Without 2007 data	0	Area	4	18.6	**<0.001**
			Year	2	28.1	**<0.001**
			Area × Year	8	1.5	0.154
Magnesium	With 2007 data	0	Area	4	4.9	0.001
			Year	3	12.9	<0.001
			Area × Year	11	1.9	**0.043**
	Without 2007 data	0	Area	4	4	0.004
			Year	2	15.8	<0.001
			Area × Year	8	2.4	**0.022**
Nickel	With 2007 data	0	Area	4	10.9	<0.001
			Year	3	245	<0.001
			Area × Year	11	3.1	**0.001**
	Without 2007 data	0	Area	4	11.9	<0.001
			Year	2	261.3	<0.001
			Area × Year	8	3.6	**0.001**
Potassium	With 2007 data	0	Area	4	2	0.101
			Year	3	109.4	**<0.001**
			Area × Year	11	1.7	0.071
	Without 2007 data	0.5	Station/Area	4	1.5	0.221
			Year	2	137.7	<0.001
			Area × Year	8	2.3	**0.029**
Rubidium	With 2007 data	0	Station/Area	4	15.7	<0.001
			Year	3	121.5	<0.001
			Area × Year	11	9	**<0.001**
	Without 2007 data	0	Area	4	8	<0.001
			Year	2	16.5	<0.001
			Area × Year	8	7.6	**<0.001**

Table 2: Results of Trend Analysis of Slimy Sculpin Tissue Chemistry, with and without 2007 Data

Variable	With or Without 2007 Data	Yeo-Johnson Transformation[(a)]	Coefficient	DF	F-value	*P*-value
Titanium	With 2007 data	0	Area	4	14.4	**<0.001**
			Year	3	32	**<0.001**
			Area × Year	11	1.4	0.178
	Without 2007 data	0	Area	4	10.2	<0.001
			Year	2	61.2	<0.001
			Area × Year	8	3.1	**0.003**
Uranium	With 2007 data	0	Area	4	47.1	<0.001
			Year	3	11.5	<0.001
			Area × Year	8	5.6	**<0.001**
	Without 2007 data	0	Area	4	38.4	<0.001
			Year	2	3.5	0.032
			Area × Year	8	5.9	**<0.001**

Note: P-values of significant Area × Year interactions and significant main effects (where no significant interactions were found) are shown in bold.

(a) Transformation was performed using Yeo-Johnson transformation, which uses an offset in log transformations.

DF = degrees of freedom.

Table 3: Post-hoc Multiple Comparisons for Slimy Sculpin Tissue Chemistry, 2007 to 2019

2007 Data	Variable	NF				FF2				MF3				FFA				FF1			
		2007	2013	2016	2019	2007	2013	2016	2019	2007	2013	2016	2019	2007	2013	2016	2019	2007	2013	2016	2019
Included	Aluminum	c	a	a	b	c	a	a	b	-	a	b	c	d	b	a	c	c	a	a	b
	Arsenic	c	b	a	b	c	b	a	b	-	ab	a	b	c	ab	a	b	c	a	a	b
	Magnesium	c	ab	a	bc	b	ab	a	ab	-	ab	a	b	ab	b	a	b	a	a	a	a
	Nickel	c	a	b	d	c	a	b	d	-	a	b	c	b	a	a	c	c	a	b	d
	Potassium	ab	c	a	b	ab	c	a	b	-	b	a	b	b	c	**a**	**ab**	a	b	a	a
	Rubidium	c	b	a	b	c	bc	a	ab	-	b	a	b	c	a	ab	b	b	a	a	a
	Titanium	ab	a	a	b	b	a	a	b	-	a	b	c	a	a	**a**	**a**	a	a	**a**	**a**
	Uranium	b	a	a	a	-	a	a	a	-	**a**	**a**	b	-	ab	a	b	-	**a**	**a**	**a**
Excluded	Aluminum	-	a	a	b	-	a	a	b	-	a	b	c	-	b	a	c	-	a	a	b
	Arsenic		b	a	b		b	a	b		ab	a	b		ab	a	b		a	a	b
	Magnesium		ab	a	b		a	a	a		a	a	b		b	a	b		a	a	a
	Nickel		a	b	c		a	b	c		a	b	c		a	a	b		a	b	c
	Potassium		c	a	b		c	a	b		c	a	b		c	**a**	**b**		b	a	a
	Rubidium		b	a	b		b	a	ab		b	a	b		a	ab	b		a	a	a
	Titanium		a	a	b		a	a	b		a	b	c		a	**a**	**b**		a	**a**	**b**
	Uranium		a	a	a		a	a	a		**a**	**b**	c		ab	a	b		**a**	**ab**	**b**

Note: Different letters signify statistically significant differences (at the 0.05 level) among years within areas following post-hoc multiple comparisons; letters represent relative increases in values (i.e., “a” represents the smallest mean). Shaded cells denote significant increasing trend, underlined letters denote significant decreasing trend. Trends differing with and without the inclusion of the 2007 data are indicated in **bold**.

NF = near-field; MF= mid-field; FF = far-field; “-“ = data from that year/area were not included in the analysis of the variable.

Figure 1: Temporal Data and Estimated Least Squares Means of Transformed Aluminum Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models with their associated 95% confidence intervals
NF = near-field; MF= mid-field; FF = far-field.

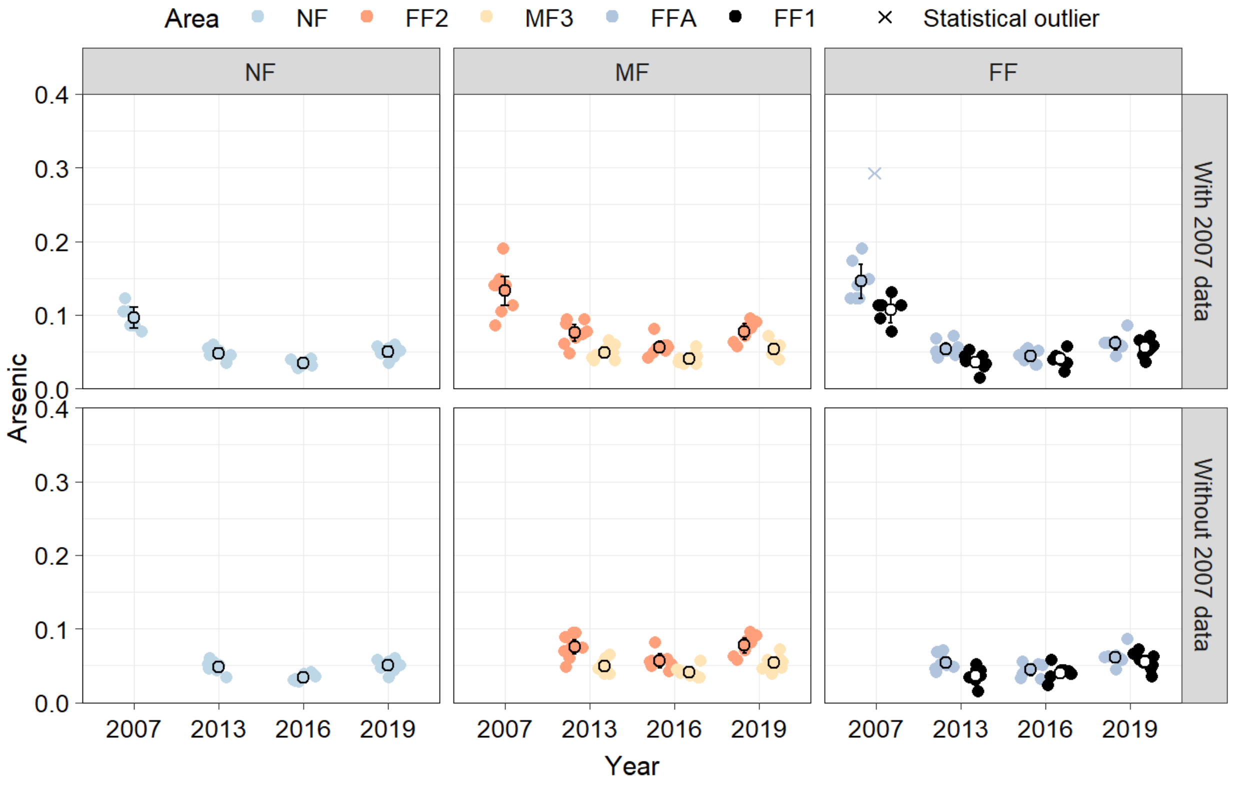

Figure 2: Temporal Data and Estimated Least Squares Means of Transformed Arsenic Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

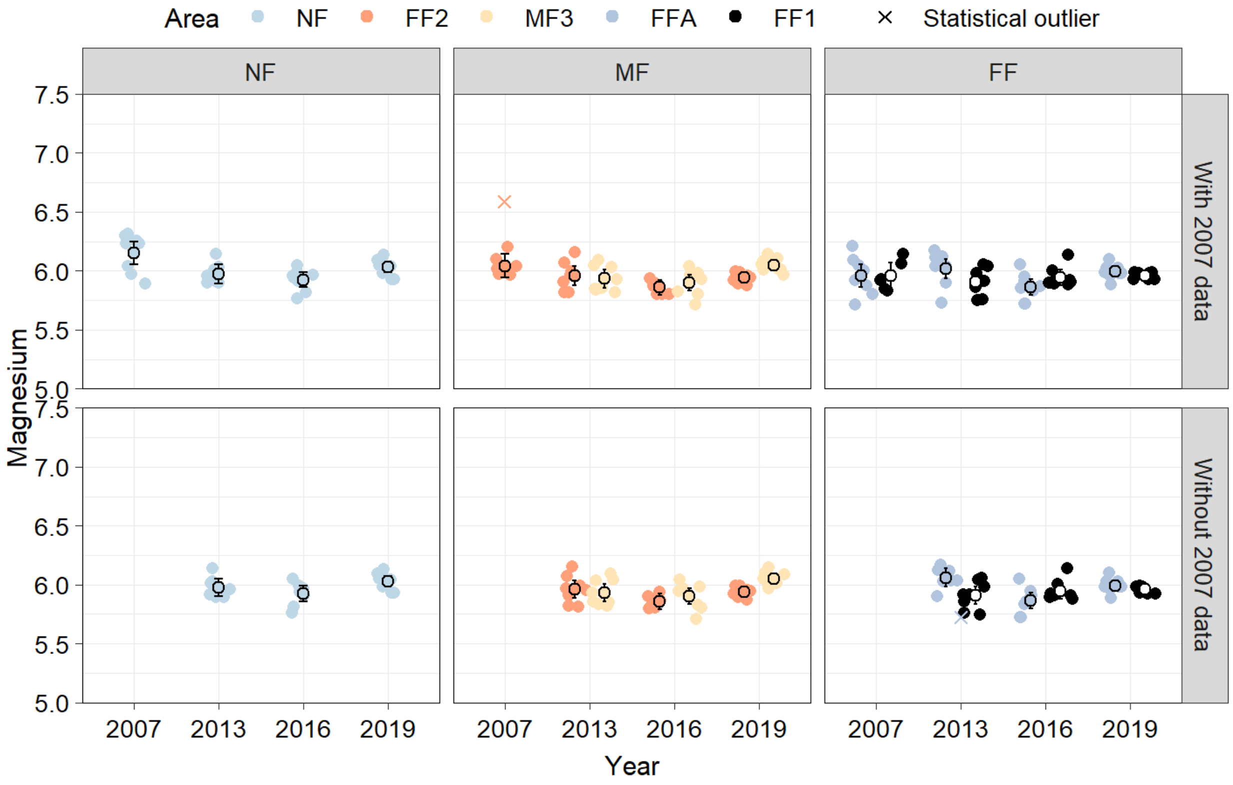

Figure 3: Temporal Data and Estimated Least Squares Means of Transformed Magnesium Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

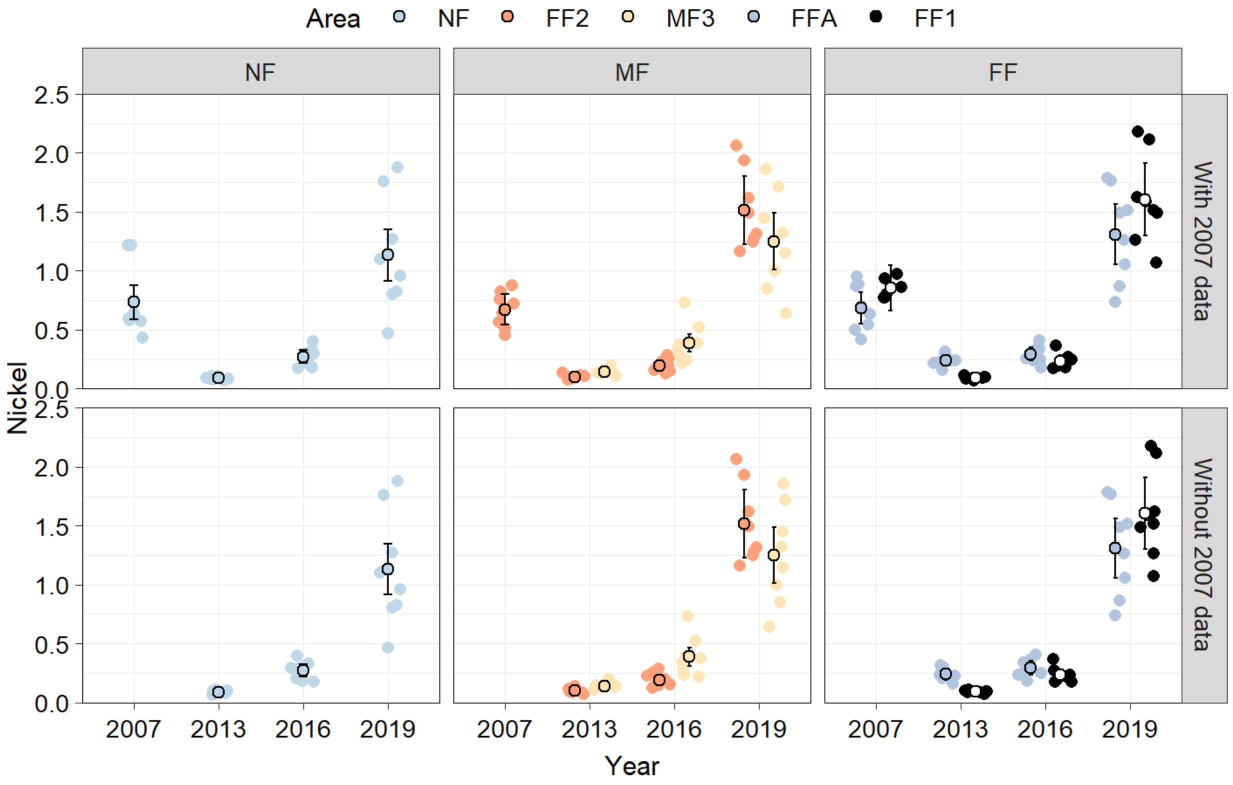

Figure 4: Temporal Data and Estimated Least Squares Means of Transformed Nickel Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

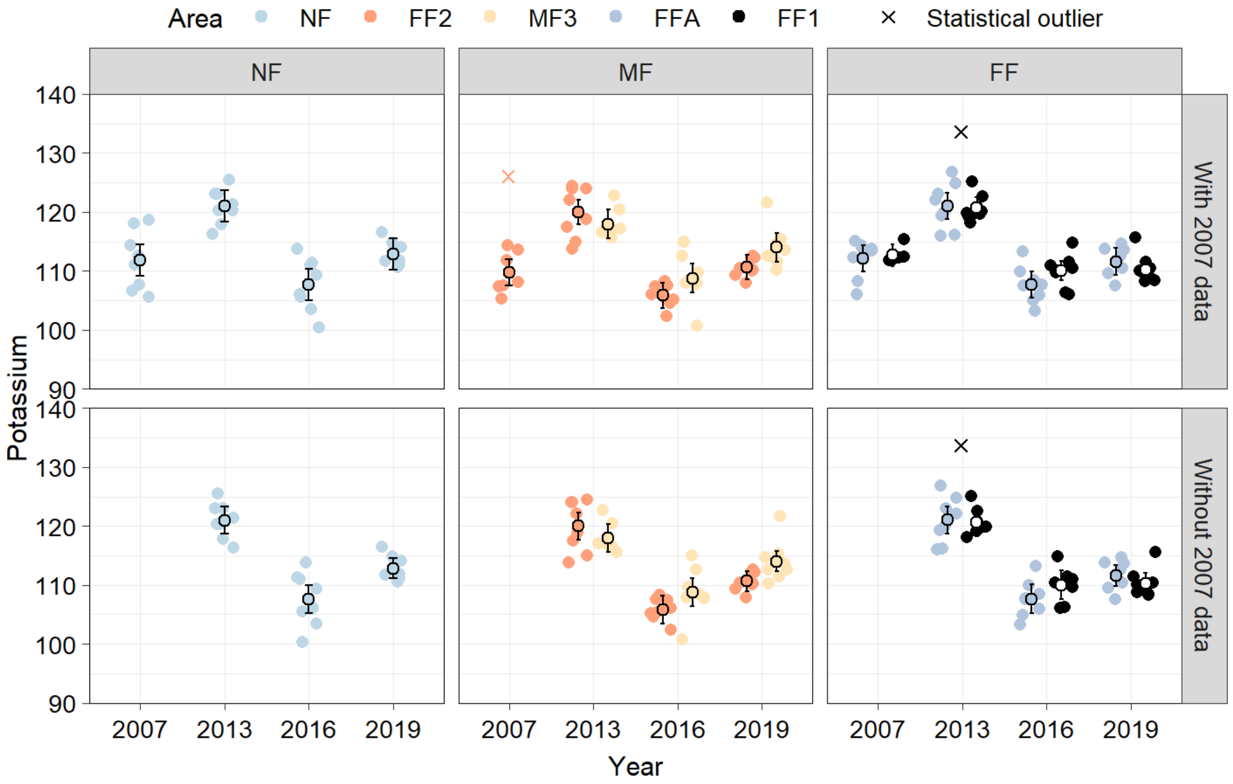

Figure 5: Temporal Data and Estimated Least Squares Means of Transformed Potassium Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

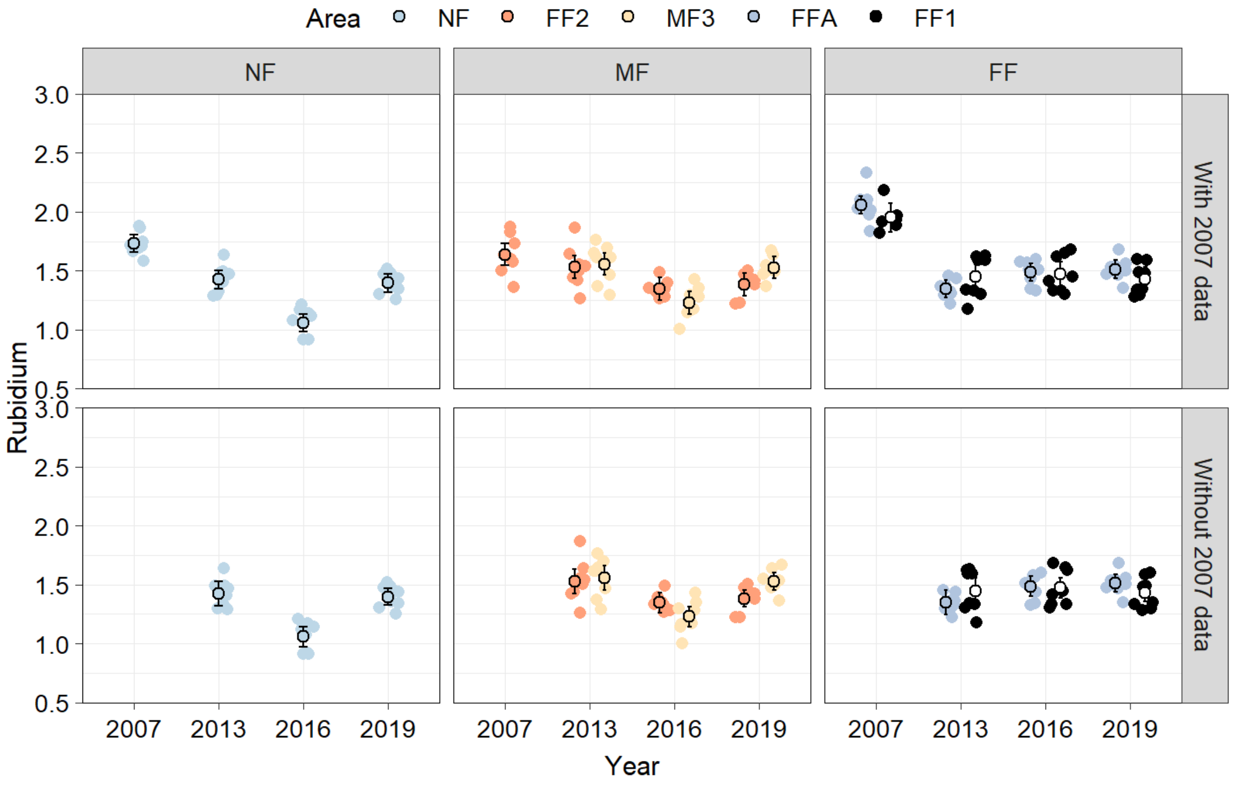

Figure 6: Temporal Data and Estimated Least Squares Means of Transformed Rubidium Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

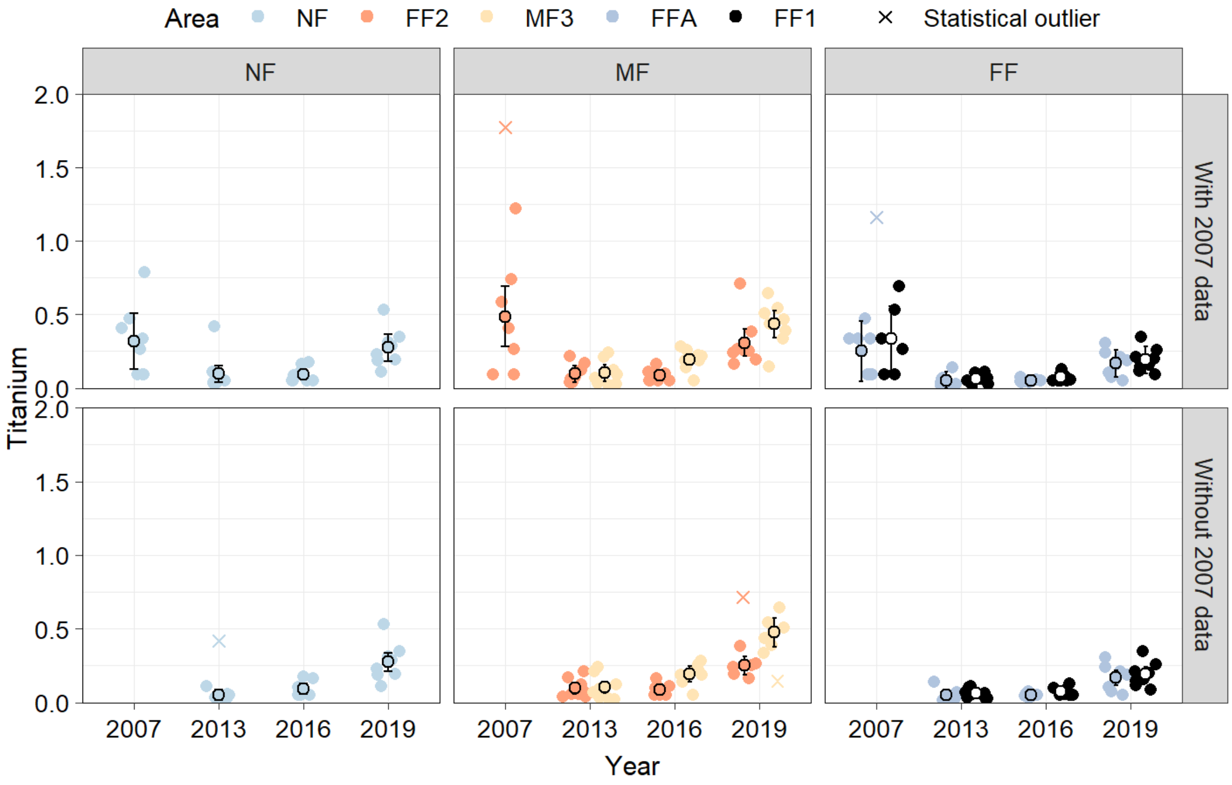

Figure 7: Temporal Data and Estimated Least Squares Means of Transformed Titanium Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

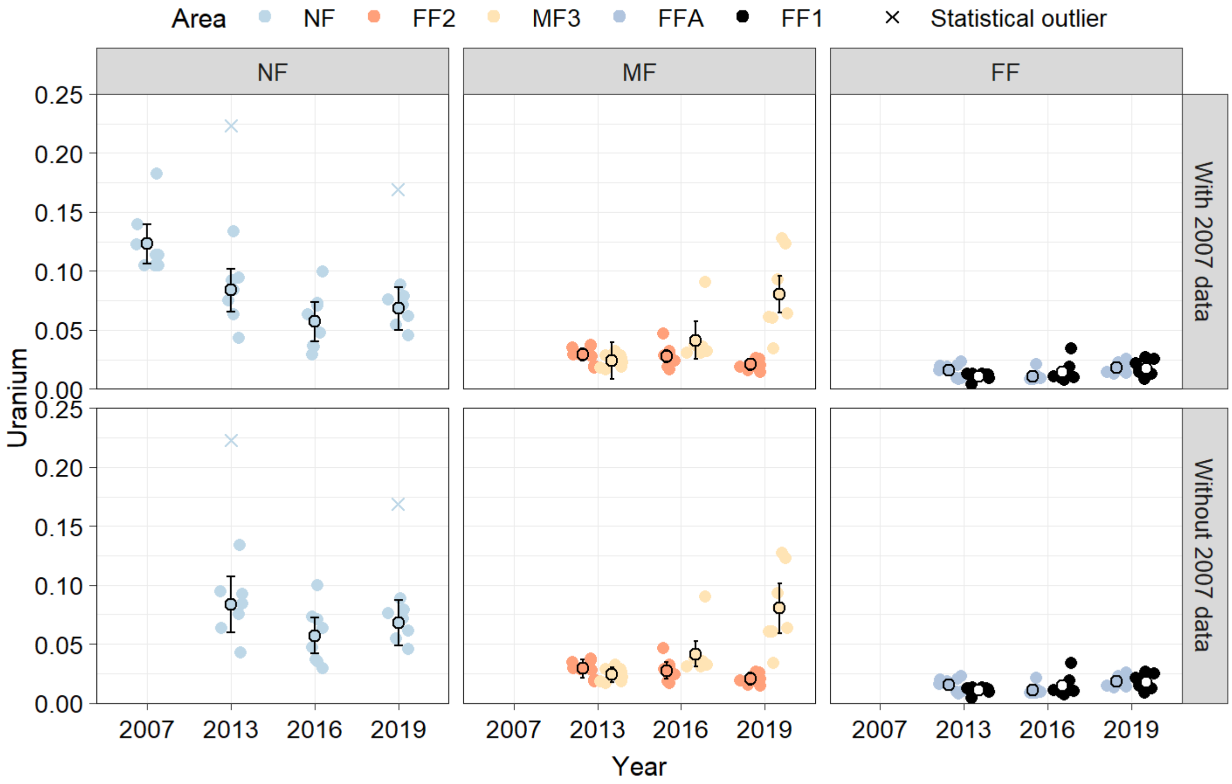

Figure 8: Temporal Data and Estimated Least Squares Means of Transformed Uranium Concentrations in Slimy Sculpin Tissue, with and without 2007 Data

Note: Solid circles represent individual fish; open circles with error bars represent least squares means from statistical models.
NF = near-field; MF= mid-field; FF = far-field.

3.0 REFERENCES

Golder (Golder Associates Ltd.). 2019. AEMP Reference Conditions Report, Version 1.4. Prepared for Diavik Diamond Mines (2012) Inc., Yellowknife, NT. July 2019.