Reworld Marion, Inc.
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June 10, 2024

Ms. Julia DeGagne
Air Toxics Project Manager
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232
julia.degagne@deq.oregon.gov

RE: Reworld Marion, Inc. – Revised Cleaner Air Oregon Emissions Inventory Submittal

Dear Julia DeGagne:

Reworld Marion, Inc. (Reworld) is pleased to submit the revised Cleaner Air Oregon (CAO) Modeling Protocol (MP) and Risk Assessment Workplan (RAWP) for its Brooks, Oregon facility in response to the Oregon Department of Environmental Quality (DEQ) request dated April 26, 2024. With this letter, Reworld is submitting the enclosed revised CAO Emissions Inventory Form and associated documents to comply with the requirement to submit an emissions inventory pursuant to Oregon Administrative Rule (OAR) 340-245-0030.

The enclosed documentation was prepared using best engineering estimates, process knowledge, source test data, and/or published guidance in completing dispersion modeling and health risk assessments. Reworld reserves the right to update the enclosed documentation upon obtaining updated and/or additional emissions or facility operating data.

RESPONSE TO SPECIFIC COMMENTS FROM OREGON DEQ

Per the request of Oregon DEQ in the letter dated April 26, 2024, Reworld has included the following responses and additional information to support Reworld's submittal provided on December 6, 2023, along with any required revisions to the previously submitted MP and RAWP.

1. Per discussion with Oregon DEQ via teleconference on May 1, 2024, the reasoning for selecting "Yes" on the AQ523 Form for "distillate oil, kerosene, gasoline, natural gas or propane burning equipment that falls under the Exempt TEU category" was because of the presence of propane-fueled forklifts that operated at the Marion Facility. As a follow up to this discussion, Oregon DEQ provided an email confirming that Reworld did not need to provide any additional information related to these forklifts, and the units are confirmed to be Exempt TEUs.
2. Section 2.1.1 of the MP and RAWP has been updated to state the newest version of AERMOD (version 23132) will be used in the final risk assessment.
3. Reworld intended to use the most recent meteorological data set at the time in which the Marion Facility was called into Cleaner Air Oregon in 2020, which included the years 2015 through 2019. However, Reworld has obtained a more recent meteorological data set for years 2017 through 2021, which will be used for the risk assessment.

4. Section 2.2.2 of the MP and RAWP has been updated to include all buildings at the Marion Facility in the Building Profile Input Program (BPIP). Note that due to stack heights of the municipal waste combustors (MWC) and the vicinity of the fire pump to nearby buildings already included in BPIP, the additional buildings requested to be added by Oregon DEQ are expected to have no impact on building downwash for the model, as downwash impacts will be driven by the buildings previously included. Additionally, with the addition of these buildings Reworld utilized updated maps with more granularity of building extents into the model, which resulted in minor changes in coordinates and elevations for buildings.
5. In response to questions related to stack parameters for the Municipal Waste Combustors:
    a. Reworld has provided a table detailing the various source test dates, as well as the temperature and exhaust flow values used to derive the modeled parameters for the MWCs in Attachment 1 to this letter. Note that Reworld reviewed the most recent five years of Title V source testing data from 2019 through 2023, as these tests would be indicative of representative operating conditions at the Marion Facility.
    b. Section 3.1 of the MP and RAWP has been updated to include the values of H and L used to determine good engineering practice (GEP) stack height for the two MWCs.
    c. Table 3-1 of the MP and RAWP has been updated to the correct source names, that correspond to the TEU IDs in the AQ520 Form.
6. In response to questions related to natural gas emissions for the MWCs:
    a. "Startup Operation" emissions as shown in Appendix C Tables C-10 and C-11 of the MP and RAWP represent emissions from TEUs AUX-1 and AUX-2. During startup, natural gas is combusted through the auxiliary burners of the MWCs to bring the units up to temperature and steady state conditions, at which point natural gas supply is then gradually tapered off as the heat input from the combustion of the municipal waste increases, at which point heat input is solely derived from the combustion of municipal waste. The source names for these units have been updated to correspond to the TEUs in the approved emissions inventory.
    b. Stack parameters for AUX-1 and AUX-2 have been added to the model as parameters for startup operation, which are different than when the MWCs are combusting only municipal solid waste. Data from the 2021 stack test report for the Marion Facility was utilized to estimate these parameters, since velocity and stack temperature data were available at the first point where natural gas was no longer the only heat input (i.e., the first velocity head and stack temperature readings at the first traverse point during startup testing was used as the MWCs were switching from natural gas only to combusting solely municipal solid waste). References for these parameter determinations are included in Attachment 2. Note that the stack diameter and stack height are the same as MWC-1 and MWC-2.
7. In response to questions, comments and requested revisions for the exposure located identified in the MP and RAWP
    a. Receptor ID639 has been updated to "worker" as this location is within an industrial zoned area. An updated location exposure crosswalk has been provided showing this receptor and surrounding receptors as "worker".
    b. Buena Crest Head Start (Receptor ID5257) has been included as a child exposure location.
    c. Fence line receptors on the west and south side of the facility will be included in the risk assessment and evaluated for risk.
    d. A revised crosswalk has been included to ensure that the identified receptors match those in the images provided.
    e. Per Oregon zoning data from the Oregon Department of Land Conservation and Development, all receptors included on Form AQ522 are zoned as "Exclusive Farm Use 80". As a result, Form 522 lists this as the current zoning designation. Additionally, Figure 4.2 has been updated to remove receptors identified as "Risk Not Evaluated".
    f. Receptor ID2703 has been updated to be residential.

   g. These areas have been reviewed and updated in the revised crosswalk provided in this submittal.
   h. Reworld understands that risk may need to be evaluated for receptors included in the Exposure Location Change request in the event that land use changes in the future.
8. In response to Oregon DEQ's request for Reworld to evaluate whether a Level 4 Risk Assessment is needed, Reworld has developed a memorandum and provided this memorandum in Attachment 3 to this letter. This memorandum justifies that completing a Level 4 Risk Assessment is not warranted for the two areas identified by Oregon DEQ: the St. Louis Fish Ponds County Park in Keene, Oregon and potential livestock grazing areas adjacent to Reworld, and other potential livestock grazing areas within the receptor grid. Additionally, Reworld has provided a risk assessment for the Reworld facility in Hawaii in Attachment 4, which was approved by the local agency, the Hawaii Department of Health (DOH), and EPA Region 9, and showed that a Level 4 Risk Assessment had little to no impact on calculated risk, and was below acceptable health risk levels.
9. Section 4.2 of the MP and RAWP has been updated to include the correct CAO form number (AQ520) and the text "note that for combustion emissions from this scenario" from the first bullet point.
10. Reworld will include the elective Risk Assessment based on the actual emissions in a separate document for informational purposes only.

Enclosed Documentation

Enclosed with this cover letter is the revised MP and RAWP which incorporates certain updates as requested by Oregon DEQ. Additionally, Reworld has provided the following documentation to support the MP and RAWP development, and the additional information requested by Oregon DEQ:

- Title V Source test data used to derive MWC modeled stack parameters (Attachment 1)
- Startup operation stack velocity and temperature data (Attachment 2)
- Memorandum justifying that completing a Level 4 Risk Assessment for the Marion Facility is not warranted (Attachment 3)
- Approved Health Risk Assessment for Reworld Facility in Hawaii (Attachment 4)

We look forward to continuing to work with you and your team as we advance toward development of a HRA for Reworld after the MP and RAWP is approved. Please let me know if you have any questions.

Sincerely,

Reworld

Steve Nipp
Facility Manager

Cc: Michael Eisele, Oregon DEQ
Brian Kent, Reworld Marion Inc.
Terry Coble, Reworld Marion Inc.
Joseph Walsh, Reworld Marion Inc.
Jeffrey Hahn, Reworld Consultant
Jesse Gonzalez, Trinity Consultants

Josh Haar, Trinity Consultants

Attachments

Attachment 1

Title V Source Test Values from 2019 - 2023

Unit	Test	Date	Trial	Stack Velocity (feet/second)	Temperature (F)
1	Title V	8/7/2019	1	98.46	247.70
			2	98.21	254.40
			3	104.99	252.10
			Average	**100.55**	**251.40**
1	Title V	8/8/2019	1	104.54	259.80
			2	106.47	260.00
			3	104.63	261.90
			Average	**105.21**	**260.57**
2	Title V	8/8/2019	1	97.23	246.30
			2	96.37	258.30
			3	101.35	255.10
			Average	**98.32**	**253.23**
1	Title V	8/6/2020	1	94.36	228.80
			2	96.75	242.30
			3	94.66	231.10
			Average	**95.26**	**234.07**
1	Title V	8/6/2020	1	93.82	230.00
			Average	**93.82**	**230.00**
2	Title V	8/5/2020	1	92.71	265.60
			2	93.05	263.90
			3	93.71	271.30
			Average	**93.16**	**266.93**
2	Title V	8/6/2020	1	91.55	258.30
			2	93.13	263.00
			3	94.14	269.80
			Average	**92.94**	**263.70**
1	Title V	7/28/2021	1	92.38	248.20
			2	101.97	254.40
			3	98.87	253.10
			Average	**97.74**	**251.90**
1	Title V	7/28/2021	1	92.79	252.20
			2	100.85	254.00
			3	99.72	253.30
			Average	**97.79**	**253.17**
2	Title V	8/18/2021	1	94.13	276.70
			2		
			3		
			Average	**94.13**	**276.70**
2	Title V	7/27/2021	1	92.12	277.00
			2		
			3		
			Average	**92.12**	**277.00**

Unit	Test	Date	Trial	Stack Velocity (feet/second)	Temperature (F)
1	Title V	10/25/2022	1	95.03	250.50
			2	96.87	252.30
			3	97.38	250.80
			Average	**96.43**	**251.20**
2	Title V	10/25/2022	1	97.91	273.60
			2	97.06	275.40
			3	97.03	267.60
			Average	**97.33**	**272.20**
1	Title V	10/25/2022	1	99.79	259.60
			2	99.09	249.20
			3	99.48	253.70
			Average	**99.45**	**254.17**
1	Title V	10/25/2022	1	97.47	251.10
			2	97.68	252.30
			3	98.73	254.00
			Average	**97.96**	**252.47**
1	Title V	10/25/2022	1	96.73	275.40
			2	97.61	271.50
			3	97.67	270.70
			Average	**97.34**	**272.53**
1	Title V	12/14/2023	1	96.23	248.00
			2	90.84	254.00
			3	99.08	251.00
			Average	**95.38**	**251.00**
2	Title V	12/14/2023	1	100.53	272.10
			2	101.00	271.70
			3	101.10	271.20
			Average	**100.88**	**271.67**
1	Title V	12/14/2023	1	90.95	251.00
			2	95.21	258.00
			3	87.35	254.00
			Average	**91.17**	**254.33**
1	**Unit 1 Average**			**97.66**	**251.40**
2	**Unit 2 Average**			**95.55**	**268.78**

Attachment 2

Source Test References for Startup Operation Stack Velocity and Temperatures

ISOKINETIC SAMPLING TRAIN RESULTS - METHOD: **EPA 23**

Client Name	Covanta	**Operator**		JG
Plant Name	Covanta Marion	**Project #**		15800
Sampling Location	UNIT 1 STACK	**Standard Temperature, °F**		68

USE IN AVERAGE OF RUN SET? 1 or 0 =>		1	1		SET AVERAGE
Run Number		1-SU-M23-1A	1-SU-M23-1B		
Run Date		7-30-21	7-30-21		
Run Start Time	hh:mm	2212	2212		
Run Stop Time	hh:mm	0117	0117		
Meter Calibration Factor	Y	0.97	1.00		
Pitot Tube Coefficient	C_p	0.84	0.84		
Actual Nozzle Diameter	in	0.217	0.218		
Sample Volume	ft^3	164.900	164.300		164.600
Total Sampling Time	min	180	180		180
Average Meter Temperature	°F	97.6	100.9		99.3
Average Stack Temperature	°F	247.2	250.0		248.6
Barometric Pressure	in Hg	29.6	29.6		29.6
Stack/Duct Static Pressure	in H_2O	-1.00	-1.00		-1.00
Absolute Stack/Duct Pressure	in Hg	29.5	29.5		29.5
Average Delta H	in H_2O	2.42	2.79		2.60
Absolute Meter Pressure	in Hg	29.8	29.8		29.8
Avg Differential Pressure (Delta P)	in H_2O	1.610	1.684		1.647
Total Water Volume Collected	mL	495.4	531.8		513.6
Volume of Water vapor @ STP	SCF	23.318	25.032		24.175
Volume Metered @ STP	DSCF	150.676	153.996		152.336
Calculated Stack Moisture	% H_20	13.4	14.0		13.7
Saturated Stack Moisture	% H_20	100.0	100.0		100.0
Reported Stack Moisture Content	% H_20	13.4	14.0		13.7
Carbon Dioxide Percentage	% CO_2	4.6	4.6		4.6
Oxygen Percentage	% O_2	14.6	14.6		14.6
Carbon Monoxide Percentage	% CO	0.0	0.0		0.0
Nitrogen Percentage	% N_2	80.8	80.8		80.8
Dry Mole Fraction	decimal	0.866	0.860		0.863
Dry Gas Molecular Weight	lb/lb-mole	29.32	29.32		29.3
Wet Stack Gas Molecular Weight	lb/lb-mole	27.80	27.74		27.77
Flue Gas Density	lb/ft^3	0.0722	0.0720		0.072
Calculated Fuel Factor	F_o	1.37	1.37		1.37
Percent Excess Air	% EA	216.9	216.9		216.900
Stack Cross-Sectional Area	in^2	1800.1	1800.1		1800.1
Stack Cross-Sectional Area	ft^2	12.50	12.50		12.50
Percent of Isokinetic Rate	% ISO	100.7	100.5		100.6

Air Flow Rate Results

Average Stack Gas Velocity	ft/sec	84.57	86.77		85.67
Actual Stack Flow/Minute	ACFM	63,430	65,083		64,256
Dry Standard Stack Flow/Minute	DSCFM	40,471	41,087		40,779

ISOKINETIC SAMPLING TRAIN DATASHEET - METHOD EPA 23

Client Name	Covanta	Run #	1-SU-M23-1A	~~9/30~~	
Plant Name	Covanta Marion	Project #	15800	Run Start	~~1012~~ 2212
Plant City, State	Brooks, OR	Personnel	TG	Run End	~~1317~~ 0117
Test Location	Unit 7	Tester Signature			
Date of Test	9-30-21	Checked By	CDR		

Isokinetic Factor Setup		Pressures		Sampling Equipment		Filter ID & Tares		Actuals
ΔH @ 0.75 SCFM	1.68		29.6	Meter Console #	MB11			CO_2
Meter Calibration Factor	0.997	Pstatic	-1.00	Ideal Nozzle Diameter	.211			4.6
Pitot Tube Coefficient	0.84	Abs P	29.5	Nozzle #	D245			O_2
Estimated Dry Gas Meter Temp	98	Tstd, °F	68	Actual Nozzle Diameter	.218			14.6
Estimated Stack Temp or M2 Avg.	250	Pstd	29.92	Probe Lgth/ID #	5	5-8		CO
Estimated Delta P or M2 Avg.	1.40	Estimates		Liner Material	G	XAD ID & Tares		0.0
Estimated Moisture Content	10.0	CO_2	8	Filter Box #	NA			N_2
Estimated Dry Molecular Weight	29.76	O_2	12.0	Cold Box ID #	NA			80.8
Estimated Velocity, ft/sec	77.9	CO	0.0	Umbilical ID #	NA			H_2O
K Factor (delta H/delta P)	1.42	N_2	80.0	TC ID #s	5-V			495.4

Equipment & Leak Check Data			Leak Checks	1	2	3	4	5	6	Status
	Pre	Post	DGM initial							0.0
Pitot GEM	☒	☐	Vacuum	15	12					15
Tedlar Bag ID B-2	B11, B12, B13		Leak Rate	0.003	0.003					OK
	7/31/21		DGM final							0.0

Point #	Clock Time	Test Time	Dry Gas Meter Reading	Velocity Head	Desired Orifice ΔH	Actual Orifice ΔH	Pump Vac.	DGM Inlet Temp	DGM Outlet Temp	Stack Temp	248 °F Probe Temp	248 °F Filter Temp	<68 °F Cond Exit Temp	<68 °F Imp Exit Temp
	24 hr	min	ft^3	in H_2O	in H_2O	in H_2O	in Hg	°F	°F	°F	°F	°F	°F	°F
A 6	~~1012~~	0.00	0.60	0.35	0.30	0.30	4	94	92	238	250	254	56	52
-	2212	7.50	3.80	0.37	0.52	0.52	4	92	91	244	250	253	56	52
- 5		15.00	7.20	0.39	0.55	0.55	4	92	90	234	250	253	56	51
-		22.50	10.51	0.35	0.38	0.38	4	92	91	229	250	253	57	51
- 4		30.00	14.50	0.78	1.1	1.10	4	92	91	235	250	254	56	52
-		37.50	19.40	1.20	1.70	1.20	96	93	93	238	254	255	56	52
- 3		45.00	25.30	1.65	2.20	2.20	9	97	93	241	255	255	56	52
-		52.50	32.20	1.60	2.27	2.25	10	102	94	243	255	255	56	52
- 2		60.00	39.00	1.40	2.67	2.70	12	102	94	245	255	256	56	52
-		67.50	46.30	1.90	2.99	2.30	12	103	95	249	257	254	56	52
- 1		75.00	54.25	2.00	2.84	2.84	13	103	96	258	255	255	56	52
-		82.50	62.00	2.00	2.84	2.84	13	103	97	260	255	254	56	52
B 6		90.00	69.50	2.20	3.12	3.10	14	104	97	253	255	254	56	52
-		97.50	~~77.40~~	2.20	3.12	3.10	14	104	97	255	254	254	56	52
- 5		105.00	85.40	2.25	3.19	3.20	14	103	97	255	255	254	57	53
-		112.50	93.60	2.25	3.19	3.20	14	103	97	254	255	255	57	53
- 4		120.00	101.70	2.30	3.26	3.30	15	103	98	254	255	255	57	52
-		127.50	110.03	2.30	3.26	3.30	17	103	97	253	255	256	56	52
- 3		135.00	118.00	2.37	3.33	3.33	17	103	97	252	254	255	57	53
-		142.50	126.50	2.40	3.40	3.40	17	104	98	248	255	255	56	52
- 2		150.00	134.50	2.20	3.12	3.10	17	104	98	250	255	255	56	52
-		157.50	142.50	1.90	2.69	2.70	14	102	97	248	255	256	56	52
- 1		165.00	150.11	2.00	2.84	2.84	14	102	97	245	255	255	56	52
-	0117	172.50	158.00	2.00	2.84	2.84	14	102	97	245	255	256	56	52
- ~~X~~	~~1317~~	180.00	165.50											
-														
						MAX =>	17							
Average Values		180	169.91	1.00	2.425	2.428		97.6		247.5				

ISOKINETIC SAMPLING TRAIN DATASHEET - METHOD EPA 23

Client Name	Covanta	Run #	1-SU-M23-113		
Plant Name	Covanta Marion	Project #	15800	Run Start	~~1012~~ 2212
Plant City, State	Brooks, OR	Personnel	TL	Run End	~~1317~~ 0117
Test Location	Unit 1 Stack	Tester Signature			~~ST~~ 7130/21
Date of Test	9-30-21	Checked By	CDP		

Isokinetic Factor Setup		Pressures		Sampling Equipment		Filter ID & Tares		Actuals
ΔH @ 0.75 SCFM	1.77		29.6	Meter Console #	M313		314.6	CO_2
Meter Calibration Factor	1.00	Pstatic	-1.00	Ideal Nozzle Diameter	.217			4.6
Pitot Tube Coefficient	0.84	Abs P	29.5	Nozzle #	D246			O_2
Estimated Dry Gas Meter Temp	98	Tstd, °F	68	Actual Nozzle Diameter	0.218			14.6
Estimated Stack Temp or M2 Avg.	250	Pstd	29.92	Probe Lgth/ID #	5	5-1		CO
Estimated Delta P or M2 Avg.	1.40	Estimates		Liner Material		G	XAD ID & Tares	0.0
Estimated Moisture Content	10.0	CO_2	4	Filter Box #		NA		N_2
Estimated Dry Molecular Weight	29.76	O_2	13.0	Cold Box ID #		NA		80.8
Estimated Velocity, ft/sec	77.9	CO	0.0	Umbilical ID #		NA		H_2O
K Factor (delta H/delta P)	1.52	N_2	80.0	TC ID #s		5-1		495.4

Equipment & Leak Check Data			Leak Checks	1	2	3	4	5	6	Status
	Pre	Post	DGM initial							0.0
Pitot GEM	☒	☐	Vacuum	15	15					15
Tedlar Bag ID B-2	B11, B12, B13		Leak Rate	0.003	0.005					OF
FH 9/21			DGM final							0.0

Point #	Clock Time	Test Time	Dry Gas Meter Reading	Velocity Head	Desired Orifice ΔH	Actual Orifice ΔH	Pump Vac.	DGM Inlet Temp	DGM Outlet Temp	Stack Temp	248 °F Probe Temp	248 °F Filter Temp	<68 °F Cond Exit Temp	<68 °F Imp Exit Temp
	24 hr	min	ft^3	in H_2O	in H_2O	in H_2O	in Hg	°F	°F	°F	°F	°F	°F	°F
1 6	~~1017~~	0.00	837.20	0.23	0.35	0.35	4	97	96	242	250	254	56	52
-	2212	7.50	839.80	0.25	0.38	0.38	4	97	96	240	250	254	56	52
2 5		15.00	842.60	0.26	0.40	0.40	4	95	95	237	250	254	56	52
-		22.50	845.20	0.40	0.61	0.61	4	94	93	237	254	254	57	52
3 4		30.00	848.55	0.95	1.47	1.47	4	94	93	236	254	254	52	52
-		37.50	853.60	1.32	1.97	2.00	6	94	93	242	255	255	53	51
4 3		45.00	859.60	1.30	1.98	2.00	6	98	97	246	255	254	54	52
-		52.50	867.90	1.90	2.89	2.94	8	101	96	248	255	255	54	51
5 2		60.00	873.10	2.30	3.50	3.54	9	106	98	248	255	255	54	51
-		67.50	881.10	2.50	3.80	3.80	9	107	99	250	255	255	54	51
6 1		75.00	889.32	2.40	3.65	3.65	9	108	100	251	255	255	53	50
-		82.50	897.44	2.37	3.58	3.60	9	108	100	250	254	254	53	49
1 8		90.00	905.27	1.90	2.89	2.90	9	104	100	252	255	254	53	48
-		97.50	912.60	1.95	2.97	3.00	9	101	100	255	254	254	53	51
2 5		105.00	920.00	2.20	3.35	3.35	10	101	100	255	254	255	56	51
-		112.50	928.00	2.20	3.35	3.35	10	101	101	256	254	254	56	51
3 4		120.00	935.80	2.35	3.58	3.60	9	104	101	253	254	255	56	51
-		127.50	943.60	2.20	3.35	3.35	9	104	101	251	254	254	56	51
4 3		135.00	951.50	2.50	3.80	3.80	11	108	101	254	250	254	57	52
-		142.50	959.70	2.55	3.88	3.90	11	108	102	254	250	254	57	52
5 2		150.00	968.40	2.50	3.80	3.80	11	108	103	252	250	254	53	52
-		157.50	976.84	2.55	3.88	3.90	11	108	104	251	250	251	56	52
6 1		165.00	985.11	2.40	3.65	3.65	11	108	102	252	248	255	53	52
-	0117	172.50	993.40	2.40	3.65	3.65	11	108	102	248	252	254	53	52
-	~~1317~~	180.00	1001.50											
-														
						MAX =>	11							
Average Values		180	1643.50	1.685	2.787	2.818		100.9	249	9				

Attachment 3

Level 4 Risk Assessment Memorandum

Trinity Consultants
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The below sections constitute responses to Item 8 of Oregon DEQ's CAO response letter dated April 26, 2024. The answer provided for the local fishing ponds includes a focus on potential mercury deposition as mercury is expected to be the driving pollutant for any health-related impacts in fish.

LOCAL FISHING PONDS

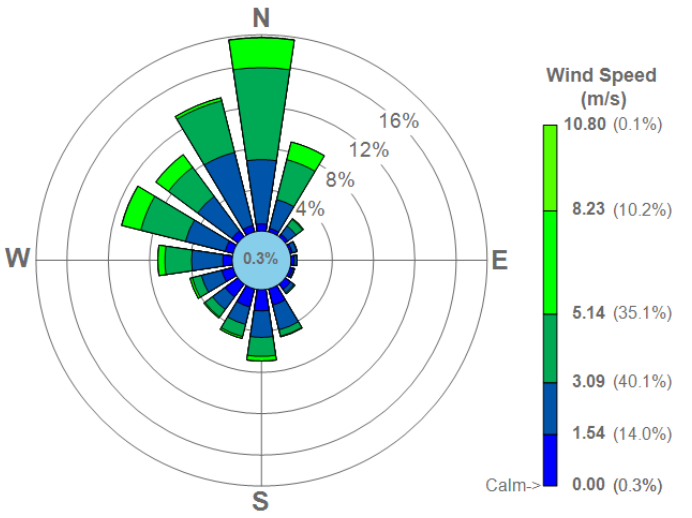
The ponds at St. Louis Ponds County Park in Keene, Oregon are a network of canal-like waterways commonly used for warm water fishing from March 1 through September 30. The ponds are located within a 260-acre park complex co-managed by Marion County Parks and the Oregon Department of Fish and Wildlife located 4.72 miles north of Reworld Marion, Inc. (RMI) at 13100 Tesch Lane in Gervais, Oregon, with the fishing area comprising of 21.87 acres.[1]

Meteorological Considerations

The St. Louis Ponds County Park is located approximately 4.72 miles north of RMI. Prevailing winds near RMI and the St. Louis County Park originate normally from the south to the north. These prevailing wind patterns primarily occur during rainy months, in which the vast majority of particulate bounded matter and potential soluble mercury vapor, would be washed out of the plumes from RMI well before reaching the St. Louis Pounds Park. Additionally, as shown in Figure 1 below, during summer months where particulate bounded matter and vaporous emissions are expected to disperse and potentially deposit farther away from RMI due to the absence of rain, the wind patterns shift to primarily originate from the north to south. In these months, the St. Louis Ponds County Park would be upwind of RMI. Lastly, per the mercury speciation data included in Attachment A, mercury that is emitted from RMI is 90 to 95% in the soluble ionic form, with only 5-10% in the elemental vapor form, and less than 1% in the particulate form. Based on these two atmospheric conditions, the St. Louis Ponds County Park would be upwind of RMI during non-weather events where particulate matter could deposit further from RMI; minimal mercury would be present in the plume from RMI near the St. Louis Ponds County Park during weather events; there will be little mercury wet or dry deposition, if any, 4.72 miles away; and any minimal mercury deposition calculated would not impact the risk assessment.

[1] St. Louis Ponds (marion.or.us)

Figure 1. Wind Speed and Direction During Summer Months



Historic Health Risk Assessment

In 2009, Reworld conducted a Health Risk Assessment for a similar facility in Honolulu, Hawaii (the H-Power Facility). The H-Power Facility was in the process of permitting a third municipal waste combustor, which operates similarly to those located at RMI. This Health Risk, included in Attachment B, concluded that estimated risks are 50 to 3,333 times lower than the USEPA's combustion facility benchmark for cancer risk and 50 to 5,000 times lower than the USEPA's noncancer risk benchmark. Additionally, the risk was deemed to be within an acceptable range and the evaluated water bodies and a reservoir were located a similar distance from the H-Power Facility in comparison to the St. Louis Ponds County Park to RMI .

Surface Water

The attached historic HRA used U.S. EPA guidance (2005) to estimate concentrations of compounds in surface water in each water body nearby due to direct deposit onto the water surface and loading via soil erosion. For reference, the average annual precipitation rate calculated for the H-Power facility is 132.1 cm per year. However, the average annual precipitation for Brooks is 111.76 cm. As a result, comparing the runoff from RMI to the HI facility is conservative, as less of the mercury would be washed out from RMI compared to the H-Power facility. Even with the higher annual precipitation value, of the six local watersheds considered by the H-Power facility in its HRA, the highest calculated concentration of mercury in surface water from the site would be less than 0.0002 mg/kg for contribution to noncancer risks and 6.00E-05 for carcinogenic risks.

Concentrations in Fish

Compound concentrations in fish are a function of the concentrations of a compound in the water and the tendency of a compound to accumulate in fish tissue. The H-Power facility estimated compound concentrations in fish is consistent with U.S. EPA guidance (2005) by utilizing both the fish bioconcentration factor and fish bioaccumulation factors to represent the ratio of the concentration of compound in the fish tissue to the concentration of dissolved compounds in the water body.

For the risk associated with consuming fish, the H-Power facility assumed that the amount of fish consumed by a typical person on the island of Oahu from each specific waterbody in 25% of their total fish ingestion of

13.2 g/day for children and 87.5 g/day for adults. This assumption is very conservative in regard to the St. Louis Ponds County Park because the park is only open for seven months out of the year and individuals would not have a consistent dependency on fish consumption throughout the year.

Total H-Power Facility Health Risk Assessment Findings

The H-Power Facility calculated a health risk of 2E-08 to a fisher adult at any one of the nearby watersheds and 1E-08 to a fisher child, demonstrating a near zero increase to health risk while accounting for all potential pathways associated with the uptake of pollutants from the facility. As a result, it is reasonable to assume that RMI would see a similar, if not lower, increase in risk while completing a Level 4 assessment of potential risk from deposition into ponds.

With meteorological conditions that suggest an unlikelihood of mercury deposition at the St. Louis Ponds County Park and a historic Health Risk Assessment at a similar site that showed a near zero increase in risk, RMI is requesting that this qualitative analysis be sufficient explanation for the insufficient increase in risk due to deposition in ponds used for recreational fishing and justifying that a Level 4 Health Risk Assessment is not needed for RMI.

LIVESTOCK GRAZING AREAS

Per teleconference with Oregon DEQ on May 1, 2024, Reworld evaluated potential areas where livestock grazing may occur adjacent to RMI in order to evaluate potential risk from airborne deposition of TACs. In particular, the evaluation focused on areas adjacent to RMI that are east of Interstate 5 (I-5) as Oregon DEQ recalled observing cattle grazing in these areas.

Using publicly available land ownership data[2], Reworld contacted representatives from NORPAC, owner of the adjacent fields near RMI. Per discussions with NORPAC representatives, it was determined that cattle no longer graze on the adjacent fields as of 2020. Cattle were once placed on these fields to control vegetative overgrowth, however, this is no longer occurring and will not occur in the future as NORPAC has implemented changes that will reuse process water at the facility that minimize overgrowth in these areas, as part of meeting the facility's sustainability goals. Additionally, Reworld staff have not observed any cattle grazing on these adjacent areas or any other areas near RMI within the receptor grid. As such, a Level 4 Risk Assessment would not be warranted for livestock grazing areas as this activity does not occur and will not in the future.

[2] https://gis-marioncounty.opendata.arcgis.com/apps/b41e1f1b340a448682a2cc47fff41b31/explore

Attachment 4

Reworld Hawaii Level 4 Risk Assessment

Attached separately.