MINNESOTA POLLUTION CONTROL AGENCY

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October 23, 2023

TO: INTERESTED PARTIES

RE: MCES Metropolitan Wastewater Treatment Plant Solids Management Improvements Project

The Minnesota Pollution Control Agency (MPCA) has approved the Findings of Fact, Conclusions of Law, and Order for a Negative Declaration (FOF) on the need for an Environmental Impact Statement on the MCES Metropolitan Wastewater Treatment Plant Solids Management Improvements Project. The FOF document concludes that this project does not have the potential for significant environmental effects. The decision for a Negative Declaration completes the state environmental review process under Environmental Quality Board rules, Minn. R. ch. 4410. Final governmental decisions on permits or approvals for the project may now be made.

The MPCA appreciates comments submitted on the Environmental Assessment Worksheet (EAW). The comments were considered by MPCA staff during the environmental review process and responses to these comments are provided in the FOF.

Interested parties can review the FOF and the EAW documents at the following locations: the MPCA offices in St. Paul; the Hennepin County Library at 300 Nicollet Mall, Minneapolis. Interested parties can also view the documents on MPCA's website at https://www.pca.state.mn.us/business-with-us/recently-completed-mpca-reviews. Please contact the MPCA's St. Paul office at 651-757-2098 for copies of these documents.

STATE OF MINNESOTA

MINNESOTA POLLUTION CONTROL AGENCY

IN THE MATTER OF THE DECISION ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED METROPOLITAN WASTEWATER TREATMENT PLANT SOLIDS MANAGEMENT IMPROVEMENTS PROJECT RAMSEY COUNTY, SAINT PAUL, MINNESOTA

FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER

INTRODUCTION

Pursuant to Minn. R. ch. 4410, the Minnesota Pollution Control Agency (MPCA) staff prepared and distributed an Environmental Assessment Worksheet (EAW) for the proposed Metropolitan Wastewater Treatment Plant Solids Management Improvements Project (Project) at the Metropolitan Wastewater Treatment Plant (Metro Plant) in Saint Paul, Minnesota. Based on the MPCA staff environmental review, the EAW, comments and information received during the comment period, and other information in the record of the MPCA, the MPCA hereby makes the following Findings of Fact, Conclusions of Law, and Order.

FINDINGS OF FACT

Project Description

1. Metropolitan Council Environmental Services (MCES) proposes to construct a fourth fluidized bed incinerator. The treatment train includes the incinerator, energy recovery (primary and secondary heat exchangers, waste heat boiler), air pollution control equipment (carbon injection, baghouse, wet scrubber, wet electrostatic precipitator), and a flue gas stack. The Project also includes a dewatering facility addition, upgrades to ash handling equipment, a new cake receiving facility, replacing a steam turbine generator, replacing auxiliary steam condensers, changing the backup fuel and adding a 175-kilowatt engine-driven fire pump. The Project will expand the Solids Management Building (SMB) to increase the solids processing capacity as follows:
    - Construct a fourth fluid bed incinerator train (FBI 4).[1]
    - Construct additional dewatering facilities with two centrifuges, one cake bin, and two cake pumps with odor control.
    - Replace the existing steam turbine generator with a larger unit in a building addition north of the SMB.
    - Replace existing auxiliary condensers with two larger units.
    - Construct a new sludge cake receiving facility with odor control.
    - Replace the existing carbon storage silo with a new carbon storage silo on the west side of SMB.
    - Replace the existing ash conveyance system in the SMB with a new vacuum system for both the existing incinerators and FBI 4.
    - Replace the existing SMB housekeeping vacuum system and exhaust emissions externally.
    - Exhaust some of the transporters currently exhausting to stack STRU3 (SV023) to existing bins with bin vent filters.
    - Change the facility's backup fuel system from fuel oil to propane.

1 Note: The air emissions permit uses the term fluidized bed reactors. The terms fluid bed incinerator (FBI) and fluidized bed reactors (FBR) are interchangeable.

- Add a 175-kilowatt (kW) fire pump with a diesel engine.
- Reconfigure the existing stormwater basin.

2. MCES applied for a Major amendment to their existing Title V Air Permit, and the application was deemed complete August 25, 2021. Additional permits as reflected in item 108 are required for the project.

Procedural History

3. An EAW is a brief document designed to provide the basic facts necessary for the Responsible Governmental Unit (RGU) to determine whether an Environmental Impact Statement (EIS) is required for a proposed project or to initiate the scoping process for an EIS (Minn. R. 4410.0200, subp. 24). The MPCA is the RGU for this Project.

4. Pursuant to Minn. R. 4410.1000, subp. 3(C), on May 6, 2022, MCES submitted a discretionary (voluntary) draft EAW to the MPCA. Subsequently, an EAW on the Project was prepared by MPCA staff for publication. The MPCA provided public notice of the Project as follows:
    A. The Environmental Quality Board (EQB) published the notice of availability of the EAW for public comment in the *EQB Monitor* on July 11, 2023, as required by Minn. R. 4410.1500.
    B. The EAW was available for review on the MPCA website at https://mpca.commentinput.com/comment/search.
    C. The MPCA provided a news release to media in Ramsey County, Minnesota, and other state-wide interested parties, on July 11, 2023.
    D. MCES applied for a Major amendment to their existing Title V Air Permit; a draft permit was open for public comment July 11 through August 25, 2023.
    E. The MPCA conducted community engagement meetings before the Project's August 14, 2023, public meeting on the following dates.
        i. April 12, 2022, West Side Community Organization
        ii. April 26, 2022, District 5 Payne-Phalen
        iii. May 2, 2022, District 1 Southeast Community Organization
        iv. October 4, 2022, West Side Community Organization
        v. April 25, 2023, Community Information Meeting

5. During the 45-day comment period on the EAW, the MPCA received comments from United States Army Corps of Engineers, two Ramsey County Commissioners, a Saint Paul City Council Member, the Sierra Club, and nine community members. The comment period ended on August 25, 2023.

6. On September 12, 2023, the MPCA requested and was granted approval from the EQB for a 15-day extension of the decision-making process on the need for an EIS for the Project in accordance with Minn. R. 4410.1700, Subpart 2. B.

7. The list of comments received during the 45-day public comment period are included as Appendix A to these Findings. The MPCA prepared written responses to the comments received during the 45-day public comment period. These responses are included as Appendix B to these Findings.

Criteria for Determining the Potential for Significant Environmental Effects

8. The MPCA shall base its decision on the need for an EIS on the information gathered during the EAW process and the comments received on the EAW (Minn. R. 4410.1700, subp. 3). The MPCA must order an EIS for projects that have the potential for significant environmental effects. (Minn. R.

4410.1700, subp. 1). In deciding whether a project has the potential for significant environmental effects, the MPCA must compare the impacts that may be reasonably expected to occur from the Project with the criteria set forth in Minn. R. 4410.1700, subp. 7. These criteria are:

A. Type, extent, and reversibility of environmental effects.
B. Cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project.
C. The extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project.
D. The extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.

The MPCA Findings with Respect to Each of These Criteria Are Set Forth Below

A. Type, Extent, and Reversibility of Environmental Effects

9. The first criterion that the MPCA must consider when determining if a project has the potential for significant environmental effects is the "type, extent, and reversibility of environmental effects" Minn. R. 4410.1700, subp. 7. A. The MPCA findings with respect to this criterion are set forth below.

10. The types of impacts that the MPCA anticipates may reasonably be expected to occur from the Project include the following:
    a. groundwater appropriation
    b. air quality
    c. greenhouse gas emissions

11. Written comments received during the comment period raised additional issues, as follows:
    d. human health impacts from per- and polyfluoroalkyl substances (PFAS)
    e. impacts related to odors
    f. impacts related to cultural resources
    g. impacts related to noise

12. With respect to the extent and reversibility of impacts that are reasonably expected to occur from the Project, the MPCA makes the following findings.

a. Groundwater appropriation

13. The DNR is the permitting authority for appropriating waters of the state in Minnesota. The DNR Water Appropriations Permit allows for a reasonable use of water if the use does not negatively impact surrounding wells or other water resources.

14. MCES has an existing DNR Water Appropriation Permit (Permit No. 1965-0271) for the Metro Plant that authorizes withdrawal of up to 1,500 million gallons per year. The Project would result in an increase in the Metro Plant's water use from 464 to 522 million gallons per year. The additional

groundwater needs for the Project would not cause MCES to exceed the currently permitted water appropriation amount.

15. MCES anticipates requesting a temporary DNR Water Appropriation Permit for dewatering during construction. The anticipated construction schedule may require 6 to 12 months of dewatering. Water from dewatering during construction will be managed in accordance with the DNR Water Appropriation Permit and the MPCA CSW permit. Dewatering is expected to be discharged to the Metro Plant's existing stormwater system. Dewatering is not anticipated to be required following completion of construction.

16. The DNR Water Appropriation Permit ensures water resources are managed so that adequate supply is available for long-range seasonal requirements for domestic, agricultural, fish and wildlife, recreational, power, navigational, and water quality.

17. The DNR Water Appropriation Permit balances competing management objectives, including both the development and protection of water resources. Minn. Stat. § 103G.261 establishes domestic water use as the highest priority of the State's water when supplies are limited. If a well interference arises, the DNR has a standard procedure for investigating the matter. If the DNR finds a commercial operator is causing interference, the operator must correct it.

18. Unauthorized pumping or use of the well or other water resources is subject to enforcement under Minn. Stat. § 103G. Upon completion of an investigation, a permit for water appropriation may be limited, amended, or denied in accordance with applicable laws and rules for the protection of the public interests and the sustainability of Minnesota's water resources.

19. Due to the DNR oversight and permitting of water appropriations, the MPCA does not expect significant adverse impacts to water appropriation. However, if the DNR determines there is well interference based on concerns or well interference claims, the operator must fix the causes of the interference. Thus, the impacts to water appropriations would then be reversed. The MPCA finds that any water appropriation impacts that may occur from the Project are reversible.

20. The MPCA finds that information presented in the EAW and other information in the environmental review record are adequate to assess potential impacts to the quantity of groundwater appropriation that are reasonably expected to occur from the Project.

21. The MPCA finds the Project, as proposed, does not have the potential for significant environmental effects based on the type, extent and reversibility of impacts related to groundwater appropriation, which are reasonably expected to occur.

b. Air Quality

Air Permit

22. The Metro Plant was in the PM_{10} maintenance area along the Mississippi River in Saint Paul. The maintenance area was redesignated as attainment for PM_{10} in 2002 and the maintenance plan expired in September 2022. The Metro Plant and nearby facilities have on-going PM_{10} air permitting requirements for this maintenance area.

23. MCES's Metro Plant operates under MPCA Air Permit 12300053-006. The Project will trigger a Major amendment to MCES's existing Title V air permit. In the air permit application, MCES proposes new emission limits on $PM_{2.5}$ and PM_{10} for the auxiliary boilers, existing and new incinerators, and alkaline stabilization sludge loadout. In addition, a risk-based polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF) emission limit is proposed for the existing incinerators.

24. The Project will increase criteria pollutant emissions of nitrogen oxides, volatile organic compounds, and carbon monoxide overall by 54.82 tons per year.

25. The Project will decrease criteria pollutant emissions of PM, PM_{10}, $PM_{2.5}$, sulfur dioxide, and lead by 12.93 tons per year, due to the change of the auxiliary boiler's backup fuel from fuel oil to propane.

26. The hazardous air emissions from FBI 4 are expected to be metals, volatile organics, polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF), and hydrochloric acid. Potential emission decreases of lead and mercury are associated with changing the Metro Plant's auxiliary boiler backup fuel and the incinerators auxiliary backup fuel from fuel oil to propane.

27. With the additional solids processing capacity, the Metro Plant will remain operating as a minor Hazardous Air Pollutant (HAP) source after the Project construction is complete.

Air Dispersion Modeling

28. MCES used a Source Impact Analysis (SIA) to assess whether the Project will cause or contribute to an air quality violation.

29. The results of the SIA showed that only carbon monoxide (CO) emissions were below the Significant Impact Level (SIL). Therefore, National Ambient Air Quality Standards (NAAQS) modeling was not required for CO. For the parameters that did not pass the SIL (nitrogen dioxide - NO_2, sulfur dioxide - SO_2, PM_{10}, $PM_{2.5}$), refined air dispersion modeling was conducted.

30. MCES conducted air dispersion modeling of Project emissions using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). AERMOD was developed by the American Meteorological Society and the U.S. Environmental Protection Agency. The model evaluated the air quality impacts of the Project. AERMOD is a widely accepted air dispersion model, which uses conservative assumptions to predict air quality.

31. For PM_{10}, MCES conducted a refined modeling analysis that accounts for as many PM_{10} emitting sources as can be quantified in the area as well as a monitored background value. This analysis is referred to as a Cumulative Impact Analysis (CIA).

32. All of the pollutants passed the CIA by modeling under the ambient air quality standards for NAAQS/Minnesota Ambient Air Quality Standards (MAAQS) except for PM_{10}, which then underwent a third analysis called a Source Contribution Analysis (SCA).

33. The PM_{10} nearby source parameters provided by MPCA for the Red Rock Maintenance area have modeled concentrations above the PM_{10} NAAQS. MCES is proposing an operating restriction on the facility so that Metro Plant's contribution to all exceedances is less than 5 micrograms per cubic meter ($\mu g/m^3$) SIA. The final air dispersion modeling report submittal documented all day and receptor locations above the PM_{10} NAAQS, and all days where the Metro plant contributions were above the 5 $\mu g/m^3$ PM_{10} SIL for those receptors. MCES demonstrated that the Metro plant had no contributions above 5 $\mu g/m^3$ for the modeled PM_{10} NAAQS exceedances. Therefore, the Metro Plant is not a significant contributor under MPCA and EPA guidance.

34. The Metro Plant impacts are below the PM_{10} Significant Impact Analysis for all days and locations that nearby source allowable emissions are showing modeled exceedances. Based on the CIA, FBI 4 and the remainder of the Project will meet all NAAQS and MAAQS.

Air Emission Risk Analysis (AERA)

35. An Air Emission Risk Analysis (AERA) was completed to evaluate and quantify potential human risks associated with emissions from the Project. The AERA includes both a quantitative analysis of potential impacts to human health using the risk assessment screening spreadsheet (RASS), and a qualitative analysis using information from the Metro Plant and the surrounding community.

36. The results of the AERA indicate that the calculated cumulative excess cancer risks and hazards are below the Minnesota Department of Health (MDH) risk management levels. The Project does not significantly change the rural risk and hazard levels.

37. FBI 4 will meet the applicable 40 CFR 60 Subpart LLLL emission standards and monitoring requirements. Continuous parametric monitoring on FBI 4 control equipment will be completed in accordance with final air permit requirements.

38. The MPCA finds that information presented in the EAW and other information in the environmental review record are adequate to assess potential impacts to the air quality that are reasonably expected to occur from the Project.

39. The MPCA finds the Project, as proposed, does not have the potential for significant environmental effects based on the type, extent and reversibility of impacts related to air quality, which are reasonably expected to occur.

c. Greenhouse gas (GHG) emissions

50. The MPCA considered GHG emission sources that are within the scope of the Project.

51. The Project will directly release GHG emissions, which can widely disperse within the atmosphere, and which vary both in terms of their global warming potential and their persistence in the atmosphere.

52. To provide a common unit of measure, the MPCA uses the individual global warming potential of methane and nitrous oxide to convert to carbon dioxide equivalency (CO_2e).

53. Using EPA emission factors, Scope 1 Construction Sources, Scope 1 Mobile Equipment Combustion, Scope 1 Stationary Equipment Combustion, Scope 2 Fugitive Emissions, and Scope 2 Off-site Electricity, the Project will release 4,902 tons of CO_2e during construction over the course of three years. Further, the Project will release an additional 3,237 tons per year (tpy) of CO_2e during operation.

54. CO_2 emitted to the atmosphere from combustion of biomass, such as wastewater treatment sludge, is considered biogenic CO_2 as defined in Table 4 of the Environmental Quality Board's EAW climate guidance and is considered carbon neutral.

55. There are no Minnesota or National Ambient Air Quality Standards for GHGs.

56. Currently, there are no federal or Minnesota thresholds of GHG significance for determining impacts of GHG emissions from an individual project on global climate change.

57. In the absence of a threshold of GHG significance, the MPCA looks to existing regulation. Minn. R. 4410.4300, subp. 15, Part B, establishes a mandatory category requiring preparation of an EAW for stationary source facilities generating 100,000 tpy of GHGs. The purpose of an EAW is to assess environmental effects associated with a proposed project to aid in the determination of whether an EIS is needed. On the premise of GHG emissions, environmental review regulations establish

100,000 tpy as a "trigger" to prepare an EAW to aid in determining potential significant environmental effects. A reasonable conclusion is that the Project's total GHG emissions below 100,000 tpy are not considered significant.

58. The MPCA finds that information presented in the EAW and other information in the environmental review record are adequate to assess potential greenhouse gas emission impacts that are reasonably expected to occur to and from the Project.

59. The MPCA finds the Project, as proposed, does not have the potential for significant environmental effects based on the type, extent and reversibility of impacts related to greenhouse gas emissions, which are reasonably expected to occur.

d. Human health impacts from PFAS

60. Wastewater treatment plants (WWTPs) are receivers of PFAS. They receive PFAS daily from a variety of industrial, commercial and residential sources.

61. In 2021, the MPCA, along with other state agencies, released Minnesota's PFAS Blueprint[2] – a strategic, coordinated approach to reducing PFAS in the environment to protect families and communities.

62. In March of 2022, the MPCA developed a PFAS Monitoring Plan.[3] The PFAS Monitoring Plan addresses PFAS monitoring at several different types of industries including Wastewater Treatment Plants.

63. The focus of the wastewater section of the PFAS Monitoring Plan is to understand and minimize the landscape of PFAS influent source contributions and their concentrations. The Plan helps to identify where source reduction and elimination efforts are needed and measure the effectiveness of source reduction interventions such as prevention and mitigation strategies.

64. Under MCES's existing National Pollutant Discharge Elimination System (NPDES) Permit, MCES has been sampling for PFAS in the Metro Plant effluent since September 2015 and has completed source identification and reduction work over time. The MPCA will review these data and new surface water quality site-specific criteria as part of the reissuance of the NPDES which expired on August 31, 2020. MPCA is currently working on reissuing the permit, which will include consideration of PFAS effluent limits.

65. There is ongoing MPCA research on potential risks for PFAS in land applied biosolids. At the same time EPA is leading human health and ecological risk assessments https://www.epa.gov/biosolids/risk-assessment-pollutants-biosolids related to potential risks posed through biosolids to drinking water, soil, and agricultural receptors like plants and livestock. The results of these efforts will inform local and state management decisions related to managing risks from PFAS in biosolids.

66. The major amendment to the Metro Plant's Title V Air Permit, will include new performance-based stack testing requirements for PFAS per MPCA stack testing protocol and EPA Other Test Method 45 (OTM-45). Data collected will establish a baseline understanding of PFAS emissions from the Metro

[2] Minnesota Pollution Control Agency. Minnesota's PFAS Blueprint. Available online at: https://www.pca.state.mn.us/sites/default/files/p-gen1-22.pdf
[3] Minnesota Pollution Control Agency. Available online at: https://www.pca.state.mn.us/sites/default/files/p-gen1-22b.pdf

Plant. This data will inform whether future regulatory MCES air and water permit modifications are necessary.

67. In 2023, the Minnesota Legislature enacted a statute requiring manufacturers to report where PFAS are being intentionally used in consumer products and where their packaging is being sold in the state. Further, within nine years, the law requires a ban on all but the most essential or currently irreplaceable uses in those products. This law enacts PFAS pollution prevention measures consistent with MPCA's 2021 PFAS Blueprint. Once the PFAS ban has been fully implemented, PFAS within the biosolids is expected to diminish over time.

68. In fall 2023, the MPCA began two rulemakings to enable the product reporting process and associated fee payments to help cover implementation costs. A third rulemaking to clarify definitions and decision-making processes for the agency to arrive at determinations by 2032 of what intentional PFAS in product uses might be "currently unavoidable", will begin at a later date. An initial group of 11 product bans becomes effective on January 1, 2025; reporting is due by January 2026 (unless extension requests are granted); manufacturers then have until 2032 to phase out PFAS uses unless they are determined to be essential and for which alternatives are not reasonably available. Pesticides and fertilizer containing PFAS have similar requirements which will be administered by the Department of Agriculture, in partnership with the MPCA.

69. Based on current knowledge, there are PFAS compounds in the wastewater influent, but the processes at Metro Plant do not add PFAS into the wastewater recycle stream. Because the Project will not be processing additional wastewater until the population increases, it is not expected that additional PFAS will be introduced into the wastewater recycle stream in the immediate future.

70. MCES will continue to work with the MPCA to address PFAS at the Metro Plant as the regulatory framework evolves.

71. Based on the proactive actions described in items 61 to 68, the manufacturing, selling of products containing, and releases of PFAS to the environment will be reduced over time.

72. The MPCA finds that information presented in the EAW and other information in the environmental review record is adequate to address the concerns related to human health impacts from PFAS. The human health impacts from PFAS that are reasonably expected to occur from the Project have been considered during the review process and methods to prevent and mitigate significant adverse impacts have been developed.

73. The MPCA finds that the Project, as it is proposed, does not have the potential for significant environmental effects based on the type, extent, and reversibility of human health impacts from PFAS that are reasonably expected to occur from the Project.

e. Impacts related to odors

74. The fourth incinerator will have no impact on odors during construction or during operation as the incineration process eliminates any odors.

75. Odors from the additional dewatering facilities will be directed to the inlet on the fluidizing air blowers and incinerated, or to the alkaline stabilization loadout scrubber with chemical neutralization.

76. MCES will direct odors from the cake receiving to the inlet on the fluidizing air blowers, or to the alkaline stabilization loadout scrubber.

77. No additional odors during construction or during operation are expected from the additional dewatering and cake receiving facilities.

78. The MPCA finds that information presented in the EAW and other information in the environmental review record is adequate to address the concerns related to odors. The impacts on odors that are reasonably expected to occur from the Project have been considered during the review process and methods to prevent significant adverse impacts have been developed.

79. The MPCA finds that the Project, as it is proposed, does not have the potential for significant environmental effects based on the type, extent, and reversibility of impacts related to odors are reasonably expected to occur from the Project.

f. Impacts related to cultural resources

80. The Minnesota State Historic Preservation Office reviewed the Project and their database found no archeological records for the given Project area.

81. The Project will construct a fourth incinerator at the Metro Plant entirely within the existing Metro Plant facility boundary.

82. The MPCA finds that information presented in the EAW and other information in the environmental review record is adequate to address the concerns related to impacts to cultural resources. The impacts related to cultural resources that are reasonably expected to occur from the proposed Project have been considered during the review process and methods to prevent significant adverse impacts have been developed.

83. The MPCA finds that the Project, as it is proposed, does not have the potential for significant environmental effects based on the type, extent, and reversibility of impacts related to cultural resources that are reasonably expected to occur from the Project.

g. Impacts related to noise

84. Varying degrees of noise can be expected during the construction period. Anticipated noise sources are primarily construction equipment and normal construction activities. High impact noise, such as pile driving, will be required during construction. Pile driving equipment results in the highest peak noise level. High impact noise construction activities will be limited in duration to the greatest extent possible and avoided during night-time hours. Mitigative measures will include standard mufflers on engine driven equipment and possible ear protection as necessary for workers engaged in periodic demolition or other short-term noise intensive activities.

85. Any increase in noise after operation of the Project starts is expected to be minimal as the Metro Plant is already fully operational. Additionally, the Metro Plant is in a zone designated for industrial use.

86. MCES will continue operation of the Metro Plant in accordance with noise standards for industrial areas as described in Minn. R. Ch. 7030.

87. The MPCA finds that information presented in the EAW and other information in the environmental review record is adequate to address the concerns related to noise. The impacts on noise that are reasonably expected to occur from the proposed Project have been considered during the review process and methods to prevent significant adverse impacts have been developed.

88. The MPCA finds that the Project, as it is proposed, does not have the potential for significant environmental effects based on the type, extent, and reversibility of impacts related to noise that are reasonably expected to occur from the Project.

B. Cumulative potential effects

89. The second criterion that the MPCA must consider when determining if a project has the potential for significant environmental effects is the "cumulative potential effects." In making this determination, the MPCA must consider "whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effects; and the efforts of the proposer to minimize the contributions from the project." Minn. R. 4410.1700 subp.7 (b). The MPCA findings with respect to this criterion are set forth below.

90. The EAW, public comments, and MPCA follow-up evaluation did not disclose any related or anticipated future projects that may interact with this Project in such a way as to result in significant cumulative potential environmental effects.

91. The EAW addressed the following areas for cumulative potential effects for the proposed Project:
    - air quality
    - greenhouse gas emissions
    - odor

Air quality

92. Cumulative potential effects related to air quality were discussed in Part 17 and Part 21.c of the EAW. Findings 22 through 39 are incorporated herein as part of MPCA's cumulative potential effects evaluation for human health impacts to air quality, in that the air assessment through refined air dispersion modeling and AERA incorporated ambient background concentrations and nearby contributing emission sources in the same geographic region.

93. The Metro Plant impacts are below the PM_{10} Significant Impact Analysis for all days and locations that nearby source allowable emissions are showing modeled exceedances. Based on the CIA, FBI 4 and the remainder of the Project will meet all NAAQS and MAAQS.

94. The results of the AERA indicate that the calculated cumulative excess cancer risks and hazards are below the MDH risk management levels. The Project does not significantly change the rural risk and hazard levels.

95. The MPCA finds the information presented in the EAW and other information in the environmental review record does not demonstrate that the Project has the potential for significant environmental effects to air quality based on significant cumulative potential effects because: the Project will obtain and comply with an MPCA air emissions permit, will meet the NAAQS, and will not pose any acute inhalation health hazards or any sub-chronic or chronic multi-pathway health hazards to the public.

96. Therefore, the MPCA finds that the Project is not expected to contribute significantly to adverse cumulative potential effects on air quality.

Greenhouse gas emissions

97. On-site, stationary source GHG emissions were calculated for the Project at the Metro Plant to support the air permit application. GHG emissions from the fourth incinerator include both biogenic emissions from the incineration of solids and the anthropogenic burning of fuel to operate the incinerator. There are only anthropogenic sources of GHGs from the auxiliary boilers and engine-driven fire pump.

98. While the Project will increase overall GHG emissions for the Metro Plant, the increase in GHG emissions is necessary to ensure the proper treatment of wastewater at the Metro Plant.

99. On the premise of GHG emissions, environmental review regulations establish 100,000 tpy as a "trigger" to prepare an EAW to aid in determining potential significant environmental effects. A reasonable conclusion is that the Project's GHG emissions below 100,000 tpy are not considered significant.

100. The City of St. Paul has a Climate Action and Resilience Plan (CARP) that describes the current GHG emissions profile and strategies to mitigate GHG emissions and reduce vulnerabilities. The 2015 GHG inventory for the City of St. Paul calculates that 1% of the city's GHG emissions were attributable to water and wastewater. The CARP notes that treating and distributing clean water is critical and that mitigation of wastewater emissions is dependent upon reducing water consumption. The CARP also contains strategies for the City of St. Paul to reduce overall GHG emissions and achieve carbon neutrality by 2050. Other sectors, such as building energy use and travel, will drive the success of the program. Cumulatively, the GHG emissions from MCES and wastewater treatment in general are minor.

101. Global climate change results from the total accumulation of GHG emissions in the earth's atmosphere, as well as other man-made and natural factors. The GHG composition of the earth's atmosphere is changing and causing the planet's climate to change.

102. While it may be possible to model the effects of the incremental GHG emissions associated with the Project (e.g., a social cost of carbon estimate based on a modeling framework that considers the social cost of each marginal ton of CO_2e), as a matter of empirical observation, it would be impossible to "see" the effects signal observationally amidst the internal noise of the global climate system. In other words, the available models might be used, and the results of those models might be extrapolated to give MPCA some idea of physical impacts caused by the amount of GHGs emitted from the Project. However, significant uncertainly would remain, especially as to when and where the physical impacts might occur.

103. It is not within the current state of the science to provide an analysis of the impact that the Project related GHG emissions will have on the environment.

104. It is impossible to know whether and when reliable data regarding Project GHG emissions' impact on the environment will become available, and any study of cumulative impacts of GHGs would necessarily go well beyond evaluating the impacts solely from the Project.

105. The information on Project impacts might be developed from any such GHG/climate modeling cannot be reasonably obtained as required for an EAW Minn. R. 4410.1700, subp. 2(A).

106. There are no Minnesota or National Ambient Air Quality Standards for GHGs.

107. Regarding Minn. R. 4410.1700, subp. 7(B), items 91-105 analyze whether the cumulative potential effect is significant and whether the contribution form the Project is significant when viewed in connection with other contributions to the cumulative potential effect.

108. The MPCA finds that for the reasons stated in items 91-105, the cumulative potential effect of Project GHG impacts, as proposed, does not have the potential for significant environmental effects related to cumulative potential effects based on the Project's GHG emissions that are reasonably expected to occur.

109. Therefore, the MPCA finds that the Project is not expected to contribute significantly to adverse cumulative potential effects on greenhouse gas emissions.

Odor

110. The Project at the Metro plant will incorporate existing odor control systems to control odors. Therefore, the Metro Plant will not generate additional odors within the community because of the Project.

111. Therefore, the MPCA finds that the Project is not expected to contribute significantly to adverse cumulative potential effects on odor.

Cumulative effects – summary

112. Based on information on the Project obtained from air modeling reports information on air quality, air toxics, greenhouse gases, and odors, presented in the EAW, and consideration of potential effects due to related or anticipated future projects, the MPCA does not expect significant cumulative effects from this Project.

113. The MPCA finds the Project, as proposed, does not have the potential for significant environmental effects related to cumulative potential effects that are reasonably expected to occur.

C. The Extent to Which the Environmental Effects Are Subject to Mitigation by Ongoing Public Regulatory Authority

114. The third criterion that the MPCA must consider when determining if a project has the potential for significant environmental effects is "the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project." Minn. R. 4410.1700, subp. 7.C. The MPCA findings with respect to this criterion are set forth below.

115. The following permits or approvals will be required for the Project:

Unit of Government	Permit or Approval Required
Federal Aviation Administration (FAA)	Notification of Proposed Construction or Alteration
National Park Service (NPS)	Plan review and coordination under Mississippi National River and Recreation Area (MNRRA)
MPCA	National Pollutant Discharge Elimination System (NPDES) Permit plan and specification approval
MPCA	Major amendment to Title V Air Permit
MPCA	Construction Stormwater Permit
MPCA	Stormwater Pollution Prevention Plan

Unit of Government	Permit or Approval Required
MPCA/U.S. Environmental Protection Agency (EPA)	Spill, Prevention, Control, and Countermeasure Plan and Minnesota Spill Bill
MPCA	Tank Registration/Deregistration
MPCA/Minnesota Department of Health (MDH)	Asbestos Notifications
Minnesota Emergency Response Commission and Local Fire Department	SARA Title III Chemical Notification, Planning, and Reporting
DNR	Construction Dewatering Permit may be required if more than 10,000 gallons per day
Ramsey County	Hazardous Waste Generator License
Ramsey County	Hazardous Waste Contingency Plan
Ramsey-Washington County Watershed District	Grading Permit
City of Saint Paul	Plan review coordination regarding compliance with Saint Paul Critical Area River Corridor Plan and Ordinance
City of Saint Paul	Building Permit

116. The FAA Notification of Proposed Construction or Alteration assures that structures within the operating areas of aircraft near airports are not encroached upon by buildings or other structures.

117. The NPS Plan review and coordination under MNRRA assures that the recreational and scenic value of MNRRA is preserved to the greatest extent possible.

118. The MPCA NPDES/SDS Permit will be required if construction groundwater dewatering discharge is contaminated and not routed through plant but directly discharged. The purpose of the permit is to identify conditions under which industrial stormwater can be discharged so that the quality of surface waters, wetlands and groundwater is protected. The permit requires a stormwater pollution prevention plan (SWPPP) that provides details of best management practices to be implemented.

119. The MPCA Air Emissions Permit Amendment assures that the facility is designed using good engineering practices and, in a manner, consistent with the air quality rules administered by the MPCA.

120. As noted in findings #61-68, the MPCA has established a strategic approach to prevent, reduce and mitigate PFASs in the environment through ongoing monitoring, ban laws, and other regulatory controls. Specifically, the major amendment to the Metro Plant's Title V Air Permit, will include new performance-based stack testing requirements for PFAS following MPCA stack testing protocol and EPA test method OTM-45. This will establish baseline monitoring data for PFAS emissions from the Metro Plant. This data will inform whether future regulatory MCES air and water permit modifications are necessary.

121. The MPCA NPDES/SDS Construction Stormwater Permit (CSW permit) is required when a project disturbs one acre or more of soil. The CSW permit requires the use of best management practices to prevent erosion and to keep eroded sediment from leaving the construction site and requires projects that create one acre or more of new impervious surface to provide permanent treatment of stormwater runoff. The project proposer must have a stormwater pollution prevention plan (SWPPP) that provides details of the specific measures to be implemented.

122. The MPCA/USEPA Spill Prevention, Control, and Countermeasure Plan (SPCCP) assures that certain facilities that store oil and could affect a navigable water or adjoining shoreline must prepare the SPCCP. Elements include secondary containment, facility layout and drainage pattern, and cleanup procedures, among other requirements.

123. The MPCA Above Ground Storage Tank registration for tanks over 110 gallons requires certain storage tanks to be registered with the MPCA. The requirements include notification, labeling and secondary containment to prevent or minimize the potential for environmental impacts.

124. The MPCA/Minnesota Department of Health (MDH) asbestos notification may be required if asbestos is encountered during construction of Project. MDH requires notification five calendar days prior to beginning of any asbestos-related work project.

125. The Minnesota Emergency Response Commission and Local Fire Department SARA. Title III Chemical Notification, Planning, and Reporting assures local fire departments and State Agency response planners, as well as citizens, are knowledgeable about the use and storage of toxic and hazardous chemicals in various buildings around the state.

126. The DNR Water Appropriation Permit amendment may be required for dewatering if more than 10,000 gallons per day or one million gallons per year is proposed and is intended to protect other water supply wells from impacts by the dewatering.

127. The Ramsey County Hazardous Waste Generator License regulates hazardous waste generation, transport, and disposal in Ramsey County.

128. The Ramsey County Hazardous Waste Contingency Plan is required to be developed by generators in case of incidents or accidents.

129. The Ramsey-Washington County Watershed District Grading Permit assures that grading is accomplished in a way that run-off does not cause sedimentation.

130. The City of St. Paul Plan Review coordination assures compliance with the requirement of the St. Paul Critical Area River Corridor Plan and Ordinance.

131. The Building Permit issued by the city of St. Paul assures that the Project will be consistent with the city of St. Paul's Building Code.

132. The above-listed permits include general and specific requirements for mitigation of environmental effects of the Project. The MPCA finds that the environmental effects of the Project are subject to mitigation, as explained in these Findings and the EAW, by ongoing public regulatory authority.

133. The MPCA finds that the environmental effects of the Project can be anticipated, evaluated, controlled and mitigated through ongoing regulatory control by implementing the state-wide PFAS Blueprint plan and strategy to address PFAS impacts. Implementation of the PFAS Blueprint and other ongoing activities for addressing PFAS, will be used in conjunction with Project design, and permitting processes undertaken by the MPCA and the project proposer to address Project impacts.

D. The Extent to Which Environmental Effects can be Anticipated and Controlled as a Result of Other Available Environmental Studies Undertaken by Public Agencies or the Project Proposer, Including Other EISs

134. The fourth criterion that the MPCA must consider is "the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs," Minn. R. 4410.1700, subp. 7. D. The MPCA Findings with respect to this criterion are set forth below.

135. As noted in findings #61 to 68, the MPCA has established a strategic approach to prevent, reduce and mitigate PFAS in the environment state-wide through other ongoing environmental studies, statewide PFAS Blueprint monitoring, ban laws, and other regulatory controls.

136. The MPCA finds that the environmental effects of the Project can be anticipated, evaluated, controlled and mitigated through other environmental studies such as implementing the state-wide PFAS Blueprint plan and strategy to address PFAS impacts. Implementation of the state-wide PFAS Blueprint monitoring and other ongoing activities for addressing PFAS, will be used in conjunction with Project design, and permitting processes undertaken by the MPCA and the project proposer to address Project impacts.

137. Although not exhaustive, the MPCA reviewed the following documents as part of the environmental impact analysis for the proposed Project.
    i. Data presented in the EAW
    ii. Air Dispersion Modeling Report
    iii. Permits and environmental review of similar projects

138. The MPCA also relies on information provided by Metropolitan Council Environmental Services, persons commenting on the EAW, staff experience, and other available information obtained by staff.

139. The environmental effects of the Project have been addressed by the design and permit development processes, and by ensuring conformance with regional and local plans. No elements of the Project pose the potential for significant environmental effects that are not addressed or mitigated by the requirements of the permits listed above or in the EAW.

140. Based on the environmental review, previous environmental studies by public agencies or the project proposer, and staff expertise and experience on similar projects, the MPCA finds that the environmental effects of the Project that are reasonably expected to occur can be anticipated and controlled.

141. The MPCA adopts the rationale stated in the attached Response to Comments (Appendix B) as the basis for response to any issues not specifically addressed in these Findings.

CONCLUSIONS OF LAW

142. The MPCA has jurisdiction in determining the need for an EIS for this Project. The EAW, the permit development process, and the evidence in the record are adequate to support a reasoned decision regarding the potential significant environmental effects that are reasonably expected to occur from this Project.

143. The MPCA identified areas for potential significant environmental effects. The Project design and permits ensure Metropolitan Council Environmental Services will take appropriate mitigation measures to address significant effects. The MPCA expects the Project to comply with all environmental rules, regulations, and standards.

144. Based on a comparison of the impacts that are reasonably expected to occur from the Project with the criteria established in Minn. R. 4410.1700 subp. 7, the Project does not have the potential for significant environmental effects.

145. An EIS is not required for the proposed Metropolitan Wastewater Treatment Plant Solids Management Improvements Project.

146. Any Findings that might properly be termed conclusions and any conclusions that might properly be termed Findings are hereby adopted as such.

ORDER

147. The Minnesota Pollution Control Agency determines that there are no potential significant environmental effects reasonably expected to occur from the Metropolitan Wastewater Treatment Plant Solids Management Improvements Project and that there is no need for an Environmental Impact Statement.

Katrina Kessler, Commissioner
Minnesota Pollution Control Agency

October 23, 2023
Date

APPENDIX A

Minnesota Pollution Control Agency

Metropolitan Wastewater Treatment Plant Solids Management Improvements Project EAW

LIST OF COMMENT LETTERS RECEIVED

1. Dale Lutz. Letter received July 20, 2023.
2. Rachel Gralnek, U.S. Army Corps of Engineers. Letter received July 24, 2023.
3. Anders Braaten. Letter received July 25, 2023.
4. Kinsey Johnson. Letter received August 16, 2023.
5. Rosalie Bunge. Letter received August 24, 2023.
6. Stephen Greenwood. Letter received August 24, 2023. Attachments available upon request.
7. Jane Prince. Saint Paul City Councilmember. Letter received August 25, 2023.
8. Tom Dimond. Letter received August 25, 2023.
9. Krystle D'Alencar. Letter received August 25, 2023.
10. Lois Norrgard. Letter received August 25, 2023.
11. Sherilyn Young. Letter received August 25, 2023.
12. Commissioner Mai Chong Xiong and Commissioner Rafael E. Ortega. Letter received August 25, 2023.
13. Margaret Levin and Dominique Diaddigo-Cash. Sierra Club. Letter received August 25, 2023.
14. Dale Lutz. Letter received August 24, 2023.

Dale Lutz

SUMMARY: The Metro Wastewater Treatment Plant wastewater sludge incinerators should be modified to capture and "recycle" their anthropogenic AND BIOGENIC CARBON DIOXIDE (CO2), using existing technologies such as those described in my attached public comments.

I have been working with my state representative, Amanda Hemmingsen-Jaeger, to propose legislation that would fund a front-end engineering and design (FEED) study to evaluate a project that would add CO2 capture and recycling to the St. Paul Metropolitan Waste Treatment Plant incinerators (and/or other waste-to-energy facilities).

Considering the current record global heat wave, air quality alerts from Canadian wildfires, prolonged drought in the Southwest, record flooding in Vermont, etc., Minnesota needs to quickly demonstrate its commitment to significantly reducing the state's CO2 greenhouse gas emissions!

Best regards,
Dale R. Lutz, Ph.D.

Comments on Metropolitan Wastewater Treatment Plant Solids Management Improvements Project

Dale R. Lutz, Ph.D., Maplewood, MN, July 2023

SUMMARY: The Metro Wastewater Treatment Plant wastewater sludge incinerators should be modified to **capture and "recycle" their anthropogenic AND BIOGENIC CARBON DIOXIDE (CO2)**, using existing technologies such as those described below.

BACKGROUND

In section 18 on page 45 of the Environmental Assessment Worksheet (EWA) document for this Met Council Wastewater Treatment Plant (St. Paul) 4th wastewater sludge incinerator project (found at mcpa.commentinput.com under "Ramsey County") it states:

"Scope 1 Greenhouse gas (GHG) emissions from anthropogenic (man-made) sources were reported on the Metro Plant 2019 Air Emission Inventory Report. These emissions include only emissions from fossil fuel combustion at the Metro Plant and **do not include biogenic greenhouse gases generated from treatment of wastewater or from carbon in the wastewater sludge**." (Emphasis added.)

The explanation for this accounting practice is given in Table 2 on page 10, as follows:

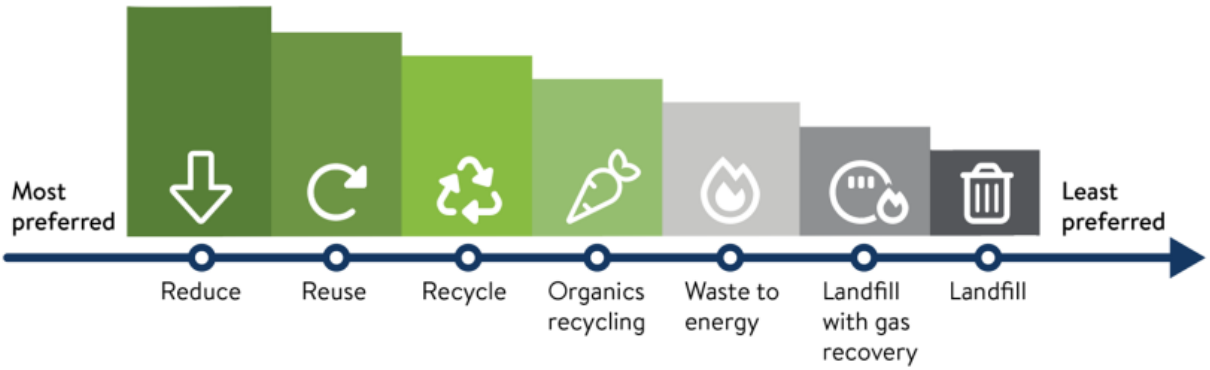
"Carbon dioxide emissions generated from sludge treatment at Metro Plant are biogenic (naturally occurring). These emissions would be expected to occur regardless of how the sludge is treated."

While this somewhat dubious approach simplifies accounting and reporting, it ignores the fact that addressing climate change requires quickly reducing the concentration of carbon dioxide (CO2) greenhouse gas in the atmosphere from the present 420+ parts per million (ppm) to at most 350 ppm, and preferably to the 280 ppm that existed before the Industrial Revolution. Technology now exists that can capture CO2 from point sources and "recycle" the carbon into needed chemicals and "electrofuels". The proposed wastewater sludge incinerator provides an opportunity for "carbon negative" operation to offset other current emission sources, such as cement and steel making.

The draft "Metropolitan Solid Waste Management Policy Plan 2022-2042" stresses **greenhouse gas emission reduction** and openness to **new technologies**, as indicated by the quotes below.

"**Purpose of this Plan** (MPP)
… The MPP supports the goals of the WMA [Waste Management Act] hierarchy [Figure 4, copied below]; improving public health; **reducing the reliance on landfills**; conserving energy and natural resources; and **reducing pollution and greenhouse gas emissions**." (Page 1, emphasis added.)

Figure 4. Minnesota's solid waste management hierarchy of preferred methods



"**Goal 1:** Protect and conserve. Manage materials in a manner that will protect the environment and public health, **reduce greenhouse gas emissions**, conserve energy and natural resources, and reduce toxicity and exposure to toxics." (Page 8, emphasis added.)

"**Emerging technology**
The solid waste system is evolving. … As a result, MPCA and others need more time to understand the **new technologies** to determine what permits they may need and how they may fit into the Solid Waste Management hierarchy.
An example is whether **new technologies** meet the technical requirements for recycling. If they do, this brings the benefit of tax-exemption status for facilities." (Page 39, emphasis added.)

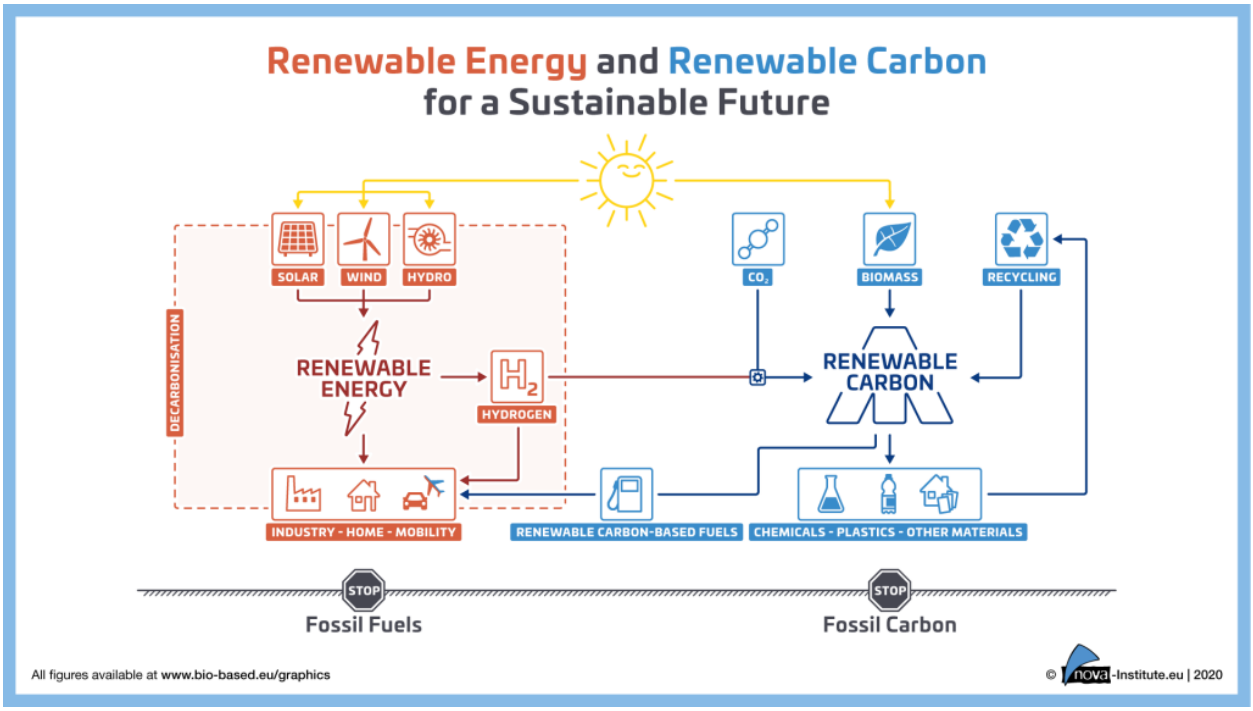
Capturing and recycling or sequestering the greenhouse gas carbon dioxide (CO2) from waste-to-energy facilities can qualify for **federal 45Q tax credits,** a possible state tax credit, and other incentives, including product sales.

New Technology: Waste-to-Energy with CO2 Recycling

One significant opportunity for reducing greenhouse gas emissions is to stop emitting carbon dioxide (CO2) greenhouse gas from Minnesota's waste-to-energy (WTE) facilities, such as the Hennepin Energy Recovery Center (HERC), the Newport Recycling & Energy Center (R&E), and the incinerators at the St. Paul Metropolitan Waste Treatment Plant described in this project's EWA. Technologies now exist (e.g., Chart Industries' Cryogenic Carbon Capture, CCC) that enable capturing and purifying the CO2 produced in the WTE process. Chart's website states that "**CCC reduces carbon emissions by 95 to 99% with half the cost and energy of competing processes and also eliminates harmful SOx, NOx and mercury pollutants from flue gases**." Chilling the flue gas to condense the CO2 also causes several other pollutants to precipitate out of the gas stream. The liquified captured CO2 can then be transported in Chart Industries' cryogenic trailers to a central processing facility, if necessary. The carbon atoms in the CO2 can then be recycled by combining the CO2 with "green hydrogen" (produced from water electrolysis in electrolyzers powered by renewable energy) to generate needed hydrocarbons. These hydrocarbons can include ethanol (e.g., from LanzaTech's bioreactors), which in turn can be converted to sustainable aviation fuel (SAF) for use at the Minneapolis-St. Paul (MSP) airport, using the LanzaJet technology. A CO2-to-SAF facility could be built at or near the Flint Hills Resources Pine Bend Refinery in Rosemount, which already has a 1988 aviation fuel pipeline to the MSP airport. Additionally or

alternatively, a CO2-to-SAF facility could be built at the St. Paul Park Marathon Refinery near the Newport Recycling & Energy Center, just across the river from the St. Paul Downtown Airport. CO2 captured from the incinerators at the St. Paul Metropolitan Waste Treatment Plant could be taken to either CO2-to-SAF facility.

Similarly, technology from MAN Energy Solutions can recycle captured CO2 to methanol and on to (renewable) gasoline. Using these "e-fuels" made from "recycled CO2" displaces conventional fossil fuels, leaving more fossil fuel underground by recycling the carbon that is already above ground. This principle is summarized in the diagram below, from the Renewable Carbon Initiative website at https://renewable-carbon-initiative.com/.



The electricity (and heat) generated by a waste-to-energy (WTE) facility can provide part of the energy needed to produce the "green hydrogen" for the CO2 recycling process. **Converting a traditional WTE facility to a "CO2 recycling" facility should arguably raise the facility to the "recycling" level in the plan's hierarchy.**

For future systems, an alternative to typical waste-to-energy facilities is a partial oxidation or "**gasification**" system that produces "syngas", a key starting material for many chemical processes. LanzaTech has demonstrated using gasification of municipal solid waste (MSW) to produce ethanol in Japan. This ethanol could provide the starting material for other chemicals or e-fuels. The draft plan only mentions one version of gasification briefly, on page 40.

Proposal to Fund an Engineering and Design Study

I have been working with some local nonprofit organizations and my state representative, Amanda Hemmingsen-Jaeger, to propose legislation that would fund a front-end engineering and design (FEED) study to evaluate a project that would add CO2 capture and recycling to the St. Paul Metropolitan Waste Treatment Plant incinerators (and/or other waste-to-energy facilities). The captured CO2 would then be

combined with green hydrogen and converted to valuable hydrocarbons such as sustainable aviation fuel, which may also be eligible for a state tax credit. This could significantly reduce the air pollution and greenhouse gas emissions of the facility, the airport, and the state. Once the system has been demonstrated here, it could be replicated at WTE facilities and incinerators across the state and elsewhere.

Urgent Need to Quickly Reduce Minnesota's CO2 Greenhouse Gas Emissions

Considering the current record global heat wave, air quality alerts from Canadian wildfires, prolonged drought in the Southwest, record flooding in Vermont, etc., Minnesota needs to quickly demonstrate its commitment to significantly reducing the state's CO2 greenhouse gas emissions!

Anders Braaten

What point on the mississippi river is the mileage being measured from Itasca or the gulf of mexico.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
332 MINNESOTA STREET, SUITE E1500
ST. PAUL, MN 55101-1323

Regulatory File No. 2023-00814-RLG

Metropolitan Council Environmental Services
C/o Rene Heflin
390 Robert Street North
Saint Paul, MN 55101

Dear Rene Heflin:

This letter is in response to the Environmental Assessment Worksheet regarding the Metropolitan Wastewater Treatment Plant Solids Management Improvements Project. This letter contains our initial comments on this project for your consideration. The purpose of this letter is to inform you that based on the document Project Information and Request for Comments Regarding the Environmental Assessment Worksheet for the project referenced above a Department of the Army (DA) permit would not be required for your proposed activity. In lieu of a specific response, please consider the following general information concerning our regulatory program that may apply to the proposed project.

If the proposal involves activity in navigable waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Section 10 prohibits the construction, excavation, or deposition of materials in, over, or under navigable waters of the United States, or any work that would affect the course, location, condition, or capacity of those waters, unless the work has been authorized by a Department of the Army permit.

If the proposal involves discharge of dredged or fill material into waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 404 of the Clean Water Act (CWA Section 404). Waters of the United States include navigable waters, their tributaries, and adjacent wetlands (33 CFR § 328.3). CWA Section 301(a) prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404. Information about the Corps permitting process can be obtained online at http://www.mvp.usace.army.mil/regulatory.

The Corps evaluation of a Section 10 and/or a Section 404 permit application involves multiple analyses, including (1) evaluating the proposal's impacts in accordance with the National Environmental Policy Act (NEPA) (33 CFR part 325), (2) determining whether the proposal is contrary to the public interest (33 CFR § 320.4), and (3) in the case of a Section 404 permit, determining whether the proposal complies with the Section 404(b)(1) Guidelines (Guidelines) (40 CFR part 230).

If the proposal requires a Section 404 permit application, the Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Time and money spent on the proposal prior to applying

for a Section 404 permit cannot be factored into the Corps' decision whether there is a less damaging practicable alternative to the proposal.

If an application for a Corps permit has not yet been submitted, the project proposer may request a pre-application consultation meeting with the Corps to obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process. A pre-application consultation meeting is strongly recommended if the proposal has substantial impacts to waters of the United States, or if it is a large or controversial project.

If you have any questions, please contact me in our St. Paul office at (651) 290-5276 or Rachel.Gralnek@usace.army.mil. In any correspondence or inquiries, please refer to the Regulatory file number shown above.

Sincerely,

Rachel Gralnek
Regulatory Specialist

cc:
Nicole Soderholm (LGU)
Ben Meyer (BWSR)
Katrina Hapka (Minnesota Pollution Control Agency)

Kinsey Johnson

This would increase fine particulate pollution in our area. Disgusting.

Rosalie Bunge

I am a resident of the Indian Mounds area. My primary concerns are odors and air emissions. Over the years, I and my neighbors have been participants in meetings, giving testimonies, phoning, and writing complaints. I request that you be vigilant in preventing any odors and air emission problems. Thank you.

August 24, 2023

1111 Argyle St.
St. Paul, MN
55103

Minnesota Pollution Control Agency
c/o Katrina Hapka
520 Lafayette Road North
St. Paul, MN 55155

Re: Metro Council – $150 million 4th Fluid Bed Incinerator,
Request for EIS and EPA Civil Lawsuit Action No. 99-CV-1105

Dear Ms. Hapka,

This letter is to request that the MPCA require an Environmental Impact Statement (EIS) for the Metro Council proposed $150 million 4th Fluid Bed incinerator (FB) and ultimately not approve the project. The proposed project, as designed will meet Federal EPA incinerator air emission limits. However, Met Council staff have failed to fairly and accurately evaluate biosolids processing alternatives, which could have substantially low total life cycle project costs and have lower irreversible total life cycle carbon emissions. Failure to fairly and accurately evaluate alternatives results in an economical and environmental injustice to the rate payers of the community. The applicable Minnesota Rule that governs this request are R 4410.17000

> Subp. 7. A. type, extent and reversibility of environmental effects.
> Subp. 7. B. '…the efforts of the proposer to minimize the contributions from the project…".

A list of six (6) alternative biosolids process alternatives which were not fairly and accurately evaluated are:

1. Upgrade 20-year-old, multiple hearth incinerators (MHI) 9 and/or 10.
2. Upgrade multiple hearth incinerators 9 and/or 10 and utilize the unused biosolids dryers associated with MHI 9 and 10, to market a biosolids for land application.
3. Convert the two unused, sludge dryers from using MHI waste heat to using natural gas.
4. Install new, state-of-art sludge dryers, in place of the unused sludge dryers.
5. Continue to landfill excess biosolids during periods of FB downtime.
6. Truck excess biosolids to Seneca for processing in either MHI and/or N-Viro (which would need to be rehabilitated).

Background

As a brief background, I worked in the MHI incineration and dewatering building from 1983 thru 1990 as a staff engineer, under the supervision of Dr. Nadim Shamat. I was responsible for engineering process control and evaluations of MHIs, air pollution control, ash handling, dryers and dewatering equipment.

Therefore, I have a clear understanding of what modifications were needed for the MHIs, to ensure compliance with EPA and MPCA regulations. As fact, the EPA or the MPCA never sued the Met Council, during the 1980's, when Dr. Shamat and I were at the Metro Plant in the 1980's.

The EPA issued a Notice of Violation (NOV) to the Met Council (Mr. William Moore) in 1997 for leaking dampers & improper operation and maintenance of the MHIs and subsequently issued a civil lawsuit No. 99-CV-1105. This resulted in a Consent Decree and subsequent installation of new fluid bed incinerators that is the elective of the Met Council, not an EPA requirement.

In December 1998, when the construction of a new $200 million fluid bed incinerator complex was being proposed, as an alternative I wrote an internal memo entitled "**Suggestions on how to reduce odors particulate, mercury & heavy metal emissions without new incinerators and cut the capital budget by $125 to $150 million**" (Paper 91), which is still applicable, with minor updates. I submitted this memo to the EPA during the national public comment period in September 2000 (Paper 95) and I stated the there were grounds that there was misrepresentation concerning the proposed project. The Met Council staff verbally informed the EPA that 'they tried all my suggestions and nothing worked', which was not true. I will explain how and why the Federal Judge Donavan Frank; along with the EPA, MPCA, DOJ, Met Council members, environmentalist and public misled, deceived, when the Honorable Judge Donovan Frank wrote on February 6, 2001, in the Consent Decree:

> "It is the Court's finding that Mr. Greenwood's view on the relative merits of upgrading the old incinerators visa vis installing new incinerators were fairly and fully considered during the Met's public decision-making process in the late 1990's...."

I want to clearly state my view of upgrading the MHIs was not just mine, but of multiple other engineers, which is fully documented in this letter.

I. Alternative 1 - Upgrade multiple hearth incinerators (MHI) 9 and/or 10.

Now, the Met Council reason given to me for not rehabilitating any of the six Metro Plant MHI is

> "...the 2001 consent decree specifically requires shutdown of the MHIs and the replacement with FBs.."

The 2001 consent decree was **not a 'Finding of Fact'**, which is critical in the following discussions. I contend that the 2001 consent decree, requiring new fluid bed incinerators was based on fraud, misrepresentation and concealment of documents to the public, EPA, MPCA, and the Honorable Judge Donovan Frank. This section deals with the nine (9) MHI issues involved in the EPA lawsuit and the Met Council misleading justifications for new FBs, which are: 1) Leaking Emergency Dampers, 2) Particulate Test Failures, 3) Not Operating & Maintaining MHI, 4) Concealment of Documents, 5) $92 Million MHI Rehab Cost, 6) Life Cycle Cost, 7) Mercury Removal, 8) Misc. Justifications for FB, and 9) Conflict of Interest.

Issue #1 - Leaking Emergency Dampers

The EPA sued the Met Council in 1998 in part for leaking emergency dampers. As fact, I discovered the emergency damper leakage in October 1990, while working as a staff engineer in the incineration building, in an effort to measure all the MHI incinerator air inputs and air leakage into the MHI. The emergency damper had the greatest air in-flow leakage rate and was measured by: 1) turning off all biosolids feed to the incinerator and having the incinerator at ambient temperature, 2) turning on the combustion air supply and having the incinerator under its normal negative pressure, 3) The air flow velocity around the leaking perimeter of the emergency damper was measured by Air Quality Control staff and the volumetric air flow rate calculated. The air flow and/or leakage rates for the emergency damper, feed drop chute, primary combustion burners, emergency air inlet dampers and secondary combustion air fan were measured (Paper #47), only the emergency damper leak rate is listed below:

Date	Measurements	Conclusions
11/07/90	Emergency Damper for MHI #8	1,330 cfm leakage
10/22/90	Emergency Damper for MHI #9	1,663 cfm leakage

The emergency damper leakage was the largest air leakage source into the MHI system. In a memo dated December 12, 1990 to Joanne Hart, Chief Process Control Engineer concerning the need to reduce air leakage, I wrote the following (Paper #48):

> **"...Reducing air leakage will reduce costs to heat hearth 0 flue gases, decrease the ID fan amperage, reduce particulate emissions, increase the sludge burning capacity of the incinerator and may eliminate the need for a larger ID fan."**

After the air leakage flow rate around the emergency dampers were measured, I asked maintenance staff if some type to temporary gasket device could be devised to seal the 1" to 2" gap around the perimeter of the steel damper. Maintenance staff believed that trying to invent some type of gasket could be very risky, as the emergency damper needs to open very quickly, when the MHI goes into a positive pressure mode. Having a home-made gasket system could cause the damper not to open or open very slowly, either would be a major safety hazard. Therefore, new emergency dampers would need to be installed to stop air leakage.

In 1991, Operations staff conducted more leakage testing of the MHI off-gas system (Paper #49). The Operations staff (Jim Brown, JoAnne Hart, and William Haapala) all agreed that the emergency dampers needed replacement and a request was made to the Engineering Department to replace the dampers. A Capital Improvement Project for Emergency Damper Improvements in 1992 was requested by Joanne Hart, in a memo from Will Haapala, Director of Operations to William Moore, Director of Engineering "Capital Improvement Project Requests for 1993" dated February 10, 1992 that states (Paper #50):

> "7. Incinerator Emergency Damper Improvements: The emergency dampers allow excess air leakage into flue gas train, consuming needed induced draft fan capacity. We need fan capacity to maximize sludge processing capacity and to minimize O&M costs. (Hart)"

In 1993, I was working in the Engineering Group, Small Systems Improvements group. I was listed to be the project manager for the Incinerator Emergency Damper Improvements project for installing new

emergency dampers. However, the project to replace new emergency dampers was stopped in 1993 by senior Engineering management, after Operations request for new dampers.

About 1993 -1994, a MCES staff person, Cliff Mohs discovered that the emergency dampers could leak air from the incinerator to the atmosphere, under certain unusual atmospheric conditions, which caused ash to be discharged into the atmosphere and was ultimately reported to the EPA. Normally, the MHI is kept under negative pressure by pressure controllers, which means that air is always leaking into the MHI and not out. When it was discovered that air and ash could leak to the atmosphere, there should have been an immediate project to replace the emergency dampers. It took an EPA lawsuit to get the Met Council to fix the leaking dampers. Mr. Jim Solem, in a 1999 Star & Tribune article about the dampers stated,

> "...He also confirmed that the seals on the emergency dampers are worn out and that the council offered to spend $1 million to replace them during negotiations with the EPA".

This statement by Mr. Solem is some-what deceptive as the emergency damper seals were known to leak nine (9) years earlier and that there was a project to replace the dampers, but it was stopped by senior management in 1993. Mr. William Moore knew about the leaking dampers and the need to replace them in written communication by February 10, 1992. Technically, the seals were not worn out, but rather the 1970's damper design was out dated; thus, needed to replaced.

The engineering test data, which documented air leakage around the emergency dampers and request to fix the emergency dampers (Papers 47, 48, 49, 50, 51, 52, and 53) were not disclosed to Judge Frank, EPA and DOJ, to my knowledge.

The Consent Decree was not a 'Finding of Fact'. By not installing new emergency dampers on a timely basis, Met Council failed to 'minimize to contributions of the fluid bed project' on a timely basis, as the EPA lawsuit and justifications for new FBs may not have been needed.

Issue #2 - MHI Particulate Testing (PM-5) Failures in the 1990's were Preventable

The MHI particulate testing (PM-5) failures in the 1990's were preventable had MCES senior management installed new air pollution control scrubbers on a timely basis, as recommended by Havens & Emerson (Paper #1), U of M staff (Paper #2 & 23) and myself (Paper 91). Operational changes to the MHIs, such as increasing pressure drops, scrubber water flow rates, temperatures etc., could not reduce PM-5 emission rates, as documented in Papers 2, 12, and 55

In the 1980's, as a staff engineer working under Dr. Nadim Shamat, one of my engineering responsibilities was the process control of the multiple hearth off-gas air pollution control equipment. By 1987, I completed a statistical multiple regression analysis of thirty-three (33) PM-5 particulate tests in an effort to correlate particulate emissions with incinerator operational parameters, such as dry ton feed rate, wet ton feed rate, venturi pressure, venturi flow etc. Dr. Shamat and I presented and published a paper "Impact of Incineration and Scrubber Operation on Particulate, Odor, Opacity and Non-Criteria Emissions" (Paper #12). We concluded the following about particulate emissions:

1. Higher emissions are found at higher air flow rates, which would be expected.
2. Particulate emissions cannot be correlated to a single parameter.

3. Incinerator stability is the primary parameter in meeting emissions requirements with proper wet scrubber design.

During each particulate test, Dr. Shamat had at least one engineer stationed at the dewatering equipment to ensure dewatering stability during testing, to help ensure the stability of the incinerator. The goal was to prevent incinerator flare-ups during testing. However, even with careful control of the dewatering and incineration processes during testing, many of the particulate test results were close to failure at the EPA limit of 1.3 lb./dry ton. For example, we had a 1.29 lb./dry ton PM-5 emission result, with no means to explain why the emission result was so high, but was below the EPA limit.

In the spring of 1990, I recommended to Dr. Shamat that a joint research effort be conducted with the University of Minnesota air pollution control professors to determine the cause of high particulate results and what changes are needed to reduce particulate emissions. In my memo to Joanne Hart, chief process control manager dated December 12, 1990 I wrote the following (Paper #48):

> "Dr. Lui's proposed scrubber modifications to reduce emissions should be given top priority. Based on the historical statistical data, about 20% of the PM5 tests are above 1.10 lb./dry. Obviously, this is to close the PCA limit. Very simply, there is nothing operations can do easily (i.e., change water flows, increase hearth 0 temperature, increase the venturi pressure drop etc.) to reduce particulate emissions. Reducing the excess air flow would reduce the emissions but it will be difficult to do."

Dr. Sun and University professors invented a devise to determine particle size distribution of the particulate emissions being discharged from the incinerator stacks and devised an experimental "Steam Scrubber", to reduce particulate emissions. This is described in a 1994 published paper "A Method to Increase Control Efficiencies of WE Scrubber for Submicron Particles and Particulate Metals" authored by Dr. J Sun, Dr. Ben Lui, Dr. Peter McMurry and myself, we stated the following (Paper #23):

> "It was found that under normal operation, particles emitted from the MWWTP incinerators were nearly all in the submicron size range, with a mass mean aerodynamic diameter of about 0.25 um…It was found that the fine particles are highly enriched in cadmium and other heavy metals…. It was concluded that the venturi's efficiency for removing small particles cannot be significantly improved by varying operating parameters… To reduce the stack emissions alternative methods must be used."

Also, in 1991, Haven & Emerson had recommended the installation of either electrostatic precipitators or bag filters by 1996 to reduce metal and particulate emissions (Paper 1). They knew of the high particulate emissions results and had access to the heavy metal emission data.

On February 26 1992, I presented a proposed program to reduce particulate emissions to senior MCES management, included William Moore and Bryce Pickart. The research sequence was to test the experimental steam injection scrubber, to reduce submicron emissions. Based on 69 particulate test results from 1983 thru 1991, there was an 8.4% probability of failing the 1.3 lb./dry ton EPA limit. The average particulate emission was 0.95 lb./dry ton with a standard deviation of 0.25. If the experimental steam scrubber did not work, the backup plan was to pilot test the more expensive and larger, but proven wet electrostatic precipitator.

The incinerator #8 scrubber was modified in 1992 to inject steam into the subcooler, which steam would condense on the submicron particles like cloud seeding, in order to try to reduce submicron emissions. The unforeseen problem was that large black particulates were on the particulate cascade impactor, which were believed to have been stripped-off from the soot lined stack and thus effecting the emission results (Paper #156). Concerning this report, in February 1995, Bryce Pickart wrote a memo stating (Paper #154):

> "It appears that we expended considerable money and personnel resources without learning anything.... If there are no answers to bypassing and other potential problems, it makes no sense to spend more money on this project.... The poor quality of this report, and the report causes me to recommend denial of any future funding."

In contrast, Harry Grounds, manager stated (Paper #154);

> "The report is well written and presented in a clear and understandable manner. ..Based on this document I would encourage the MCWS to continue its relationship with the University..."

In case the experimental steam scrubber did not work, the backup plan was to pilot test an electrostatic precipitator (WESP), but was stopped by senior management. Also, by 1995, it is known that an air atomized venturi scrubber was successful in reducing particulate emissions (Paper #62), a Venturi-Pak scrubber could have been pilot tested. Either a WESP or Venturi –Pak scrubber could have been pilot tested and implementation of either system could have occurred by 1996, would have prevented the Metro Plant PM-5 failures or at least there would have been a testing plan in place.

Many cities now have installed Venturi-Pak and/or electrostatic precipitator scrubbers to reduce particulate emissions (i.e., Detroit, Indianapolis, Atlanta etc.), which the EPA has emission particulate test data for. In 1998, the Venturi-Pak manufacture submitted to me a budgetary **quote for 6 scrubbers at a cost of $1.4 million** (Paper #91) with particulate emissions averaging about 0.2 lb./dt, with is significantly less than the 0.95 lb./dt average with 1970's style air pollution scrubbers.

The Consent Decree was not a 'Finding of Fact'. By not installing new state of art air pollution control equipment on a timely basis, Met Council failed to 'minimize to contributions of the fluid bed project', as new FBs may not have been needed.

Issue #3 – Not Operating and Maintaining the MHI in 'Good Engineering Practice'

Part of the 1998 EPA lawsuit was that the MHI's concerned the MHI operation and maintenance. This issue is discussed in detail my attached letter (Paper #128) to Tom Weaver titled,

> "Concealment of Documents to the Honorable Federal Judge Donovan Frank, Department of Justice {Joel Gross, James Lofton, Friedrich Siekert}, EPA {Steven Herman, Francis Lyons, and Mary McAuliffe}, MPCA, Metropolitan Council, & Environmentalists Concerning Federal Lawsuit, Civil Action No.99-CV-1105, United States vs. Metropolitan Council, Metropolitan Council Procedure 4-6d, Fraud, 9/2006".

To summarize a complicated topic, in 2000 David Quast and over 100 Metro Plant employees proposed the incinerator process changes listed below to improve incinerator efficiency, reduce incinerator costs

and for employees to receive public bonus money based on operational savings which they proposed, as part of the new 'Gainsharing' program (Paper 35):

1. Maximize use of Incinerators 7 to 10 (With Heat Recovery Boilers) ...
2. Hold incinerators in NATURAL MODE instead of I.D. mode during extended periods....
3. Monitor and maximize dewatering cake solids....
4. Achieve a goal of 89.3 % incinerator utilization....
5. Run fewer Zimpro units....
6. Use of statistical process control.
7. Improve communication between incinerator and dewatering operators.
8. And other miscellaneous process control items.}

However, I argued that the above MHI process control improvements were actually manufacture's recommendations and procedures which Dr. Nadim Shamat and I utilized in the 1980's, when we were engineers in charge of dewatering, incineration and air pollution control systems (Papers 33.1, 33.2, 33.3, 33.4, 33.5, 33.6, 39, 41, 45). The results of the one year long, MHI "Gainsharing" process changes resulted in the following MHI improvements (Paper 42), as documented by David Quast, P.E.:

1. The number of emergency damper openings was the lowest ever in 2001.
2. Lowest Incinerator Fuel use ever in 2001,
3. Lower Plant Fuel Use in 2001,
4. Lowest Polymer dosage ever in 2001,
5. Improved cake consistency,
6. Improved incinerator uptime (82.4% availability),
7. Increased ID fan turbine use,
8. Optimum use of flotation thickeners,
9. Increased Incinerator availability,
10. Staff claimed about a $1.1 million a year in total savings,
11. Increased incinerator availability,
12. The causes of incinerator downtime and its overall percentage of incinerator downtime.

The Gainsharing results also documented the causes of MHI down time and the number of hours. This had never been quantified before and is given below:

Cause of MHI Downtime	**Total Hours**	**% of Total**
De-slagging Incinerator	350	48
Ash System Plug-ups	210	29
Incinerator Maintenance	80	11
Dewatering Maintenance	70	10
Not enough sludge	10	1
Air pollution monitors	10	1
Total	730	100

The Gainsharing results showed 82.4% incinerator availability. The MHI design is for one incinerator out of 6 to be down for maintenance (83% availability).

What is critical in the Gainsharing results is that the MHI operation performance was turned around, after the proper MHI Operational procedures were implemented in 2001. However, it was too late in the FB justification process, as the decision to build new FBs had been made and approved by EPA and MPCA.

What is critical in the Gainsharing results is the cause of MHI downtime. The results show that the incinerator downtime maintenance is only a nominal portion (11%) of the overall downtime. Slag control (48%) and ash system plug-ups (29%), accounted for 77% of the downtime.

Slag control should have been the focus of MHI improvement to reduce downtime, which could be done by process control of combustion temperatures by the use of water sprays; such as at Seneca (Papers 3, 27, 31), improving the ash crusher and other items. Metro Plant Engineering management clearly failed to instruct MHI operators in correctly controlling MHI temperatures to prevent slag formation.

The ash system plug-ups accounted for 29% of downtime, which suggests that the **ash system (not the MHIs) needed replacing,** after 20+ years. In fact, the ash system started wearing out only after 3 years of operation. Just before 1996 Labor Day weekend, the entire MHI and solids processing was shut down because the ash system could not pull the ash from the MHIs. I had to find the problem, as the ash system was my responsibility. The problem was that an ash receiving cyclone had a hole worn thru the cyclone due to ash abrasion, so that the vacuum pumps could not transport any ash, which resulted in having to put the MHIs on hold and stop all sludge processing. The solution was to weld J-hooks inside the cyclone and install an inch of castable concrete. Ultimately all the ash cyclones were lined with concrete, which the MPCA can inspect. Afterwards, as part of the monthly preventative maintenance program, I would inspect the ash system for leakage. After 20 years of MHI operation the solution is to replace the ash system, not the entire MHI building and associated equipment. Now, the 20-year-old FB system has fundamentally the same ash problem, extensive pipe wear due to ash abrasion and ash leakage into the plant. Due to the abrasive nature of ash, it should have been expected to have to replace ash system components on a period basis.

The 100+ Metro plant employees were awarded $287,207.50, by the Met Council in September 2002. I argued against that payment, as I testified at the Met Council meeting that the procedures were part of the manufactures O&M manuals and past practices (Paper #38). A Minnesota state legislator was present at that Council meeting, then in April 2003 wrote a revision to the Gainsharing bill to repeal the Minnesota Statute, for the 'Gainsharing' program (Paper 46).

At a July 10, 2002 Metropolitan Council Environment Committee meeting concerning the approval to award the Gainsharing payment, one Council member asked,

> **'Why didn't our consultants make these recommendations (i.e., Gainsharing proposal, paper #35)?'**

There was no response from senior management, Bill Moore concerning this question. This question is incredibly important concerning consultant recommendations, in lieu of the EPA lawsuit and as what Met

Council consultants were recommending. In fact, none of the four national consultants from 1996 to 2001, whom were recommending construction of a new $200 million-dollar facility, made any recommendations to: 1) Operate and maintain the MHI's in good engineering practice, 2) Inspect the MHI in accordance with manufactures procedures, 3) Provide reasonable cost estimates for upgrading the six (6) MHI's, 4) Provide recommendations to replace the leaking emergency dampers, 5) Provide recommendations to reduce particulate emissions, via installing electrostatic precipitators or Venturi Pak scrubbers 5) Provide reasonable present worth, life cycle analysis of comparing costs for new fluid bed incinerators verses rehab of old MHI's. All of these papers (33 thru 46) relate to the Metro Plant Incinerator Gainsharing Program.

The incinerator process control procedures implemented on January 1, 2001 are what Mr. William Moore and MCES staff should have implemented in July 1997, when the EPA filed the 'Notice of Violation'. By the time the results of the incinerator 'Gainsharing' improvements were known in early 2002, it was too late to stop the new $200+ million Fluid Bed Project.

Concerning MHI maintenance, in the 1980's, Dr. Nadim Shamat, my supervisor at the time instituted a monthly MHI shutdown, scheduled for the third Wednesday of the month, when all MHI and dewatering equipment would be shut-down for maintenance (Paper #13). Each month, a list of items to be fixed by maintenance staff would be completed; such as, ash pipe repairs, calibration of weigh belts, instrument calibrations, dewatering equipment repair, cleaning APC mist eliminators, testing of emergency generators, boiler repairs, etc. The Metro Plant in the 1980's had an excellent maintenance staff of machinist, bricklayers, painters, electricians etc. Had routine MHI maintenance been continued, the MPCA staff would not have found that the 'MHIs were on their last legs'.

I request that MPCA ask both the Bill Moore, Operation staff and consultants '

> **Why weren't the Gainsharing recommendations implemented in July 1997, after the EPA Notice of Violation?'**

The Consent Decree was not a 'Finding of Fact'. By not operating & maintaining the MHI on a timely basis (Gainsharing), Met Council failed to 'minimize to contributions of the fluid bed project', as the EPA lawsuit may not have occurred and FBs may not have been needed.

Issue #4 - Met Council Staff Concealed Engineering and Technical Reports from Judge Frank, EPA, DOJ, MPCA, and public concerning the Metro Plant Solids Handling Project.

The Metropolitan Council staff verbally told the EPA that 'all of my suggestions were tried and that nothing worked' is simply not true. Also, Met Council staff concealed the multiple, independent engineering reports that were the basis for my recommendations. Subsequently, the Honorable Federal Judge Donovan Frank erroneously concluded in the Consent Decree:

> "... It is the Court's finding that Mr. Greenwood's view on the relative merits of upgrading the old incinerators vis-a vis installing new incinerators were fairly and fully considered during the Met's public decision-making process in the late 1990's...."

In fact, all of 'my views on the merits of upgrading the old incinerators' were based on prior engineering reports, papers and studies conducted by major engineering consultants, University of Minnesota

professors and results from other cities, with only one exception: The installation of new emergency dampers, because I discovered the damper leakage in the fall of 1990. It was never disclosed to the Honorable Judge Donovan Frank, as to the source for each of my recommendations and views. Also, all the suggestions have been proven in at least one treatment plant facility.

On June 28, 2007, I wrote a public letter to Mr. Tom Weaver, the Chair of Metropolitan Council,

> "Concealment of Documents to the Honorable Federal Judge Donovan Frank, Department of Justice {Joel Gross, James Lofton, Friedrich Siekert}, EPA {Steven Herman, Francis Lyons, and Mary McAuliffe}, MPCA, Metropolitan Council, & Environmentalists Concerning Federal Lawsuit, Civil Action No.99-CV-1105, United States vs. Metropolitan Council, Metropolitan Council Procedure 4-6d, Fraud, 9/2006".

My public letter (Paper #128) was written in accordance with the Metropolitan Council Procedure 4-6d, which requires employees who discover or suspects fraudulent activity to contact the Program and Audit Department, which I did. The Procedure defines Fraud as, "Fraud is defined as the intentional, false representation or concealment of documents or facts". I listed many technical documents that were not disclosed during the public hearings and/or to the EPA and Judge Donovan Frank. My June 2007 letter was never responded to by the Met Council.

Listed below are the sources of my engineering recommendations listed in my memo "Suggestions on how reduce odors, particulate, mercury and heavy metal emissions and cut the capital budget by $125 to $150 million":

1. Rehabilitation of multiple hearth incinerators verses building new fluid bed incinerators

In 1990, Havens and Emerson evaluated for the Metro Plant, three basic solids handling alternatives: 1) land application, 2) new fluid bed incinerators and 3) continued use of the multiple hearth incinerators. Haven and Emerson's stated the following:

{"...Because of the great existing investment in the sludge incineration system ($160+ million) at the Metro WWTP the cost-effective analysis favored the continued use of incineration as the sludge treatment alternative.... Multiple hearth incineration is the existing sludge management system at the Metro WWTP. The system requires no initial investment and can be rehabilitated to increase its useful life so it becomes equal to the design period. Even though the existing incineration system is not the best currently available incineration system, the total present worth of the incineration system is the lowest of all alternatives evaluated over the 20 –year period used for analysis in this study.... In spite of the expected 503 regulator restrictions, incineration is still a viable option for processing the total sludge production of the Metro WWTP. However, as discussed previously, proper measures will have to be taken to comply with the proposed 503 or other applicable regulations.....Finally, the air pollution control system could be improved to achieve the required control removal efficiencies. It has been demonstrated that fabric (baghouse) filters following multiple hearth incinerators can achieve cadmium removal efficiencies similar to those required, and electrostatic precipitators (ESPs) can provide efficiencies greater than those required...The approximate cost for the fabric filters and ESPs are $2,000,000 and $1,500,000 respectively..."

The Havens and Emerson recommendations were as follows:

a. Rehabilitate the existing multiple hearth incinerators for $18.3 million by the year 2001 (~$3 million per incinerator),
b. Upgrade the air pollution control equipment in 1996 ($1.5 million for electrostatic precipitators or $2.0 million for bagfilters) and

c. Install a land application disposal process to backup/supplement multiple hearth incineration.}

Rehabilitation of the multiple hearth incinerators was first recommended by Havens and Emerson in 1991, which they recommended upgrading the incinerator scrubber in 5 years (in 1996 electrostatic precipitators or bagfilters) and rehabilitating the six old incinerators in 2001 for $18.3 million (Paper #1). This key report was never disclosed to the public, Met Council, EPA, DOJ or Federal Judge Frank. The Met Council is still operating the Seneca WWPT, which has been properly and cost effectively upgraded, operated and maintained. A tour of the Seneca facilities is recommended for the EPA, DOJ and the Honorable Judge Donovan Frank.

On November 5, 2001, Robert Cattanach of Dorsey & Whitney LLP wrote a response to Mary McAuliffe Esq., Region 5 EPA attorney, in which they stated (Paper 100),

> "...The Council first evaluated the use of fluidized bed incinerators (among other alternatives) at the Metro Plant in its Master Plan completed in June 1997....".

This statement by Dorsey & Whitney (Met Council lawyers) to the Federal EPA, DOJ and Judge Donovan Frank is completely incorrect, false and/or misleading, as Havens & Emerson evaluated both rehab of MHI and construction of new FB by 1991 for the Metro Plant.

2. **Install Venturi Pak** – The need to upgrading the old venturi scrubber to reduce particulate and heavy metal emissions was recognized by multiple people and groups by the early 1990's. In the early 1990's only electrostatic precipitators and bagfilters were proven. Havens and Emerson, Dr. Jinjun Sun (Univ. of Minn.), Dr. Ben Liu (Univ. of Minn.), Dr. Nadim, Adjunct Professor and Metro Plant Incinerator Process Control Manager and myself realized the need to upgrade the air pollution control equipment by the early 1990's (Paper - #1, 2, 14, 18, 19, 20, 23, 30, 55, and 73). By 1995, the venturi-Pak was proven in full-scale operation to reduce sub-micron particulate emission. Indianapolis first demonstrated the Venturi Pak in the ~1994, to reduce particulate & opacity emissions. MCES management knew of the Indianapolis scrubber upgrade results by the mid-1990's (Paper 62).

3. **Install Centrifuges to shutdown Zimpro** - This was a 1993 Montgomery Watson recommendation to install centrifuges by 1998, shutdown Zimpro and save about $3 million per year in O&M costs (Paper- #3, 57, 59 and 64) and reduce plant odors. Centrifuges were proven at major cities in the US by the mid-1990's, including New York, Chicago, Los Angles and the Seneca WWTP. The ability to burn centrifuge sludge in a multiple hearth incinerator was proven at Seneca and Prince William by the mid-1990's. Chemicals emitted by the Zimpro process were quantified by University of Minnesota graduate students in the early 1980's (Paper #9). The chemical emissions that were emitted via the Zimpro process were not disclosed to the Dayton's Bluff neighbors at the public hearings.

During the public hearings, project descriptions on the Metro Plant Incinerators, MCES staff would always state the 'Project' was going to reduce odors and operational costs. However, it was not disclosed to the public that it was the centrifuge project, which would eliminate odors by the elimination of Zimpro and that is never disclosed that the centrifuges could be installed, independently of any incinerators. Also, the centrifuges had a $3 million-year costs savings or about a 4-year payback period ($12 million cost / $3 million per year savings). The payback period of new fluid bed incinerators, independent of centrifuge savings was never presented to the public. Also, the public was

never informed that new air pollution control scrubbers could be installed to reduce particulate, heavy metal and mercury emissions. The odor control and yearly cost savings by installation of centrifuges were used to justify to the public on a new $200 million-dollar incineration system and the public was not informed that centrifuges could be installed independent of new FBs.

4. **Replace / repair emergency damper** – This was requested by William Haapala, Director of Operations in a memo to William Moore in a memo dated February 10, 1992 (Paper #50). I discovered air leakage around the emergency damper in the fall of 1990 by having Air Quality Control staff measure air leakage into the multiple hearth incinerator, when it was under negative pressure (Papers 47, 48, 49, 51). Based on the measured leakage, I started asking maintenance staff how the emergency damper could be repaired or replaced. Leak proof emergency dampers have been in use at the Seneca WWTP for over a decade.

5. **Chemical precipitation to remove heavy metals** – This pilot tested by Dr. Steve Balough in the late 1980's at the Metro Plant (Paper #6). Chemical precipitation to reduce heavy metal and mercury emissions was implemented at the Duluth WWTP in the early 1990's, but now shutdown.

6. **Install 600 Hp motors to replace the 500 Hp motor** and prevent incinerator emergency damper bypasses at high amp readings, by the shutdown of the motor. This was tested and discussed in multiple reports by Dr. Nadim Shamat, MCES staff, Trinity Engineering, BBS Engineering and Brown & Caldwell - F. Michael Lewis (Papers #4, 11, 17, 19, 20, 47, 60). Basically, the incinerator was designed for an excess air rate of 125%; while the actual excess air was about 200%. A larger motor was needed to handle the extra air leaking into the incinerator ductwork. The 1995 Brown & Caldwell report stated (Paper #4)

   "…Only Alternative 3b (new fan and new 600 Hp drive can meet the original 3.2 dry tons per hour (dtph)/27 percent cake design objective assuming current leakage levels."

   A documented reason for not installing a correctly sized motor and fan was never closed to the public, EPA and Judge Frank.

7. **Install variable-speed motors** – This was tested and discussed in multiple reports by Dr. Nadim Shamat, Metro Plant Staff, Trinity Engineering, BBS Engineering and Brown & Caldwell - F. Michael Lewis, (Papers - #4, 11, 17, 19, 20, 47, 60). A VFD motor was expected to reduce annual ID Fan electric motor costs by 30% (from $118,000 to $81,000). Variable speed motors for the multiple hearth incinerators were never installed, but variable speed motors were installed for fluid bed incinerators,

8. **Install incinerator water sprays for cooling** - The installation of water-cooling sprays was first recommended for the Metro Plant by Charles Richmond of BBS Engineering in the early 1990's. These are needed to help prevent temperature flare ups & incinerator dumps. I designed, tested and proved the operation of water sprays at Seneca in multiple hearth incinerators in 1999, as being able to prevent high temperature excursions and incinerator dumps (Papers #25, 27).

9. **Inspection of Incinerators by manufacture or qualified firm** – An inspection the MHI brickwork and shell ultrasonic testing by 'qualified' firm was recommended by the incinerator manufacture BSP. Incinerator inspection required going inside the incinerators, which should be obvious, but none of the

consultants ever went inside the incinerator for a structural inspection. MHI inspection procedure details are in Paper #33.5.

10. Cover Primary Tanks - This was recommended by Malcolm-Pirnie in 1995 (Paper #8).

11. Cover Gravity Tanks – This was recommended by Malcolm-Pirnie in 1995 (Paper #8).

12. Cover Aeration Influent Channels – This was recommended by Malcolm-Pirnie in 1995 (Paper #8).

13. Install Electrostatic precipitators or Bagfilters to reduce particulate & heavy metal emissions was by Havens & Emerson (Paper #1, 20),

By not implementing low cost MHI upgrades (new air pollution control equipment, emergency damper replacement, 600 hp variable speed motor, water sprays, etc.) on a timely basis, Met Council failed to 'minimize to contributions of the fluid bed project', as new FBs would not have been needed.

14. Modifications needed to reliably operate MHI at design capacity.

In 1987, Dr Nadim Shamat and I wrote in a technical paper 'Operation and Maintenance of State of Art Sludge Incineration and Heat Recovery' which stated the following:

> "...The incinerators are designed for a capacity of 3.45 dtph. The loading rate under normal operation is 75% of design...

After MHI startup in 1983 of the upgraded and new MHI, Dr. Shamat had the MHI operated under reduced loadings of about 25% in order to prevent incinerator dumps. He started evaluating and looking into getting larger ID fan, variable speed motors, in an effort to be able to operate the MHI at design loadings, without having to dump the MHI and open the emergency damper.

These three MHI improvements were needed to ensure the MHI could reliably operate at peak design capacity 3.45 dtph without dumping the MHI:

1. Replace 500 hp ID fan motor with a variable speed 600 hp motor – to account for air leakage into system and reduce energy costs.
2. Install water cooling sprays – Reduces the mass loading to ID fan during flare ups. Using water instead of air uses about ¼ less mass for cooling. Water is used universally to put out fires. Secondly, any water sprayed into the combustion hearth will condense in the subcooler, therefore resulting in no increase in mass loading to the ID fan; thus, reducing the chance for an ID fan shutdown & emergency damper opening. MHI operators were put into a very difficult position of having to control flare-ups & preventing incinerator dumps.
3. Install leak proof emergency dampers – Reduce air leakage into the system, engineering management stopped this project in the early 1990's.

I request that MPCA require that the Met Council project engineer, Rene Heflin submit to all the Met Council engineering testing results for all of the 'suggestions' listed Paper #91 to improve the MHIs (Venturi-Pak, emergency dampers, 600 hp variable speed motor, water cooling sprays, centrifuges, tank covers etc.) which document that these improvements in fact did not work. If the 'suggestions' did not work – what corrective actions were taken to make the improvement work.

The Consent Decree was not a 'Finding of Fact'. By not making the minor MHI modifications, as recommended by multiple engineers on a timely basis, Met Council failed to 'minimize to contributions of the fluid bed project', as new FBs may not have been needed.

Issue #5. The 1998 $93 million MHI ($5 million/MHI) rehabilitation cost estimate was misrepresentative.

The $92 million cost estimate to rehab the existing MHI in the CH2MHILL Facility Plan (FP) was knowingly misrepresented, in order to self-justify the construction of a new $200 million-dollar FB facility. The $93 million rehab cost was based on an MCES memo from Jim Brown, dated 4/11/98, stating the following:

> "...Someone (Construction ?) should go thru the Seneca rebuild cost in detail and breakout exactly what inc work was done and how much it cost. The Solids Core Team roughly scaled up Seneca's cost to $90 million for Metro. I think we need a better number to be able to evaluate how realistic or complete any proposal received might be".

The problem with the Seneca scaled up cost is the 'Solids Core Team' would have had to determine costs for: ash silos, building structural modifications, thickening centrifuges, dewatering centrifuges, odor control systems and many other none related incinerator modifications. The '...go thru the Seneca rebuild cost in detail...' was never done and/or disclosed, thus the $90 million rehab cost is misleading and misrepresentative. Then, CH2MHILL added $2 million for a RHOX process to the $90 million cost, which ultimately never was needed.

The proof that the $90 million rehab cost (@ $15 million/MHI) was misrepresentative can be shown by comparing actual MHI rehabilitation costs from other cities. Listed below are reported costs from 8 cities to upgrade a total of 25 MHI's.

Table 1 – List of costs to upgrade 25 multiple hearth incinerators in 8 cities

		Year	Cost Millions $	MHI #	Millions$ /MHI	(1) Cost Millions 2001$	Millions 2001$/MHI	Millions 2023$/MHI
1	Detroit	2015	38.0	8	4.75	24.7	3.1	5.3
2	St. Louis	2015	13.0	7	1.86	9.7	1.4	2.4
3	Brockton	2010	2.9	1	2.94	2.4	2.4	4.1
4	Millbury	2004	7.0	3	2.33	2.2	0.7	1.2
5	Atlanta	2000	4.5	1	4.50	4.5	4.5	7.7
6	Canton	1996	3.0	2	1.50	3.4	1.7	2.9
7	Fitchberg	1997	5.0	1	5.00	5.5	5.5	9.5
8	Seneca	2018	1.2	2	0.60	0.9	0.5	0.9
	Total		**74.6**	**25**		**53.3**		
	Average		**2.98**				**2.1**	**4.2**

A total of $73.4 million was spent to upgrade 25 MHI's with an average of $2.98 million per MHI. The $92+ million estimate to rehab 6 MHIs at the Metro Plant is factually fraudulent. The 1991 Havens and Emerson MHI upgrade cost of $18.3 million for 6 MHI or about $3 million per MHI, (paper #1) was a fair estimate based on the 25 actual MHI upgrade costs which averaged $2.98 million per MHI or $2.1 million, when adjusted to 2001$.

The consultant CH2MHILL knew that the MCES $90 million cost estimate was wrong and were told to use this value in report. On February 1999, a meeting was held to discuss the response to my memo (Paper #91) to save $250+ million and upgrade the MHIs. In attendance were Met Council lawyers, senior management and CH2MHll engineers. Rebecca Flood stated that one of the main reasons for not upgrading the old MHI's was that the $92 million rehabilitation cost would have exceeded 50% of the original capital cost, which would thus require multiple permitting issues. Privately after the meeting, the CH2MHILL incineration expert, told me that everything I recommended in my memo 'How to reduce particulate, odor & heavy metal emissions..." could have be done for the costs I stated. However, CH2MHILL was told by MCES staff to use MCES cost estimate ($90 million dollar for rehab) for their Facility Plan. Thus, the rational of not upgrading the MHIs because of additional regulatory requirements by Rebecca Flood is not valid because of $92 million MHI rehab cost was misrepresented.

After about 1998, there were four national consultants (CDM, Brown & Caldwell, CH2MHILL, Black & Vetch) whom evaluated the Metro Plant MHI's in some manner, all of consultant's were recommending building a new $200 million dollar facility, yet not one of the consultants provided a 'fair and square' cost estimate for upgrading the MHI, as did Havens & Emerson did in 1991 (Paper #1), nor did the consultants point out that the $90 million rehab cost estimate was overly inflated and should be corrected.

In 1998, 16-year, State Representative Sheldon Johnson complained about the unfair reports on how to handle the biosolids, in an article in the Star & Tribune (Paper #101):

> "...Outdated equipment at the 50-year-old metro plant...has created the need for a $200 million project to improve the existing system...staffers have failed to provide a fair and complete analysis on how to handle the sewage...."

Representative Johnson is correct that MCES staff did not provide 'a fair and complete analysis on how to handle sewage'. The unfair reports are due to the paid, national consultants recommended a new $200 million incineration facility: without any MHI incinerator inspections, valid rehab cost estimates, and/or recommendations on how to reduce emissions without new incinerators. The MHIs could run for decades longer and that air emissions: particulates, odors, mercury & heavy metals can be reduced without new incinerators. None of the four national consulting firms, after the 1991 Havens & Emerson MHI recommendations, gave a written estimate to rehab the existing MHI's and upgrade the pollution control equipment, even though they were recommending the construction of a new $200 million facility and were able to profit from.

Detroit, the nation's largest treatment plant is the best example of the cost of upgrading old MHI's and using a 75-service life. In 2015, Detroit spent $38 million to rehabilitate 8 MHI's dating from the early 1970's (Paper 173). In comparison, MCES spent about $160 million for a facility with 3 new fluid bed incinerators in 2004, which cost $18 million to fix in 2012. Now, another $150 million is needed for the fourth fluid bed and $30 million more to fix three fluid beds again needs to be spent in 2028. The MCES

FB total capital cost is over $300 million, compared to Detroit spending $38 million on their 50-year-old MHI's!!! Atlanta in 2001, demonstrated how an upgraded MHI could reduce heavy metal, mercury, particulate and opacity by installing a Venturi-Pak scrubber and increase the feed rate to the MHI (Paper #30).

Industrial Furnace Inc is a business that repairs and upgrades MHIs, FBs and other commercial incinerators. Concerning MHI rehab costs their website (www.industricalfurnace.com/meeting-epa-regulations-on-a-4-million-budget) states the following:

> **"Multiple Hearth Furnaces: Meeting EPA Regulations on a $4 Million Budget**
> In May of 2011, the EPA introduced new emissions requirements based on section 129 of the Clean Air Act. Since then, there has been much hysteria in the industry, questioning the future of Multiple Hearth Furnaces (MHFs) and their role in thermal processing of biosolids. Despite all of the chaos, it is clear that it is not the intent of the EPA to regulate Multiple Hearth Furnaces out of existence.
>
> The actual regulations of Sewage Sludge Incinerators (SSI's) are found in Part 60 of the Clean Air Act, specifically in subparts "LLLL" (Quad L) for new installations, and "MMMM" (Quad M) for existing units. While both categories are stricter in allowable emissions, the EPA understood that two categories needed to be created to allow existing units to continue operation, and that the Clean Air Act required them to establish technology-based emission standards that are *achievable* for new and *existing* units based on a multitude of factors, cost being one of them. The two tables below summarize the emission limits for Multiple Hearth Furnaces for the nine pollutants that will be regulated.
>
> The new emission limits have raised concerns for all SSI owners, but multiple hearth furnace owners seem to have worried more than necessary. This is particularly due to the fact that many highly flawed articles and papers have been circulating, stating that multiple hearth furnaces will not be able to meet the new regulations, or will prove too costly to upgrade. Some have even stated that it is cheaper to install a new fluidized bed incinerator than it would be to upgrade an existing multiple hearth furnace. These statements could not be further from the truth, as exhibited by the EPA's own words and actions. There are many proven methods that allow owners to upgrade their existing Multiple Hearth Furnace for an average of $4-$5 million, and continue operations for many years to come."

The statement by Industrial Furnace about MHI rehab costs validates what the 1991 Havens & Emerson MHI rehab costs and recommendations (#1) for rehab of 6 MHI at $18 million total ($3 million/MHI) in year 2000. Their comment also validates what I wrote in my 1998 memo "**Suggestions on how to reduce odors particulate, mercury & heavy metal emissions without new incinerators and cut the capital budget by $125 to $150 million**" When adjusted for inflation, the $3 million/MHI in 2000 is about $4 million/MHI in 2023. It is critical for the MPCA staff to read and thoroughly understand the significance of the Industrial Furnace's statement about

> "...many highly flawed articles and papers have been circulating, stating that multiple hearth furnaces will not be able to meet the new regulations, or will prove too costly to upgrade..."

This directly relates to the Met Council's consultant and staff analysis and public papers on the MHI rehab costs. The Minnesota Board of Engineering should have been flooded with ethic complaints about this

issue (costs & meeting regulations), as 'misrepresentation' is required to be reported to the Board of Engineering per State regulations; thus, the State and MPCA need an investigation on this issue. Concerning FB costs, the Met Council's webpage (https://metrocouncil.org/Wastewater-Water/Projects/Metro-Plant-Solids-Management.aspx) on the 4th Fluid Bed Incinerator ($150 million) states the following:

> "...COST EFFECTIVE – Adding a fourth incinerator costs 50% less to construct, operate and maintain than any other solids processing alternative.."

This statement is simply fraudulent, deceptive and misleading to the public. MCES is publicly stating effectively the second lowest cost alternative is $300 million (=$150 million/0.50). Detroit spent $38 million to upgrade 8 MHIs from the 1970's (Paper 173). The costs to upgrade 25 MHIs from 7 cities totaled only $74.8 million (See Table 1). MPCA staff should have no obligation to approve a $150 million project which is based on fraudulent cost estimates, which could result in the loss of over a $125 million in public money. Met Council engineering presented no data to validate that rehabilitation of two MHIs, install centrifuges and miscellaneous building repairs is going to cost over $300 million.

Any MHI upgrades costs will be now more expensive because the facility has been neglected for 20 years, however, these costs should be considered costs due to negligence. The interior of the 408 building would need to be cleaned and painted, along with minor building repairs. However, these types of costs would be less expensive that building a new building.

Concerning lower FB maintenance costs, the Met Council is stating that another $30 million is needed in 2028 to rehab the 3 FBs ($10 million per FBI) after 24 years of operation, which is on-top of the about $15 million spent in 2012 and $20 million in 2019 (I don't have the exact repair costs). The maintenance repair costs are staggering for this FB system. A public report on what the true total FB maintenance costs are over the 24-year period (2004 to 2028) is needed. These FB maintenance costs can be compared to the Seneca MHI maintenance costs over the same period.

The Consent Decree was not a 'Finding of Fact'. By providing a knowingly providing a misrepresentative, MHI upgrade cost estimate, Met Council failed to 'minimize to contributions of the fluid bed project', as FBs may not have been needed, as many facilities are repairing, not replacing old MHIs, like Seneca.

Issue 6 – The Life Cycle Analysis of MHI Rehabilitation Costs vs. New FB's was misrepresented and could result in an economic loss of $400 to $600+ million.

The CH2MHILL response dated February 24, 1999 (Paper #94) stated:

> "... An economic analysis was carried out during preparation of the FP for options that included upgrading the existing MHFs. The results indicated that the lifecycle costs were comparable to that of a new facility...."

The referenced economic analysis was never included in any of the four consultants' (CDM, Brown & Caldwell, CH2MHILL, Black & Vetch) MHI evaluation reports (Papers #105, 107, 108, 117 & 172), which is very suspect and the referenced analysis was never subject for public review.

This complaint is the economic analysis stating life cycle costs for rehabilitation MHI's are comparable to building a new $200 million facility is fraudulent, misleading, and deceptive for four main reasons, which are:

1. MHI rehab costs were grossly overestimated at $92 million versus $30± million for MHI upgrades & centrifuges.
2. Fluid Bed Facilities for four FB's were grossly underestimated at $200 million, compared to $160+ million (2004) and the proposed $150 million costs.
3. Fluid Bed Incinerator repair due to ash abrasion costing $48± million was not budgeted for. There was no cyclone separator after the FB, to reduce ash loading and abrasion, as recommended in WPCF, Incinerator Manual of Practice OM-11, p188-189, 1988.
4. The various upgrades to the MHI to improve efficiency were not completed in a timely manner (i.e., variable speed fans, installing Venturi-Pak scrubber, replacing emergency damper, delaying centrifuge installing, adding insulation to ducts between the MHI and boilers etc.) to reduce MHI O&M costs. By not doing these needed minor improvements, the annual MHI operational costs were inflated.

I am requesting that the MPCA require the Met Council engineering staff to submit the referenced 1999 lifecycle cost analysis for public review. If engineering staff claims the lifecycle analysis can't be found, then the MPCA should require the Met Council Engineering staff calculate a new MHI vs FB life cost cycle analysis, which now can be based on actual costs. All the past costs can be adjusted to current 2023 costs via the appropriate inflation costs.

The following costs should be included in the FB vs MHI life project cost cycle economic analysis:

a. The MHI rehab cost in based on Havens & Emerson estimated a cost of $18.3 million, about $3 million/MHI should be used. The average cost from Table 1 for 25 MHIs is $2.98 million/MHI, so the Havens & Emerson MHI rehab cost estimate is fair & accurate. In 2023, a budgetary cost of $4 million per MHI is valid per Industrial Furnace.
b. Six more centrifuges needed to be installed at about $12 million.
c. The $160 million for the FB facility (3 FB's) is from the WIRE publication.
d. A $17.9 million-dollar capital project was done in 2012 for leaking FB piping and any repair project in about the year 2020 needs to be included.
e. The projected $30 million capital FB repair project in 2028
f. A fourth FB needs to be installed at a cost of $150± million
g. Landfill costs of $400,000 per year need to be included,
h. The costs for not implementing needed MHI fixes must be added to the cost of waiting for the new FB.
    - O&M costs in delaying shutdown of Zimpro at a cost of $3 million per year, Montgomery Watson for about 6 years (Paper #3).
    - O&M cost of not installing variable speed motors, which would reduce annual motor electric costs by 30% (Paper 17, 47).
    - O&M cost to run Venturi at 30" w.c., instead of 15 to 20" w.c. with installation of Venturi Pak, per manufacture, which result in high electric costs.
    - O&M cost of not installing leak proof emergency dampers, resulting in higher hearth 0 fuel use, higher ID fan motor costs and unneeded MHI dumps.

i. Costs for not operating the MHI's in accordance with manufacture's O&M procedures and what done in the 1980's must be included. The 2001 Gainsharing results claimed a $1.1 million/year savings after implementation of manufacture's and past O&M procedures,
j. Engineering fees to CDM, Brown & Caldwell, CH2MHILL, & Black & Vetch, after publication of the Havens & Emerson report in 1991 recommending MHI rehab in 2000 for $18.3 million must be included.

The economic analysis to determine the economic loss, by not upgrading the six MHI's is complex and should be open for public comment, which I would clearly like to do. A final report on the economic loss should to be distributed to Federal Judge Donovan Frank, Met Council, Board of Engineering, Pioneer Press, East Side residents, legislators and environmentalists, all whom were involved with the Metro Incineration project.

By not presenting a fair and accurate MHI verses FB life cycle cost analysis, Met Council failed to 'minimize to contributions of the fluid bed project', as FBs may not have been needed, as many facilities are repairing not replacing old MHIs.

Issue 7 – The Supplemental Project Benefit-Cost Analysis (for mercury removal) was misrepresentative and subsequently misled the EPA in their 2010 proposed national incineration regulations.

A benefit-cost analysis for the Supplemental project to remove mercury was required to be submitted after the construction of the new $200 million incineration facility. In my letter to the EPA dated, September 28, 2000 I stated the following:

> "1. If the project proceeds as scheduled, the public health benefit/cost analysis of the Supplemental Project to install Dry Electrostatic Precipitators (later changed to bagfilters with carbon injection) should be done before the project is constructed, not after. An analogy is that an engineer does structural bridge calculations before a bridge is built, not after. If it is found that the public health benefit/cost ratio from this Supplemental Project is negligible after it is built, then the rate payers will pay for a useless project. There will be no accountability in this project, if it is determined after the construction that there is not health benefit. The project cost should also include building costs and annual operation and maintenance costs.

One of the major selling points to the public for having a new $200 million fluid bed incinerator system was the mercury removal process. The Saint Paul Pioneer Press, Editorial Board in an editorial April 27, 1998:

> "**Cut project to cut mercury emissions** – It is difficult for the average person to regard the possible construction of a $200 million sludge incinerator as an opportunity… The public should join in pressing the council for a balance, cost-effective plan to reduce its mercury emissions"

After construction of the new FB facility, a benefit – cost analysis report was submitted by Rebecca Flood, but not publicly published to my knowledge. The MCES analysis had to be misrepresented.

In 2010, the EPA published proposed biosolids regulations using 'Best Available Technology', which included standards for mercury removal that were based on the Minneapolis - St. Paul WWPT. The Metro Plant was the only WWTP in the country which used this technology. The EPA stated in the proposed rules:

> "...We (EPA) believe activated carbon injection is applicable to both types of SSI combustors and do not know of any technical reason that activated carbon injection could not be applied to reduce Hg emissions at MH units. We are requesting comment and additional information on the feasibility of using this technology on MH unit.

The Clean Air Act requires that the EPA consider both cost and operational issues in evaluating the new processes, which is very reasonable. CAA Section 129 (a) (2) states:

> "…. Taking into consideration the cost of achieving such emission reduction and any nonair quality health and environmental impacts and energy requirements. This level of control is referred to as a MACT standard".

During the public comment period during November 2010, the EPA received comments concerning mercury emission control costs and operation. Commenters requested that EPA reconsider the beyond the floor Hg limit for MH units because baseline Hg emissions were overstated and costs for Hg control were understated. After EPA review of Hg emission control and associated costs, the EPA reversed its position on requiring Hg control for municipal incinerators, stating in the Federal Register, March 21, 2011, Vol. 76,

> "...At the MACT floor level, we do not estimate that any SSI will need to add control for Hg, PCDD/PCDF, or CO...."

The Minneapolis-St. Paul remains the only treatment plant in the country with mercury control. Had Rebecca Flood and the Met Council provided a fair benefit cost analysis on the Supplemental and disclosed the ash abrasion problems to the EPA prior to 2010, the EPA would never have had stimulate the requirement for mercury removal in proposed national regulations.

Because of the reversal of EPA proposed Hg control regulations, I request that the MPCA in conjunction with the Minnesota Department of Health and EPA conduct a factual review of the Met Council's Benefit Cost Analysis to determine if a fraudulent benefit-cost analysis was submitted to the EPA and Court.

By installing Hg control on the proposed $150 million project, the Met Council is simply wasting public money on something that is not required and is an irreversible waste of money and irreversible increase in carbon emissions. The mercury control monies could be better spent by building health care clinics in the economically disadvantaged areas of the Metro Area.

Issue 8 – Miscellaneous Justifications for new FB's

This section discusses various miscellaneous justifications for new FBs (Energy recovery, PM-10 Non-Attainment Area, Carbon Emissions, 25-year design life and Odor) which are deceitful.

PM-10 Non-Attainment Area:

In the 1980's, the Metro plant was in a PM-10 Non-Attainment Area. Also, there were major industries in the area which were a major source of fine particulates emissions. The fact that the Metro Plant was in a non-attainment area was used as a justification for new fluid bed incinerators. However, if the MPCA reads the Doctoral Thesis written by the University of Minnesota graduate student (Paper 2) the cause of MHI submicron emissions is not due to having an old MHIs, but rather an old, out-date scrubber, which could not remove sub-micron particulates. Senior engineering management stopped the 'Fine Particulate Emission Reduction' project. Also, by 2004 when the FBs where installed, it is my understanding the area was reclassified as an Attainment Area.

FB Energy Recovery:

Concerning FB Energy Recovery, the Met Council website states:

> "Incineration recovers enough energy to power 800 homes. The energy recovered is used in the plant and saves the ratepayers $1.8 million per year." What the Met Council is not stating is the old MHIs also had energy recovery.

However, what the Met Council staff are not revealing is that old MHIs 7, 8, 9 and 10 also had energy recovery systems. New fluid bed incinerators were not needed for energy recovery, as the old MHI's had energy recovery. Concerning the old MHIs, the Incineration - Manual of Practice OM-11, Water Pollution Control Federation, 1988, page 232 states:

> "The new incineration system was put into operation in October 1982.... The value of recovered steam was $1,400,000 million...In 1985, a description of the project was submitted to the state of Minnesota and the U.S. Department of Energy (DOE) for recognition of energy conservation measures. The project was awarded Minnesota's Ninth Annual Energy Savers Award of Excellence and the DOE's Special Recognition Nation Award for Energy Innovation."

The public was not clearly informed that the old MHI had energy recovery systems. The new fluid bed project can't be justified based on additional energy recovery.

Carbon Emissions:

Irreversible carbon emissions from projects are a major concern now. About Greenhouse Gases the Met Council's 4th FB webpage states:

> "LOW GREENHOUSE GASES - Greenhouse gas emissions are similar to other alternatives, insignificant compared to other industries and are offset through energy recovery."

The Met Council did not publish any total life cycle greenhouse emissions for the various alternatives, which would include: greenhouse gases generated from manufacturing of construction materials (concrete, glass, steel, ceramics etc.), greenhouse gases generated from construction activities and greenhouse gases generated by tax payers having to work to pay for fluid bed project capital and interest costs. The total capital project will be on the order of $330 million ($160 million for the first 3 FBs, $150 million for the 4th FB, $18 million for 2012 repairs and about $30 million in piping repairs), when interest costs are included, the total economic loss to rate payers will be on the order of $500 million, which takes significant amount of taxpayer work and energy to pay for, which will create greenhouse gases.

Upgrading the old MHI eliminates the need for a major construction project, which will reduce greenhouse gases generated due to: manufacturing, construction and working to pay for capital & interest costs.

EPA is not regulating carbon emissions from either MHI or FB, so that new FB can't be justified on carbon emissions.

Odor:

Odor from the Metro Plant was rightfully a major issue for neighbors in the 1990's. Odor from FBs and MHIs is a non-issue in EPA regulations. East Side residents signed a petition in the late 1990's requesting new fluid bed incinerators, because of the pungent odors from the plant. In the early 1980's, the University of Minnesota graduate students and professors analyzed, the odor emissions from the Zimpro process, which heated biosolids up to high temperatures and pressures (like pressure cooker) to break down bacterial walls, to enable better dewater dewatering. The major chemical classes found were aldehydes, ketones, and alcohols. Some of compounds were acetaldehyde, benzaldehyde, butanal, furan, hetanal, hexanal, methyl butanol, pentanal, propanal, and propanone (Paper 9). The high solids centrifuge technology to replace the Zimpro process was developed and known by the early 1990's and could have been installed at the Metro Plant by the late 1990's. The East Side residents were never told that the installation of high solids centrifuges could be done independently of any installation of new fluid bed incinerators. Also, the 1993 Montgomery Watson report (#3) recommendations of shutting down Zimpro and its odor emissions with the installation of centrifuges by 1998 was not disclosed at the public hearings IMO, the East Side residents were unnecessarily subjected to the Zimpro odors for at least four to six year, which was an environmental and economic injustice.

25-Year Service Life

A 25-year design life was also used a justification for abandonment of the six MHI's (Paper 107). There has been no engineering documentation provided that dictates a MHI needs to be abandoned after 25 years. When I called the BSP the manufacture about the 25-year service life, they simply stated that they can provide references of cities that have MHIs that are 30 to 50 years old. The MPCA need look no further than the Seneca WWTP, which was put into operation in the early 1970's, upgraded several times and is still in operation after about 50 years. Detroit, one of the nations largest WWTPs, upgraded eight (8) MHI from the early 1970's a few years ago for a cost of $38 million.

Now, the MHI ash system, which is subject to extreme ash abrasion obviously may not last 25 years, but the MHI ash collection system could have been replaced without having to replace the MHI, APC, building and all the associated equipment. The three FBs are being subject to same ash abrasion, which is resulting in even a more expensive repair project, because the all the biosolids ash is going thru the APC system and wearing out the FB APC system.

Issue # 9 – Consultant Conflict of Interest and/or Collusion

The MPCA staff in conjunction with State Attorney, Minnesota Board of Engineering and appropriate State legislators from the Democratic, Republican and Independent parties must investigate the issue of Consultant Conflict of Interest and/or Collusion concerning justifications for the Metro Plant Fluid Bed complex, which will date back to the early 1990's. On March 8, 1999, Jason Willett a staff member of

the Met Council finance department wrote an internal memo 'metro solids' (Paper 166), in which he stated the following:

> "...the metro solids team is meeting to discuss CH2's answers to Steve Greenwood's concerns. I cannot evaluate the technical alternatives that Steve Greenwood has raised. However, his request for rigor in the analysis and questioning of technical premises clearly require careful consideration.
>
> The "Greenwood issues" along with prior reservations raised by others (including Finance) make clear that our Facility Planning process has some inherent problems. Here are two possible improvements I think should be given consideration by senior management and/or the Council:
>
> 1) The consulting engineer that does the Facility Plan should be prohibited from bidding on the design and construction work. As the incumbent, they clearly are the favorite to be picked for this subsequent work (as happened in this case). Thus, they have a clear financial interest in selecting capital intensive option (s) in the plan. While I do not want to accuse CH2 of bending the analysis, it is surely an appearance of conflict, and this contributes to some of the questioning we have seen recurring on this project.
>
> 2) The best way to determine if a facility plan is really competitive is to put it to the market as a test..."

Mr. Willett rightly could not have known how the analysis was bent. But for the public record, the analysis was bent because the **Met Council told CH2MILL to use the $90 million rehab cost** estimate, which was based on the early 1990's Seneca Solids Handling project, which included multiple non-incineration costs: odor control, thickening centrifuges, dewatering centrifuges, tank covers etc. Privately, a CH2MHILL told me that everything that I had stated in my memo (Paper 91) could be done for the costs I stated. An investigator is needed to determine who told CH2 to use the $90 million rehab cost. Effectively, a misrepresentative rehab MHI cost was used and went out to the public, EPA and MPCA used to justify new FBs.

Mr. Willett states that the "best way to determine if a facility plan is really competitive is to put to the market as a test...". Another way is to check what are the actual MHI upgrade costs at other facilities, which I did and MHI rehab costs are tabulated in Table 1. There are eight cities with a total of 25 MHIs which were upgraded, with a total cost of $74.8 million and an average cost of $2.98 million per MHI. With six MHI's the Metro Plant MHI would have cost $18 million, excluding centrifuges and building repairs. The market place analysis of what is actually spent on MHI upgrades factually confirms that the financial analysis was intentionally 'bent', but three other consulting firms to provide valid MHI upgrade cost recommendations, which I will explain.

There were five national consulting firms, after 1990 which in some way evaluated the Metro Plant MHI's and dewatering system. Only Havens and Emerson recommend the upgrading of the MHI in 2000 at a cost of $18.3 million (which is fair), when they wrote (Paper 1):

> "...Because of the great existing investment in the sludge incineration system ($160+ million in 1980) at the Metro WWTP the cost-effective analysis favored the continued use of incineration as the sludge treatment alternative.... Multiple hearth incineration is the existing sludge management system at the Metro WWTP. The system requires no initial investment and can be rehabilitated to increase its useful life..."

Subsequently after about 1995, none of the four national consultants made no recommendations or provided a valid cost estimated for MHI upgrades in their following reports to protect the public investment of building that would cost about $400 million in today's dollars. Basically, they all concurred

with the recommendation to build a new $200 million FB facility and bid on the design of a new FB complex

a. CDM – Master Plan, 1996
b. CH2MHILL – Facility Plan, December 1998
c. Brown & Caldwell - Centrifuge Evaluation,
d. Black & Vetch, Brown & Caldwell, CH2MILL, MCES - Value Engineer Study, July 1999

The MPCA must also remember that the EPA sued the Met Council for Operation & Maintenance of the MHIs. As I previously described the Metro Plant staff in 2000 implemented a Gainsharing program to cut operational costs, but was based on manufactures O&M procedures and past 1980's MHI control procedures. At a July 10, 2002 Metropolitan Council Environment Committee meeting concerning the approval to award the Gainsharing payment, one Council member asked,

> **'Why didn't our consultants make these recommendations (i.e., Gainsharing proposal, paper #35)?'**

There was no response from Bill Moore concerning this question. In fact, none of the consultants made any recommendations to:

a. Operate the MHIs in accordance with O&M procedures.
b. Inspect the MHIs in accordance with manufactures recommendations (none of the consultants ever went in the MHIs to for a structural inspection of brickwork),
c. Install new scrubbers to reduce sub-micron particulate emissions,
d. Install new emergency damper to prevent air leakage into the ductwork.
e. Install new variable speed 600 hp motors to burn at MHI capacity,
f. Install simple air sprays to prevent temperature excursions and dumping the MHI.
g. Provide reasonable cost estimate for MHI repairs & upgrades on the order of $3 to $4 million/MHI.
h. Expedite installation of centrifuges to reduce Zimpro odors and reduce yearly O&M costs by about $3 million/year.

I am requesting that MPCA staff, reread the four major consultant reports, relating to recommendations to cost effectively upgrade and repair the old MHIs. When the consultants are recommending and bidding on a new FB complex at $200 million, without any valid recommendations to repair the old MHIs, it is an indication of 'Conflict of Interest' and/or Collusion. The public ends up paying for a FB complex, that costs hundreds of millions of dollars, which is an economic & environmental injustice.

Also, I ask that the Met Council submit to the MPCA and State officials for review, all the consulting fees for the entire FB complex, which should include, but not limited to the following: 1) Metro Plant Master Plan – CDM, 2) Facility Plan – CH2MHILL, 3) Value Engineering Study – Black & Vetch, 4) Design fees for the 2004 $160 million FB complex, 5) Design fees for the $18 million repair project in 2012, 6) Planning fees for the new $150 million FB complex, 7) Design fees for the new $150 million FB complex and 8) Design fees for the $30 million repair project. With a total capital cost of over $350 million (not adjusted for inflation), I suspect that the total consultant fees for the FBs will be very close to or exceed the cost of upgrading the MHIs in 2000 at a cost of $18.3 million, as projected by Havens & Emerson in 1991.

By not providing representative MHI upgrade cost estimates and recommendations low cost MHI upgrades, consultants failed to 'minimize to contributions of the fluid bed project', as FBs may not have been needed, as many facilities are repairing, not replacing old MHIs.

OTHER BIOSOIDS ALTERNATIVES

II. Upgrade multiple hearth incinerators 9 and/or 10 and utilize the unused biosolids dryers associated with MHI 9 and 10, to market a biosolids for land application and full-fill Met Council's past commitment for land application.

The design and construction of MHI 9 and 10, included biosolids dryers, which utilized the hot off-gases from the MHI to dry incoming wet biosolids. New high solids centrifuges would need to be installed in the dewatering building. A diagram of the MHI and dryer system is shown in Paper #. The biosolids dryers were performance tested for contractual obligations in August 1983 and I was the staff engineer responsible for process control on the Operations side. To my understanding, the dryers were installed as a backup of MHIs when one or two were down for repair. In the 1980's, the dryers were never used, as they did not need to be put into operation. These dryers did work and are effectively new. What is unique about the dryer design is that they use the waste MHI heat for drying, not natural gas.

The use of the biosolids dryers to create a biosolids product for land application would full fill the commitments by the Met Council to have about 10 to 15% land application. During the late 1990's many people spoke in favor of having land application. In 1991 Havens & Emerson stated the following (Paper 1):

> In addition to incineration, at least one other alternative should be included in the RSM plan to serve as a backup to the incineration system and to guarantee continued service. The other management alternative should be chosen from one or more of the remaining selected sludge management alternatives (i.e., in-vessel composting, heat drying, anaerobic digestion and chemical stabilization).

Also, another consultant, Peter Burrows, CH2MHILL, wrote about backup land application in a memo 'MCES Metro Solids Improvement Project', dated December 23, 1997 the following:

> "...The preferred alternative consists of 3 fluidized bed incinerators (FBI), 3 pug mill mixers for alkaline stabilization, and 8 high torque centrifuges fore dewatering. The FBIs are intended to handle annual average solids from the plant. The alkaline stabilization is intended to handle peak solids, as well as solids when the FBIs are out of service..."

The Report of the Environment Committee, 'Technology Selection for Metro Plant Solids Processing Improvements; Committee Item No. 98 - 37 - E, July 15, 1998' stated the following:

> "... The Committee felt that the alternative which best balances these key factors is the alternative of energy recovery using three fluid bed incinerators, supplemented by land application of alkaline stabilized or heat dried solids, with assurance of effective odor

> control and lowest overall costs ... It is recommended that the Metropolitan Council approve the selection of energy recovery through fluid bed incineration with beneficial use of ash, supplemented with land application for approximately 10% of the solids... "

The Met Council and past consultants were in agreement about the need to supplement incineration with a backup biosolids process. Met Council engineering staff have **failed to honor the public 1998 Met Council commitments** to have a backup land application process at the Metro Plant. The biosolids sludge dryers could have been put into service by 2000 and/or alkaline stabilization could have been implemented.

Met Council Engineering staff failed to evaluate the use of the two biosolids dyers, in conjunction with MHIs 9 and 10, as an alternate to building a new $150 million FB complex. It is requested that MPCA require the Met Council engineering staff to an engineering report for start-up of the biosolids dryers as means for land application, as an alternative.

III. Convert the two unused, sludge dryers from using MHI waste heat to using natural gas.

The existing two sludge dryers are a 1970's design. It may be more cost effective to convert the two dryers to a state-of-the art sludge dryers using natural gas, rather than MHI waste heat. This analysis would need to be done by a bon-fide biosolids dryer manufacture.

This analysis should consider both total life cycle project costs and carbon emissions (manufacturing, constructions, and carbon generated to pay for the project).

IV. Continue to landfill excess biosolids during periods of FB downtime

This alternative is basically a do-nothing option. In 2019, I asked what is the yearly cost landfilling cost for biosolids, when the FBs are down and was informed the cost is $400,000 per year. The project payback period can be quickly calculated (capital cost / yearly savings): $150,000,000 / $400,000 = 375 years! The payback would be even longer, if interest costs are included. This $150 million can't be justified on economic savings, even if the yearly biosolids disposal costs increase to a million dollars a year. Landfilling is not illegal, so it must be considered as an alternative to spending $150 million. Personally, I believe that land application is a far better environmental alternative, but the landfill should be included in alternative discussion, to ensure a fair analysis of all alternatives. The response from Met Council engineering, after I proposed this alternative was:

> "Landfilling sludge is inconsistent with the Council's Wastewater Sustainability Policy (Thrive MSP 2040 Water Resources Policy Plan). Landfilling sludge is utilized by the Council as an emergency backup for wastewater solids processing technologies such as thermal processing or anaerobic digestion. The Council does not consider landfilling of sludge to be a viable alternative for processing wastewater solids and it will not be evaluated."

The Met Council told me $400,000 a year was spent for landfilling, during FB downtime. Landfilling is not illegal. The Council's Policy could be incorrect and/or faulty which will end up requiring ratepayers to spend over a hundred of million dollars needlessly – This is theft of rate-payers money.

I request that the MPCA require that Met Council complete an analysis for landfilling biosolids considering both total life cycle project costs and life cycle carbon emissions (trucking emissions, carbon emissions from landfilling and carbon generated to pay for the project).

V. Truck excess biosolids to Seneca for processing in either MHI and/or N-Viro (which would need to be rehabilitated).

Excess biosolids during FB shutdown could be trucked to Seneca to process in the MHI's and/or N-Viro. The response from the Met Council concerning this recommendation was the following:

> "The N-Viro process at Seneca was decommissioned because incinerating at Seneca was determined to be more cost effective. Increasing solids processing capacity at Seneca for any other solids other than Seneca is prohibited by a 1989 development agreement with the City of Eagan. The Council does not consider using Seneca N-Viro for Metro Plant solids as a viable alternative for this facility plan."

I clearly understand that the MHI process may be more cost effective to operate that using the N-Viro process, excluding capital costs. However, by using the N-Viro process for only biosolids when the FB are down for service, this eliminates the need for ratepayers to spend $150 million for a new FB complex. Met Council staff clearly failed in their analysis to include the capital and interest costs in their evaluation of using N-Viro.

The Seneca WWTP has two MHI, which generally one is in operation, which would allow excess Metro Plant biosolids to be processed in the unused MHI.

The 1989 development agreement with the City of Eagan can be modified and updated concerning biosolids trucking. Any additional road maintenance costs associated due to trucking biosolids could be paid to Eagan, from the savings due not having to spend $150 million on the FB complex. The Met Council trucks biosolids from all around the Metro area (Metro Plant, Empire, Blue Lake, Cottage Grove) as the MPCA knows. Cities all across Minnesota, truck biosolids from their WWTP to land application or landfill sites. The MPCA and State need to investigate the 1989 development agreement to determine the rational for the agreement and determine if the agreement can be modified to allow for trucking excess Metro Plant biosolids to Seneca.

I request that the MPCA require that Met Council complete an analysis for processing excess Metro Plant in the Seneca MHIs and/or N-Viro processes considering both total life cycle project costs and life cycle carbon emissions (N-Viro rehab costs, trucking emissions, and carbon generated to pay for the project). A separate line-item cost to reimburse Eagan for road maintenance costs should be included in the analysis.

Summary

Spending an additional $150 million for a new FB complex to process biosolids during FB shutdown time is unacceptable expenditure of public funds and shows a complete disregard for ratepayers, while sitting idle are: six (6) Metro MHI's, two (2) unused Metro Plant sludge dryers, Seneca N-Viro, and one (1) MHI at Seneca. There is an incredible amount of unused biosolids processing capacity. All these processes have been paid for by this community and have been used in the past. Also, there is the availability of landfill for disposal. The proposed $150 million project is an economical and environmental injustice to ratepayers. The proposer has clearly failed to '**minimize the contributions from the project', by not fairly evaluating alternatives, which will result in an irreversible lost of public money and irreversible higher carbon emissions due to significantly higher project costs.**

Because of the complexity and number of referenced papers within my comments and my past experience concerning this project, I am willing to meet in person with the MPCA and/or EPA staff to discuss and clarify any issues.

An Appendix is attached, which all the referenced papers. A USB flash drive with pdf files of all the referenced documents is enclosed.

Thank you for taking the time and effort the review this letter.

Sincerely,

Stephen Greenwood

Stephen Greenwood

APPENDIX - List of Related Papers

Partial list of documents not disclosed to Federal Judge Donovan Frank, Department of Justice, EPA, MPCA, Metropolitan Council, Environmentalists and pubic. Also attached are related public documents concerning justification for new fluid bed incinerators. Quotes and brief comments concerning the document are added in {10-point text}.

I. Key Major Reports on Metro Plant Incinerators, Scrubbers & Zimpro.

1. Havens and Emerson, Consulting Engineers "Metro WWTP Residual Solids Management Study – MWCC Project # 855617", March 15, 1991.

   {"...Because of the great existing investment in the sludge incineration system ($160+ million[1]) at the Metro WWTP the cost-effective analysis favored the continued use of incineration as the sludge treatment alternative.... Multiple hearth incineration is the existing sludge management system at the Metro WWTP. The system requires no initial investment and can be rehabilitated to increase its useful life so it becomes equal to the design period. Even though the existing incineration system is not the best currently available incineration system, the total present worth of the incineration system is the lowest of all alternatives evaluated over the 20 –year period used for analysis in this study.... In spite of the expected 503 regulator restrictions, incineration is still a viable option for processing the total sludge production of the Metro WWTP. However, as discussed previously, proper measures will have to be taken to comply with the proposed 503 or other applicable regulations.....Finally, the air pollution control system could be improved to achieve the required control removal efficiencies. It has been demonstrated that fabric (baghouse) filters following multiple hearth incinerators can achieve cadmium removal efficiencies similar to those required, and electrostatic precipitators (ESPs) can provide efficiencies greater than those required...The approximate cost for the fabric filters and ESPs are $2,000,000 and $1,500,000 respectively..."

   The Havens and Emerson recommendations were as follows:
   a. Rehabilitate the existing multiple hearth incinerators for $18.3 million by the year 2001 (~$3 million per incinerator),
   b. Upgrade the air pollution control equipment in 1996 ($1.5 million for electrostatic precipitators or $2.0 million for bagfilters) and
   c. Install a land application disposal process to backup/supplement multiple hearth incineration.}

2. Sun, J., "Particulate Emission and Control Research on a Sewage Sludge Incinerator", Ph.D. Thesis, University of Minnesota, January 1992. {This doctoral thesis studied the nature of particulate emissions from the multiple hearth incinerators. The particle mass mean diameter was found to be 0.25 μm. The old, venturi scrubbers could not remove submicron particles. There were no operational changes that could be done to reduce submicron particles. High metal emissions were found to be associated with the emissions of small particles (<1.0 μm). A new scrubber designed utilizing steam injection to remove submicron particles was recommended. The thesis also discussed alternative means to reduce submicron particles; such as electrostatic precipitators, fine water sprays, steam injection etc.}

3. Montgomery Watson, "Solids Handling Facilities Evaluation Metropolitan Plant Evaluation Study", Project Number 855616", March 1993. {The report estimated the installation of centrifuges would save $3 million per year in O&M costs, due to the shutdown of the Zimpro process. This would also eliminate a major odor source at the Metro Plant, (See #6). Installation

[1] Incineration Manual of Practice, Water Pollution Control Federation, 1987. Page 232.

of centrifuges would have reduced staff by about 60. A timetable to demonstrate and install centrifuges by January 1998 was given.}

4. Brown and Caldwell, "Predesign Report for the Metropolitan Wastewater Treatment Plant Incinerator Induced Draft Fan Improvement, Project Number 896587", November 1995. {"Only alternative 3b (new fan and new 600 hp drive) can meet the original 3.2 dry tons per hour (dtph) /27 percent cake design objective, assuming current leakage levels." The report also listed over internal 100 memos and tests dating from August 1992 to November 1995, concerning the incinerator ID fans and motors. This was done by F. Michael Lewis, a national incineration expert}.

5. Earth Tech, "Air Toxics Review Final Report, Volume 1, Metropolitan Wastewater Treatment Plant – Solids Processing Improvement Project", December 22, 2000. {The report showed that both the new fluid bed incinerators and the existing, 'unmodified' multiple hearth incinerators would comply with Minnesota Department of Health risk guidelines. The new fluid bed incinerators had a lower health risk, than the existing system. The report's executive summary stated:

   "Three factors should be considered in considering the estimate health risk/chemical hazards associated with the pre- and post-modification maximum potential-to-emit scenarios:
   - Risk/hazard reduction is likely to occur due to proposed decrease in incineration capacity.
   - Risk/hazard reduction is expected to occur due to inherently lower emission from the proposed FBIs compared to existing MHIs, as well from the superior air pollution control equipment that will be installed with the FBIs.
   - Risk/hazard reduction will occur to the decommissioning of the rotating biological surfaces (RBS and Zimpro™, two sources of hydrogen sulfide."

   The superior air pollution control equipment and the decommissioning of Zimpro by the installation of centrifuges could have been completed by 1998, see Havens & Emerson and the Montgomery Watson reports #1 and #3.}

6. Balough, S., "The precipitation and removal of heavy metals from incinerator scrubber water at the Metropolitan Wastewater Treatment Plant, QC-91-227", R&D MWCC, September 1991. {This report discussed pilot scale tests for removal of heavy metals from the multiple hearth incinerator stack gases by the use of chemical precipitation in the incinerator scrubber water. This chemical precipitation process was proven at Duluth WWTP during the 1980's, for treating scrubber water from fluid bed incinerators to reduce metal emissions, as I visited Duluth in the early 1990's to see the process. Environmentalists at public meetings expressed concerns about metal emissions from incinerators, but this report about the ability to reduce metal emissions was not disclosed to them.}

7. Greeley & Hanson, "Energy Management Study", January 1992. {This report made various recommendations to improve the energy efficiency of the incinerators, waste heat boilers and Zimpro.

   "... -The temperature drop between Hearth "0" and the waste heat boiler is over 100 F. This 100 F temperature drop results in a loss of 2.4x10^6 BTUs/hr.... this represents 24 percent of the steam actually produced. If this is added to the total steam production, the boilers would have attained 93 percent of design (p. B.1-12) .....
   - Replace ZIMPRO with centrifuges. p. PE1-10
   - A variable frequency drive would provide capacity control in lieu of the damper. New motors of increased horsepower were recommended to handle the increased load. B. 1-7,
   - These calculations show that heat recovery through steam generation could potentially be increased by 72 %. B. 1-13
   - Generation of electricity was evaluated by Greely-Hanson, but was not recommended because of a payback period greater than 5 years...
   - Utilize Incinerators #5 and #6 only for standby B1-2

- Only three incinerators should be routinely be used in order to fully utilize their capacity and reduce excess unit operation.
- Investigate alternatives to increase induced draft fan capacity.
- Reduce heat losses between Heath "0" exit and the waste heat boiler inlet by controlling flue gas leakage in the duct work and improving duct insulation.
- Other general energy savings recommendations...."

8. Malcolm Pirnie, "Metropolitan Wastewater Treatment Plant, Odor Control Study – Final Report", March 1995. {This study evaluated odor emissions from the Metro Plant. The three main areas where odor control was recommended were: Primary sedimentation tanks, Aeration tanks influent channels, and gravity thickeners. p. ES-7. The report did not recommend the replace of multiple hearth incinerators with fluid bed incinerators to reduce plant odor emissions.}

II. Related Published Papers and Publications

9. Kim, C., "Health Effects and Their Mutagenecity Test of Volatile Organics from the Zimpro Process", University of Minnesota, January 3, 1983. {This report discussed the measured concentrations of 23 volatile organic compounds given off by the Zimpro process, the health effects and the odor characteristics of each of the compounds. The major chemical classes were aldehydes, ketones, and alcohols. Some of compounds were acetaldehyde, benzaldehyde, butanal, furan, hetanal, hexanal, methyl butanol, pentanal, propanal, and propanone. The report was based on work conducted as a Master Thesis at the University of Minnesota. This report on Zimpro chemical odor emissions was not disclosed to the Dayton's Bluff neighbors at the public meetings I attended. Also, the 1993 Montgomery Watson report (#3) recommendations of shutting down Zimpro and its odor emissions with the installation of centrifuges by 1998 was not disclosed at the public hearings.}
10. Water Pollution Control Federation, "Incineration, Operation Manual of Practice OM-11", 1986. {"Appendix B - Fuel Reduction and Heat Recovery at St. Paul, Minnesota – ...The value of the recovered steam during 1985 was $1,400,000. The fuel bill for incineration has dropped from over $3,000,000 per year before system rehabilitation to $150,000 during 1985...The overall efficiency of the incinerator/waste heat boiler/economizer system is approximately 42% of the BTUs available in the sludge cake.... The project was awarded Minnesota's Ninth Annual Energy Savers Award of Excellence and the DOE's (Department of Energy) Special Recognition National Award for Energy Innovation."}
11. Metcalf & Eddy and US EPA, "Improving Design and Operation of Multiple-Hearth and Fluid Bed Sludge Incinerators", EPA/600/2-86-061, 1986. {A comparison of maintenance requirements between the multiple hearth incinerators and fluid bed incinerators was made and the report stated, "Maintenance and replacement requirements for major components of the MHF and FBF systems show no distinct advantages of one system over the other".}
12. Greenwood, S., Shamat, N., "Impact of Incineration and Scrubber Operation on Particulate, Odor and Opacity Emissions", Municipal Treatment Plant Sludge Management National Conference, Hazardous Materials Control Research Institute, p. 149, May 1987.
13. Shamat, N., and Greenwood, S. "Operation and Maintenance of State-of-the-Art Sludge Incineration and Heat Recovery", National Conference on Municipal Sewage Treatment Plant Sludge Management, May 1987.
14. Lewis, M., Lundberg, L., "Modifying Existing Multiple Hearth Incinerators to Reduce Emissions", National Conference on Municipal Treatment Plant Sludge Management, June 1988.

15. Shamat, N., Greenwood, S., "Multiple Hearth Incinerators", Municipal Treatment Plant Sludge Management National Conference, Hazardous Materials Control Research Institute, p. 94, May 1989.
16. Shamat, N. Crumpler, E., and Roddan, A. (EPA), "Total Hydrocarbon Analyzer Evaluation Study", Water Pollution Control Federation Annual Meeting Proceedings, 1990.
17. Trinity Engineering, Report on the Incinerator ID Fans and Motors, June 19, 1990. {This report discussed alternatives in improving the incinerator ID fans and motors with larger 600-hp variable speed drive motors and new fans.}
18. Sun, J., Greenwood, S., McMurry, P., and Liu, B., "Measurement of Size Distribution of Particles Emitted by a Sludge Incinerator in a Waste Water Treatment Plant", Annual Conference American Association for Aerosol Research Annual Conference, October 1991.
19. Shamat, N and Case, R., "Compliance with Part 503 Incinerator Limitations through System Optimization", Water Environment Federation Annual Conference Proceedings, early 1990's.
20. Water Environment Federation, "Sludge Incineration, Manual of Practice FD-19", 1992. {This design manual of practice discussed the reduction of heavy metals and particulate emissions from incinerators by at least 90% using wet electrostatic precipitators.}
21. Huisinga, R., "Report on MWCC Plant Cogeneration", MWCC Project 855616, March 3, 1993. {The report evaluated the installation and cost effectiveness of an electrical generator to produce electricity from excess incinerator steam production. The estimated payback period was 6 years. The generator was never installed.}
22. Mayrose, D., To: Greenwood, S., "NIRO High Temperature Fluid Bed Incineration, NIRO Budget Proposal 8.45.7432, Rev 1", March 12, 1993. {A budgetary proposal for two fluid bed incinerators, which could be installed in the space occupied by the four incinerators, which were built in the late 1930's, and shutdown in early 1980's.}
23. Sun, J., Greenwood, S. and Liu, B., McMurry, P., "A Method to Increase Control Efficiencies of Wet Scrubbers for Submicron Particles and Particulate Metals", Journal of Air and Waste Control, p. 184, February 1994.
24. Balogh, S, "The Fate of Metals in Sewage Sludge Incinerators", Water, Air, and Soil Pollution, 91:249-254, 1996.
25. Greenwood, S., and Geisenhoff, J., "Incinerator Slag Formation and Control", Proceedings Water Environment Federation 1997 Annual Conference, Volume 2 – Residuals and Biosolids Management, p. 243, 1997.
26. Polta, R., Jacobson, R., Wolfert, L., and Brown J., "Predicting Particulate Emissions from Sewage Sludge Incinerators: An Exploratory Study", Water Environment Federation Annual Conference, October 1998. {"As would be expected, the sludge feed rate in dry tons per hour (DTPH) also exhibit a negative correlation with TSP", (TSP - Total Suspended Particulate material). The reported Correlation Coefficient is r = -0.319 for the linear regression of feed rate (dtph) and TSP emission rate (lb/dry ton). That is the particulate emission rate decreased as the feed rate increased.}
27. Greenwood, S., and Geisenhoff, J., "Automatic Water Cooling for Temperature Excursions in Multiple-Hearth Incinerators", Presented at Water Environment Federation 1999 Annual Conference, October 1999, New Orleans.
28. Kellam, J., et. al, CH2MHILL "Getting the Most Out of a Multiple Hearth Incinerator", WEF Technical Program, February 2000, Alternate Paper.

29. Burrowes, P., et. al. CH2MHILL, "How an Agency should React When Its Incinerators Begin to Age – The Twin Cities Story", WEF Technical Program, February 2000. {At the same WEF session, as #23.}
30. Porter, Joseph, "Renewing Multiple Hearth Furnaces: The Atlanta Experience", 16th Annual Residuals a Biosolids Management Conference 2002 Privatization, Innovation and Optimization, Water Environment Federation, March 2002. {This was a report on how Atlanta reduced particulate, hydrocarbon, mercury, opacity and heavy metal emissions from a multiple hearth incinerator with the appropriate scrubber modifications. Construction was reportedly completed in nine months.}
31. Greenwood, S.J., and Geisenhoff, J., "Incinerator Slag Formation and Control of Excursion Temperatures", Water Environment Research Journal, Volume 75, Number 4, July/August, 2003.
32. American Society of Civil Engineers and Water Environment Federation, 'Odor Control in Wastewater Treatment Plants – Manual of Practice No. 22',

III. Metro Plant Gainsharing, Incinerator O&M procedures,

33. Incinerator Manufacture's (BSP Inc.) 1) Operation, 2) Maintenance and 3) Inspection procedures, 1983. {The public, EPA, DOJ & Judge Frank could not have compared the recommended operating, maintenance and inspection procedures verses the actual operating, maintenance and inspection procedures, between the time of the EPA Notice of Violation and the signing of the Consent Decree by Judge Frank, DOJ and EPA. BSP's inspection procedures required going inside the incinerator to inspect the bricks. None of the consultants whom recommended building new incinerators ever went inside to inspect the incinerators, per the chief bricklayer.}
34. 1997-1998 Minnesota State Statute, 473.1295 – Metropolitan Council Service Improvement (Gainsharing).
35. Quast, David, 'IBU and SBU Energy and Polymer Savings', August 25, 2000. {Proposed incinerator process changes to improve incinerator efficiency, reduce incinerator costs and for employees to receive public money as a result:
    1. Maximize use of Incinerators 7 to 10 (With Heat Recovery Boilers) ...
    2. Hold incinerators in NATURAL MODE instead of I.D. mode during extended periods....
    3. Monitor and maximize dewatering cake solids....
    4. Achieve a goal of 89.3 % incinerator utilization....
    5. Run fewer Zimpro units....
    6. Use of statistical process control.
    7. Improve communication between incinerator and dewatering operators.
    8. And other miscellaneous process control items.}

36. Incinerator manufacture's (BSP) operating procedures and 1980's incinerator practices, relating to the 2001 Metro Plant Gainsharing proposals,
    1. "Incinerators No. 7,8,9, and 10 are fully-equipped incinerators. They are utilized whenever possible to maximize heat recovery...Incinerators No. 5 and 6, which are not connected to a waste heat recovery system, will be kept in reserve standby condition so that they can be fired-up when one of the primary incinerators is off-line for routine maintenance or malfunction..."
    2. "An alternate means of providing a negative pressure within the furnace is provided by 'natural draft'. The emergency bypass damper is open during heatup and standby condition when no sludge is being burned, or in an emergency condition...."
    3. "Practical experience has shown that any feed solids from 32% and up will burn autogenously (i.e., without fuel) ... When the feed solids drop below 32% burners will have to be used to aid in control of a stable burn in the desired location."
    4. "With six (6) incinerators, five (5) of them should be available at any time". This is an 83.3% utilization rate.

5. In 1993, Montgomery Watson calculated a $3 million per year savings by the shutdown of Zimpro. Cost savings by using centrifuges; instead of Zimpro was documented, seven years prior to the Gainsharing proposals. See #3.
6. I purchased statistical process control software in the mid-1980's for statistical process control of incinerators, air pollution control equipment and dewatering processes.
7. "Frequent and rapid communication between the Incinerator Operator and the Dewatering Building Supervisor will be necessary to anticipate changes required to preserve stable, full rate burning operation...."

37. List of MCES (100+) managers and staff, whom accepted public 'bonus' money in 2002 for the implementation of manufacture's and 'Good Engineering Practice' incinerator procedures in 2001.
38. MCES Senior management's (Bill Moore and Leisa Thompson's) verbal and written documentation for approving payment to MCES employees with public money for the savings, due to the implementation of incinerator manufactures and past incinerator operational procedures.
39. Greenwood, S, to: Jill Pettis / Gainsharing Committee, "Metro Plant Gainsharing Project to Reduce dewatering and Incineration Costs - Implementation of Old Procedures and Previous Recommendations", February 22, 2001. {This internal memo documented that the Metro Plant Gainsharing Proposal to reduce incinerator costs by incinerator process changes were actually implemented by Dr. Nadim Shamat and myself in the 1980's.}
40. Pettis, Jill, to: Stephen Greenwood, "Gainsharing Proposal 02006, IBU / SBU Energy and polymer Savings and Your Memo dated February 22, 2001", March 30, 2001. {"You state that you and others previously implemented cost saving measures listed in the Metro Plant IBU and SBU Gainsharing Proposal.... While these statements documenting the cost saving programs implemented in the 1980's are accurate....".}
41. Greenwood, S, Public Letter to Debra Rose & William Moore, "Documentation of Standard and Past Procedures in Incineration, Standard Practice of Using Emergency Dampers and EPA Lawsuit, Metro Plant Gainsharing - IBU and SBU Energy & Polymer Savings", January 9, 2002. {This public letter provided additional documentation that the Metro Plant Gainsharing Proposal to reduce incinerator costs by incinerator process changes were actually implemented by Dr. Nadim Shamat and myself in the 1980's.}
42. Quast, D., To: Rose, Deb "Response to Gainsharing Information", February 8, 2002 {This memo documented the improvements to the performance of the multiple hearth incinerators, after the implementation of the Metro Plant Incinerator Gainsharing Proposals in January 2001. The following improvements were taken from a slide presentation on the Gainsharing results:

    1. The number of emergency damper openings was the lowest ever in 2001.
    2. Lowest Incinerator Fuel use ever in 2001,
    3. Lower Plant Fuel Use in 2001,
    4. Lowest Polymer dosage ever in 2001,
    5. Improved cake consistency,
    6. Improved incinerator uptime (82.4% availability),
    7. Increased ID fan turbine use,
    8. Optimum use of flotation thickeners,
    9. Increased Incinerator availability,
    10. Staff claimed about a $1.1 million a year in total savings,
    11. Increased incinerator availability,
    12. The causes of incinerator downtime and its overall percentage of incinerator downtime.

The Gainsharing results documented the sources of incinerator down time and the number of hours, which is given below:

Cause of Downtime	Total Hours	% of Total
Deslagging Incinerator	350	48
Ash System Plug-ups	210	29
Incinerator Maintenance	80	11
Dewatering Maintenance	70	10
Not enough sludge	10	1
Air pollution monitors	10	1
Total	730	100

The Gainsharing results showed 82.4% incinerator availability. The design is for one incinerator out of 6 to be down for maintenance (83% availability). The results show that the incinerator maintenance is only a nominal portion of the overall downtime. Slag control should have been the major control item, which could be done by process control and the use of water sprays; such as at Seneca. I would state as fact that when I gave talks on slag formation and control at the 1997 and 1999 the nation Water Environment Federation Conferences, no one from the Metro Plant staff came to the presentations. The ash system is the second major source of incinerator downtime, which should have been corrected. There has been no factual data to validate that the 'incinerators were on their last legs...at the end of the useful life etc. as presented at public meetings and to the court. The Gainsharing proposal and results have never been presented to the public, MPCA, EPA, DOJ, and Federal Judge Donovan Frank.}

43. Rahiman, Rahim, MCES Auditor, "MCES Gainsharing Proposal 02006, Audit Results", July 3, 2002.
44. Incineration Team MWWTP Operations, 408 Incinerators Operating Guidelines, December 1992. {This internal operating incinerator manual deleted key manufacture process control procedures and good engineering practice procedures. The manual for a multimillion-dollar system is shorter than my standard VCR manual.}
45. Greenwood, S., 'Gainsharing and Manufacture's O&M Procedures', Letter to Metropolitan Council, September 9, 2002. {This public letter documented that the Metro Plant Gainsharing Proposal to reduce incinerator costs by incinerator process changes were out of the incinerator manufacture's O&M manuals.}
46. State Representative Mary Holberg, House File 926 - Bill to Eliminate Metropolitan Council Gainsharing, March 26, 2003. {This is a bill to repeal the state statute which awarded public money to employees which implemented cost saving measures.}

IV. Emergency Damper Memos

47. Quast, D., 'Incinerator ID Fan Replacement Project', Jan 6, 1992 & MCES Air Quality Control, Measurements of air flowing around emergency damper gaps, Fall 1990. {I requested that the airflow around the emergency damper be measured in order to quantify air leakage into the incinerator. With no feed to the incinerator and the incinerator ID fan in operation, Mr Wahlberg and I measured the air leakage rate into the incinerator around the gap on the emergency damper, which was about 1,500 cfm. This was the first known measurement of air leakage into an incinerator via the emergency damper. Based on the leakage into the incinerator, I knew that the damper had to be either repaired or replaced.}
48. Greenwood, S. "Major Region III Process Issues for 1991", To: Jo Anne Hart, December 12, 1990. {Discussion of Importance of Reducing Incinerator Leakage. "...Reducing air leakage will reduce costs to heat heath 0 flue gases, decrease the ID fan amperage, reduce particulate emissions, increase the sludge burning capacity of the incinerator and may eliminate the need for a larger ID fan..."}

49. Brown, J., Memo recommending Emergency Damper Replacement, December 4, 1991.
50. Haapala, Will (Director of Operations), To: William Moore, "Capital Improvement Project Requests for 1993", To: William Moore, February 10, 1992. {This requested Incinerator Emergency Damper Improvements by repair or replacement of the damper.}
51. Grounds, H., "Partial List of WWTP Design Section- Small System Improvement Projects, ... Incinerator Emergency Damper Improvements, $400,000", February 21, 1992. {I was to be project manager for the emergency damper improvements, but the project was cancelled by senior management for some unknown reason to me.}
52. Flood, Rebecca, "503 Permit Implementation Issues", To: John Colletti EPA Region 5, {Emergency Damper Discussion}, August 1, 1996.
53. MCES Incineration Business Unit, Reduction of Emergency Damper Openings 1998 to 2002, {The chart shows the monthly number of emergency damper opening from 1998 through 2002. The number of monthly emergency damper openings was reduced by about 2/3 (21 to 7), after the 1999 EPA lawsuit.}

V. Miscellaneous Related Reports and Memo's

54. Comments on the 1991 Havens and Emerson Report by MCES Management:
    a. Pickart, B., "Operations and Maintenance Department Comments, Draft Report on Residual Solids Management Study", To: Grounds, H., April 11, 1991.
    b. Hart, J., "Metro Plant RSM Draft Review", To: Pickart, B., April 10, 1991.
    c. Merenes, M., "Review Comments for Draft RSM Study", To: Pickart, B., April 5, 1991.
55. Greenwood, S., "Fine Particulate Emission Control and Related Projects", Presentation to MCES management, January 13, 1992. {I gave a presentation to senior MCES management which summarized the results and recommendations of a University of Minnesota Doctoral Thesis on Incinerator Particulate and metal emissions from the multiple hearth incinerators. The recommendations were to test a steam scrubber to reduce sub-micron emissions and if that did not work, then an electrostatic precipitator (WESP) should be tested. Also, I recommended a full-scale test of chemical precipitation of heavy metals from incinerator scrubber water.}
56. Richmond, Charles, BBS Inc., Engineering Evaluation of Metro Plant Multiple Hearth Incinerator ID fan and off-gas system, 1993. {This report recommended the use of water sprays for cooling the Metro Plant multiple hearth incinerators. The report also discussed various means to improve the incinerator off-gas system.}
57. Greenwood, S., and Grounds, H., To: Warner, D. and Christenson, C., "Comments on RSB Sustainability Report", October 3, 1994.
58. Greenwood, S., To: Warner, D., Warburton, J., Moore, B., DPAC, "Purchase 4 or more centrifuges, instead of 2 for Centrifuge Demonstration Test, Comments on B&C Pre-Design Centrifuge Report", June 5, 1995.
59. Greenwood, S., To: Moore, B., "Incinerator Capacity Questions", June 14, 1995. {"...The project to increase incinerator capacity (by installing new fans and/or motors) is extremely critical and must be expedited...."}
60. Greenwood, S., To: Warbuton, J., Baxter, D., "Comments on Your Draft Memo Dated July 12, 1995, MWWTP Centrifuge Evaluation", August 7, 1995. {Recommended accelerated project schedule to install centrifuge and shutdown ZIMPRO.}

61. Metro Plant Staff, I.D. Fan Turbine Test, June 10, 1993. {Testing that document about a 15% reduction of electricity by the installation of a variable speed ID fan motor.}
62. Polta, Dr. R., To: Brown, J. and Greenwood, S., "Another Incinerator Scrubber Alternative", November 14, 1994. {This memo reported on the success of the Indianapolis Venturi-Pak scrubber, which reduced particulate emissions by about 90%.}
63. Metro Plant Newsletter, "Attrition to shrink Metro Plant work force in the future", February 1997. {This newsletter said in 1990 there were 532 Metro Plant employees. A time series graph showed that with the implementation of fluid bed incinerator there would be a reduction of 28 employees (5.3% of work force). With the implementation of centrifuges to eliminate Zimpro there would be a reduction of 60 employees (11.3% of work force). Combined, with the installation of centrifuges and fluid bed incinerators there was projected to be a reduction of 88 staff. These numbers did not account for resignations, deaths or terminations}
64. Greenwood, S., and Grounds, H., To: Pickart, Bryce, "Opportunity for Substantial cost Savings Cost Savings, MWWTP Dewatering Evaluation (930220) and MWWTP Solids Handling Facility (970300), March 19, 1998. {This memo provided suggestions on means to delay the construction of new fluid bed incinerators and still reduce plant odors and particulate emissions.}
65. MCES survey of wastewater rates of other cities. {Wastewater rates of cities that 'successfully' use multiple hearth incinerators without being sued by the EPA was not disclosed during the public hearings; for example, Indianapolis (privatized) $116/yr, and St. Louis $176/yr, while the Twin Cities rate is $192/ yr.}

VI. Engineering calculations which were not disclosed and/or never done.

66. The CDM/MCES life cycle cost analysis comparing the rehabilitation of an incinerator complex to the construction of a new $200 million facility.
67. Calculations showing how the 'Solids Handling Team' broke down their $90 million multiple hearth incinerator rehabilitation cost estimate, which was based on a 'scaled-up' estimate from Seneca's incineration and dewatering project. {They would have had to determine all the following project costs: ash silos, thickening centrifuge, building modifications, lunchroom, lab, HVAC, odor control, process computer, incinerator rehab costs etc}.
68. MCES internal memos, that told the CH2MHILL to use the MCES multiple hearth rehabilitation $90 million, cost estimate for their report.
69. An "apples to apples" health risk assessment and comparison between:
    a. Multiple hearth incinerator with an upgraded scrubber (electrostatic precipitator or Venturi-Pak) and centrifuge dewatering,
    b. Fluid bed incinerator with an equivalent air-pollution control scrubber and centrifuge dewatering.
70. Energy calculations documenting 75% energy recovery from new fluid bed incinerators (Bill Moore & Bryce Pickart). {During the public hearings, environmentalists questioned the fluid bed incinerators getting 75% energy recovery. Bill Moore gave the reply about achieving 75% energy recovery. In reality, the design value by the manufacture for energy recovery is about 50%; steam output btu / sludge energy input btu}
71. Multiple Hearth Incinerator monthly gas use between 1983 through 2003.
72. Heat Balances using the first law of thermodynamics (conservation of energy) for each separate component of the multiple hearth incinerator system (incinerator, hearth zero burners, cyclone, ducting, waste heat boiler, pre-cooler, venturi and subcooler). {This was needed to determine where all energy losses were occurring and then what to do to prevent the energy loss.}

73. A complete carbon dioxide and carbon monoxide balance for the incinerator project. A complete balance would include: CO & CO_2 generated due to manufacturing material for the incinerator building, CO & CO_2 generated from workers going to and from work site, CO& CO_2 generated from the public having to work & pay for about $200 million extra in capital and interest costs over 20 years, and reduced CO & CO_2 from new fluid bed incinerators. {Not reporting CO & CO_2 generated to make and pay for the new incineration building is misleading to me.}
74. The 1984 through 1999 multiple hearth incinerator particulate emission test results and incinerator operating parameters during testing. {These results were needed to help justify the installation of a new larger 600 hp motor for the incinerators.}
75. Reduced multiple hearth incinerator odor emissions, due to the shutdown of Zimpro by the installation of centrifuges.

VII. Engineering reports of the Failed 'Greenwood' suggestions.

The EPA was told that my suggestions were tried and did not work. In reality, the recommendations were also those of Havens & Emerson, Montgomery Watson, Greely & Hanson, University of Minnesota staff, Dr. Shamat and others. The engineering reports (cause of failure and corrective measures) for each recommendation was not disclosed to the EPA, DOJ and Judge Donovan Frank, in the court documents. I request that the engineering evaluation report signed by a registered engineer in Minnesota for each suggestion I made be submitted to Judge Frank/EPA/DOJ for review.

76. **Install Venturi Pak** – {This was never installed},
77. **Install Centrifuges** – {Centrifuges were installed in the new incineration building to shutdown Zimpro in 2004. Could have and should have been installed by 1998},
78. **Replace / repair emergency damper** – {This was done only after EPA 1999 lawsuit},
79. **Chemical precipitation of heavy metals** – {This was never done, but was proven in Duluth},
80. **Install 600 Hp motors** to replace the 500 Hp motor – never done {Particulate emission rate actually decreased with increasing dry tonnage feed rate – see reference 26 in Appendix 1},
81. **Install variable-speed motors** – {This was never done, but variable speed motors were installed for fluid bed incinerators},
82. **Install incinerator water sprays for cooling** - {Two test spray units were installed, but were incorrectly put in the 'Manual' mode and ultimately turned off. The test procedure was bad. The PID loop settings should have been adjusted, then put in Auto. Seneca has had operational water sprays for about 7 years now and run in the automatic mode. The new fluid bed incinerators have water sprays, which are in the automatic mode.},
83. **Inspection of Incinerators by manufacture or qualified firm** – {This was never done},
84. **Cover Primary Tanks - {**Weir sections are now covered},
85. **Cover Gravity Tanks** – {Gravity tank covers are now being installed},
86. **Cover Aeration Influent Channels** – {This has not done},
87. **Pilot Testing of Steam Scrubber** (1991) – {This experimental scrubber by the University of Minnesota was tested, but the funding for needed modifications to correct the problem of steam condensing in the stack was not approved.},
88. **Pilot Testing of Electrostatic precipitator**, {In 1992, pilot testing of a WEP was recommended, if the U of M steam scrubber failed. The pilot testing of an electrostatic precipitator was not funded, when the pilot steam scrubber did not work. Electrostatic precipitators are installed for the new fluid bed incinerators to reduce particulate & heavy metal emissions.},

89. **Alternate means to handle 2025 peak loading conditions.** {Excess sludge during shutdowns of the fluid bed incinerators is now sent to landfill. This is the same as what Indianapolis does. So, there was a means to handle 2025 peak loading conditions.}

VIII. Related key 'public' disclosed reports and documents concerning new fluid bed incinerators:

90. Dye, Al, Metropolitan Council Incinerator Project Manager Letter concerning request for public input for the new fluid bed incinerators, February 11, 1998 {"...either technology would: - replace outdated equipment, - reduce air emissions, resulting in better air quality, - reduce odors to benefit immediate neighborhoods, - streamline processing for more efficient operations, - keep cost down to maintain low rates...} Comment - the MCES letter never stated to the public that improved air pollution control equipment and centrifuges to shut down Zimpro could be installed, in order to reduce air emissions and plant odors.
91. Greenwood, S. "Suggestions on how to reduce odors, particulate, mercury & heavy metal emissions without new incinerators and cut the capital budget by $125 to $150 million", To the MWWTP Solids Facility Core Team, December 17 1998.
92. Bunge, R., Letter and Petition from the Dayton's Bluff neighbors to Metropolitan Council, April 3, 1998. {This was a petition from the Dayton's Bluff neighbors requesting new fluid bed incinerators to reduce odors.}
93. Raby, D. CH2MHILL, "Westside Citizens Organization Meeting, April 9, 1998 at Conway Rec. Center", April 10, 1998. {"...He (now State Representative) Sheldon Johnson is also concerned about mercury source reduction and economics, although it appears to him that staff's economic analysis is slanted in favor of incineration...."}
94. CH2MILL Engineers, Burrow, P, Erickson, K., Raby, D., Spenser, J., "Response to Stephen Greenwood Memo Date 12/17/98", February 24,1999.
95. Greenwood, Stephen, Letter to Region 5 EPA, "Consent Decree, Civil Action No. 99-CV-1005", September 28, 2000.
96. Ross Antonson, Dorsey & Whitney LLP, Letter to Region 5 EPA, Mary McAuliffe, "Response to Public Comment on Lodged Consent Decree in United States v. Metropolitan Council, Civil Action No. 99-CV-1005", December 1, 2000.
97. United States Department of Justice, "Memorandum of Law in Support of United States Motion to Enter Consent Decree, Civil Action No. 99-CV-1005", December 21, 2000.
98. Federal Judge Donovan Frank, Approval of Consent Decree – Civil No. 99-1105, February 6, 2001.
99. Greenwood, Stephen, Letter to Region 5 EPA, "Consent Decree – U.S. v Metropolitan Council", September 9, 2001.
100. Cattanach, Robert, Dorsey Whitney LLP, 'Metropolitan Council Supplemental Environmental Project', November 5, 2001.
101. Public spoken and written comments concerning the construction of new fluid bed incinerators including;
    a. State Representative Sheldon Johnson, "Incinerate Waste and we waste viable land resource", Star and Tribune, 1988. "...Unfortunately, Metropolitan Council staffers have failed to provide a fair and complete analysis of how the handle the sewage...the Pioneer Press unwisely supported that recommendation...".
    b. Pioneer Press, ' Cut Project to Cut Mercury Emissions', April 26, 1988.
    c. Meersman, T. 'EPA Sues Met Council of Air Quality', Star & Tribune,
    d. John Westley (All for the Earth), Letter to Judge Frank,

e. MCES Public Hearing Record Comments, etc.

Updated list of related Documents, since June 28, 2007 (Exhibit letter #)

102. Borghesi J., Burrowes P., Voth H., Flood, R., 'A State-of-the-Art Fluidized Bed Incineration Process to Meet the Needs of the Twin Cities', WEF 2002.

103. Borghesi J., Burrowes P., Voth H., Flood, R., 'Air Emissions Permitting for the Twin Cities Fluidized Bed Incineration Process', WEF 2004.

104. Brown and Caldwell, 'Costs for an Additional 110 DTPD Capacity', 2011.

105. Brown and Caldwell, 'Final Demonstration Centrifuge Report, Executive Summary', July 1999.

106. Brown, J., 'Inspection Tour of Fluid Bed and Rebuilt Multiple Hearth Incinerator Facilities', April 11, 1998.

107. CDM, '25-year incinerator life and reason for high number of staff', Metro Plant Master Plant,

108.CH2MHILL, 'Evaluation of Alternative Technologies for Metro Plant' Jan 1998.

109. Cramer, E., 'Sewer district must pay $200,000 to residents', The Examiner, Jackson County, March 4, 1998. {Judge Jack Gant ruled that the Little Blue Valley Sewer District people complaining of odors from the sewer plant will share more than $200,000 in damages. 'This court is concerned that a group of Jackson County citizens has been subjected to prolonged exposure of this type of environmental nuisance and loss of enjoyment of their property without positive intervention by appropriate governmental agencies.}

110. Davis, L., (Earth Protector) 'Request for Information, prior to EPA NOV', June 7 1999.

111. EPA, To William Moore, 'Notice of Violation', July 16, 1997.

112. EPA & Metcalf and Eddy, 'Improving Design and Operation of Multiple Hearth and Fluid Bed Incinerators', July 1986.

113. EPA, '40 CFR Part 60, Sewage Sludge Incineration Units, Final Rule', Federal Register Vol 76 No 54, March 2011.

114. EPA, 'Evaluation of Energy Conservation Measures, Western Branch WWTP', Sep 2010.

115. EPA, 'Spreadsheet for Multiple Hearth and Fluid Bed Incinerator upgrade costs for new MACT rules', EPA website, 2011. {The total cost to upgrade 144 MHIs is $45 million to

comply with new EPA MACT rules. Also, the EPA is not requiring any RHOX process or 'Flue Gas recirculation' process.}

116. EPA, 'Summary of Public Comments and Responses (for proposed Incinerator regulations', Feb 2011.

117. Heflin-Garmen, R., Brown and Caldwell, 'Early Centrifuge Evaluation', Feb 22, 1999.

118. Geisenhoff, J., 'Consideration of Using a Venturi-Pak for Reducing Incineration Emissions at the Seneca Plant', May 1999.

119. Greenwood, S., 'Proposed Scrubber System Modifications', Feb 22 1991.

120. Greenwood, S., 'Fine Particulate Emissions Control and Related Projects - Presentation to senior management', Feb 26, 1992. {In this presentation, I summarized the University of Minnesota research on particulate emissions, the need for new air pollution control scrubbers, the 8% probability of incinerator test failure, steam scrubber proposal, back-up plan of testing a WESP if the steam scrubber did not work}

121. Greenwood, S., 'Comments on RSM Report', April 26, 1992

122. Greenwood, S., 'REJECTION of Brown & Caldwell Centrifuge Test Plant', Sep 15, 1997

123. Greenwood, S., 'Comments of Early Centrifuge Evaluation ', Dec 12, 1997.

124. Greenwood, S., 'Master Plant Comments' March 15, 1998

125. Greenwood, S., 'Comments of Draft Facility Plan' March 19, 1998.

126. Greenwood, S., To W. Moore 'VenturiPak Survey (Canton, Fitchburg, Indianapolis), April 27, 1999.

127. Greenwood, S., To Representative Mary Holberg, 'Metro Plant Gainsharing Proposal', Dec 4, 2002.

128. Greenwood, S., 'Concealment of Documents to the Honorable Federal Judge Donovan Frank, Department of Justice, EPA, MPCA, Metropolitan Council, & Environmentalists Concerning Federal Lawsuit 99-CV-1105.' June 28, 2007

129. Greenwood, S., To EPA 'Comments Identified by Docket ID No. EPA-HQ-OAR-300xxxxx', Oct 29, 2010.

130. Greenwood, S., To EPA 'Petition - Delete Minneapolis-St. Paul Metro Plant Air Emissions from EPA MACT Database' May 18, 2011.

131. Grounds, H., 'Decision on Metro Solids Processing a WIN-WIN Approach', June 10, 1998.

132. Husingga, R., 'Metro Plant Cogeneration, Project 855616', March 4, 1993.

133. Indianapolis, 'Comments to EPA', Nov 2010.

134. Indianapolis WWTP Operations, United Water, 2001. {United Water reduced the number of treatment plant employees from xx to xx, while still using Multiple Hearth Incinerators. Indianapolis did not have to install new fluid bed incinerators, in order to reduce staff.}

135. Met Council Meeting Notes, September 2002

136. MCES, Comments to EPA on new Incinerator Rules, Nov 2010.

137 MCES, Display of New Fluid Bed Incinerator vs. Old Multiple Hearth Incinerator, Undated. {The display compares emissions from a new FB vs an old MH incinerator. It does not show a comparison of a new FB to an old MH incinerator with a new air pollution control scrubber (ESP or VenturiPak).

138. Met Council Environment Committee, Selection of 3 FBI and 10% Land Application, July 15, 1998.

139. Metro Plant Fact Sheet 1991.

140. Metro Plant, Incinerator Business Unit, Reduction of Emergency Damper Openings, Nov 2002.

141. Mohzahn, B., CDM, 'Wastewater Treatment Plant Operating Cost Comparison', March 28, 1995.

142. MCES -Wire, 'William Moore's Retirement', July 15, 2012.

143. MPCA - Finding of Fact on Fluid Bed Incinerators, 2001.

144. Palo Alto, Comments to EPA on new Incinerator Rules, Nov 29, 2010.

145. Pota, R., 'Another Scrubber Alternative', Nov 14, 1994.

146. MCES, Public Hearing Record of Comments, April 1998.

147. Quast, D., 'Energy Efficiency Improvements to Metro Plant', Conference on the Environment, Nov 2006.

148. Flood, R. '503 Permit Issues', Aug 1996.

149. Rowan, 'Breathing New Life into Biosolids Incinerators (Green Bay), Government Engineering, Oct 2006.

150. Quast, D., 'Incinerator ID Fan Improvements', Jan 1992.

151. Solem, J., 'Comments on the EPA Lawsuit', July 23, 1999.

152. St. Louis, 'Comments on new EPA Incinerator Rules', Nov 2010.

153. St. Louis, '$35 million MHI Upgrade', WEF, March 2014

154. Grounds, H., and Pickart, B., 'Comments on Steam Scrubber Report', Feb 1995.

155. Ton, D., 'BBS Incinerator ID Fan Report', July 1993.

156. University of Minnesota, 'Steam Scrubber Report', Feb 1995

157. CDM, 'Upgrade of Brockton's Multiple Hearth Incinerator', 2012

158. Warburton, J., Brown and Caldwell, 'Response to Greenwood, June 5 1995 Memo', Aug 8, 1995.

159. Water and Wastes, 'Gas Detector Bloodhounds', Sep 2010.

160. Water Environment Federation, 'Start-up Dates of Multiple Hearth Incinerators', Design of WWTP's,

161. Water Environment Federation, 'Heat Treatment Odors, Manual of Practice MOP-22', 1995

162. Water Environment Federation, 'Sizing of Incinerator ID Fans, Incinerator Manual of Practice FD-19', 1992

163. Water Environment Federation, 'Wastewater Solids Incineration Systems, WEF MOP 30, Appendix D, Metro Plant Fluid Bed Incinerators', 2009.

164. Water Environment Federation, 'Electrostatic Precipitators, Sludge Incineration, MOP FD-19," 1992. {This documents that WESPs can reduce particulate and heavy metal emissions, without new incinerators and was proven by the early 1990's.}

165. Water Pollution Control Federation (WPCF), 'Use of Emergency Dampers', Incinerator Manual of Practice OM-11, 1998.

166. Willett, J., 'Metro Solids', March 8, 1999.

167. Yisma, G., 'I.D. Fan Capacity Study Summary', March 15, 1994.

168. CDM, 'Keep that Multiple Hearth Incinerator', WEF 2013.

169. CH2MHILL, 'Facility Plan MWWTP Solids Processing Improvements', Dec 1998.

170. EPA, 'Proposed Incinerator Rules', Federal Register Oct 14 2010.

171. MCES, Comments to EPA on new Incinerator Rules. Nov 2010.

172. Brown and Caldwell, Black & Veatch, CH2MHILL, MCES, 'Value Engineering (VE) Study Report, MWTP Solids Processing Improvement Project - VE Ideas Summary', July 1999

173. Detroit, MHI Upgrades and 75 year life

Jane Prince

The Metropolitan Council should address the negative impacts to our BIPOC majority neighborhoods impacted by MCES waste burning and wetland pollutant discharge.

Forty three years ago, Saint Paul and Ramsey County called for transfer of 80 acres east of the Waste Treatment Plant to the Regional Park System. The Metropolitan Council called for an agreement that would manage the area as parkland. The Metropolitan Council assured surrounding neighborhoods the ash ponds would be taken care of. How can the public trust new Met Council assurances with a record of 43 years of inaction regarding cleanup of polluted ash pits and 80 acres of public open space?

The Metropolitan Council should transfer 80 acres east of the Waste Treatment Plant to the Regional Park System. The Regional Park System and residents of BIPOC majority neighborhoods would benefit from management of the flood plain forest as part of the Regional Park. This flood plain forest was jointly owned by St. Paul and Minneapolis and should be managed as part of Pig's Eye Lake Regional Park. The flood plain is of Regional Significance and part of Saint Paul's Great River Passage plan. The area is a National Park, State Critical Area and State Scientific and Natural Area.

Planning for Pig's Eye Lake Park started over a century ago. The Metropolitan Council approved the 1975 Regional Recreation and Open Space Plan for Saint Paul. The Plan is a Regional Park complex including Indian Mounds Park, Battle Creek Park, and Pig's Eye Lake Park. The plan called for picnicking on the river shore, boating on the lake, access to the river, and protection of the heron rookery. The Met Council approved the plans.

In the 1980 Critical Area Plan review, the Met Council approved removal of 278 acres from the park plan. Saint Paul called for the 80 acres east of the levee be included in the park and ash pit area restored. The 80 acres serve as partial compensation for parkland loss.

The Metropolitan Council supported an agreement with the City and County for the interim recreational use and landscaping of the 80 acres east of the treatment plant. State Critical Area designation regulations call for parkland next to treatment plants.

The BIPOC majority neighborhoods that surround Pig's Eye have been waiting 43 years for a Met Council agreement with the City or County so recreational use and natural resource restoration can move forward on 80 acres of public land. An agreement should be a priority in any discussion about possible expansion tied to adding another burner.

The Met Council should support City or County efforts to remove the ash pit berms, built with pollutant, and wetland restoration. The public should not wait another 43 years.

Jane Prince
Saint Paul City Councilmember, Ward 7

Tom Dimond

Tom Dimond
2119 Skyway Drive
Saint Paul, MN 55119

As a neighbor of the Pig's Eye Waste Treatment Plant. I have served in numerous roles including Saint Paul City Council, Planning Commission, and MNRRA Commissioner. The Met Council has a responsibility to address negative impacts to our BIPOC majority neighborhoods. MCES's past and proposed waste burning along with pollutant discharges into wetlands and aquifer have negative consequences that affect people, wildlife, the water we drink and air we breathe.

Saint Paul and Ramsey County have called for the Met Council to transfer 80 acres east of the Waste Treatment Plant to the Regional Park System. The Met Council has expressed their support of managing the 80 acres as Regional Park. The MWCC told Saint Paul they were willing to transfer 80 acres to Saint Paul's Pig's Eye Lake Regional Park. The Met Council assured the public the ash ponds would be cleaned up. The public was led to believe the polluted ash pits and 80 acres would be cleaned up and managed as the valued habitat and recreational opportunities the Pig's Eye Lake Park Plans envision.

The Metropolitan Council should transfer the land outside the berm for use as Regional Parkland. The highest and best use. The Regional Park System and residents of BIPOC majority neighborhoods would benefit from management of the flood plain forest as part of the Regional Park. This flood plain forest should be managed as part of Pig's Eye Lake Regional Park. The flood plain is of Regional Significance and part of St. Paul's Great River Passage plan. The area is a National Park, State Critical Area and State Scientific and Natural Area.

Pig's Eye Lake was created by glaciers prior to the existence of the Mississippi River in Saint Paul. It is a significant geological, wildlife habitat, and recreational treasure. Pig's Eye Park Planning began before any of us was born. The Met Council approved the 1975 Regional Recreation and Open Space Plan for Saint Paul. The Plan is a Regional Park complex including Indian Mounds Park, Battle Creek Park, and Pig's Eye Lake Park. In 1975, the Metropolitan Council received a Pig's Eye Park Reserve Master Plan from Ramsey County. The plan called for picnicking along the river shore, boating in the lake, access to the river, and protection of the heron rookery. The Met Council approved the plans. Pig's Eye Lake Park Plan implementation is overdue. Our neighborhood, the region, and State deserve better. We deserve better opportunities to enjoy what the Park has to offer when access is enhanced, pollution removed, and habitat restored.

In the 1980 Critical Area Plan review the Met Council approved removal of 278 acres from the park plan. Saint Paul called for the 80 acres east of the levee to be included in the park and ash pit area restored. After decades of waiting, it is time to act and include the land outside the berm in the park.

The State Critical Area designation calls for parkland next to treatment plants. The area is classified

as parkland.

The BIPOC majority neighborhoods around Pig's Eye Lake Park have waited 43 years for the Met Council to implement an agreement with the City or County so recreational use and natural resource restoration can move forward on 80 acres of public land outside of the berm. An agreement should be in place prior to any discussion about possible expansion with adding another burner.

The Met Council should support removal of the ash pit berms built with pollutant, removal of the pollutant that soaked into the ground, and restoration of wetland. The public has waited too long to enjoy the amazing potential of this park as illustrated in the Great River Passage Plan.

PFAS is only one of the toxic pollutants that should be a focus of the cleanup at Pig's Eye. The waste treatment plant was supposed to protect us from pollutant. Instead it operated for years with pipes that dumped toxic pollutant into our aquifer. We can get angry or we can do something to correct the mistakes of the past.

I appreciate and support comments submitted by Saint Paul Councilmember Jane Prince, and Ramsey County Commissioners Rafael Ortega and Mia Chong Xiong.

Krystle D'Alencar

The facility is adjacent to multiple environmental justice communities of Saint Paul, including multiple neighborhoods with a majority BIPOC, low-income, and renter populations. The Cumulative Impact Assessment provided within the EAW showed that pollutants of concern were below National Ambient Air Quality Standards threshold, however this does not mean they are incapable from causing harm. According to any toxicologist there is no "healthy" or truly 'neutral' amount of toxins that can be processed through the body, so any addition of pollutants is accumulating effects regardless of those standards. More simply, if you asked any individual, which would you prefer in your neighborhood: Zero additions of pollutants; or pollutants below the National Ambient Air Quality Standard threshold, most would most certainly choose the former because these two options are not the same. I hope efforts are made to hold a public meeting with the potentially impacted communities to explain more thoroughly the cumulative impacts analysis, reason for location vs non ej communities, and clearer analysis of the potential to spread PFAS, and why development would move forward if there is still no clear answers around this issue or ways to mitigate from PFAS harm.

Lois Norrgard

Comment Regarding: Metropolitan Wastewater Treatment Plant Solids Management Improvements Project Environmental Assessment (EA)

I am concerned about the proposal to expand the Metropolitan Wastewater Treatment Plant Solids Management Improvements Project (MWTP) which is in an incredibly wrong location to begin with. This plant is mere feet from Pigs Eye Lake, the Mississippi River, Mississippi National River and Recreation Area, and many other public parklands, as well as being adjacent to multiple environmental justice communities of Saint Paul, including multiple neighborhoods with a majority BIPOC, low-income, and renter populations.

Permit decisions and the siting of polluting facilities was not considering equity or justice when this plant was originally constructed in 1938. Even in 2005, when the solids management building (SMB) was constructed, and the facility was expanded, important science and statistics regarding the health and well-being of local communities was not taken into consideration. Today we must do better.

What are the reasons that increasing capacity at this site is the best course of action? Were alternative facilities within the metropolitan area considered for modernization and why or why not?

When multiple sources of pollution and other destabilizing factors are in the same place, the added pollution of each facility leads to more negative impacts on the health and environment of the community. Polluters have treated certain communities as "sacrifice zones" for decades, purposefully polluting those communities instead of others. This has created and contributed to a number of disparities in health, environment, quality of life, and economic stability.

Cumulative Impacts
Minnesota should ensure that the cumulative effects of pollution are incorporated into environmental permitting. This will ensure that Minnesota's regulatory process cannot continue forcing pollution on overburdened communities. The Minnesota Pollution Control Agency (MPCA) should deny permits for facilities that are causing or contributing to a substantial adverse impact to the health or environment of an environmental justice area unless a community benefit agreement is developed.

The Cumulative Impact Assessment provided with this EAW indicated that pollutants of concern were below the National Ambient Air Quality Standards threshold, but this is not a complete story – it is well known that for human health no amount of toxins are ok. Any increase in a community that is already being impacted by existing pollutants should not be allowed.

I am requesting that the responsible agencies hold a public meeting on the cumulative impact analysis. This is to promote the informed participation of impacted communities and to ensure that the cumulative impact analysis can be effectively enforced. This should be done in conjunction with the EIS analysis.

PFAS

There is not adequate research available about the transmission of PFAS into the air during the incineration of waste or wastewater containing PFAS. The MWTP is listed as a likely source of PFAS and is on the MPCA list of PFAS monitoring sites. The EAW does not describe in detail the MPCA's plan for monitoring PFAS either in water discharge or air emissions. This fact alone requires a hard look and further analysis before any permitting can move forward. I am requesting that an EIS is done for this project.

Minnesota's Environment
I am also concerned about the local natural public lands within this location, the endangered Rusty Patched Bumble Bee and other species of special concern that are found in close proximity to this project. I am concerned with additional pollution affecting the waters of the Mississippi River, Pig's Eye Lake and the many creeks and wetlands in this location.

It appears that a Rusty Patched Bumble Bee ground survey has not been done in this area for close to 10 years. It is imperative that up-to-date wildlife and plant life species of concern surveys be done – for which an EIS would allow the opportunity to do.

In conclusion, thank you for the opportunity to comment on this EA, and I appreciate consideration for my concerns. I request that the Minnesota Pollution Control Agency require an EIS as the next step in this process – with comprehensive analysis of the impacts to communities and the environment using the best available science. This must include community meetings and a transparent public involvement process.

Thank you,
Lois Norrgard

Sherilyn Young

My comments come from the perspective of a community member who has lived near the Metro plant my whole life. I am concerned about all the sources of pollution and contamination that are competing with our healthy air, soil and water and I'm afraid they will dominate if projects like this are not described and impacts on them accurately measured. While the construction of the fourth incinerator at the Metro Plant has merits which are described in the EAW, it is not complete

I've lived in the area and been exposed to the human progress and folly in this are most of my life. The early years in my parent's home and in my elementary school were spent 5.25 miles southwest of the Metro Plant, as the crow flies. Now, for more than 30 years, I have lived 2.5 west of it. However, some of my neighbors live less than a mile from it, less than 5,000 feet due west, just west of Southport industrial area.

The EAW has not fully considered the residents who live close by, in the West Side neighborhood, and the impact the current and future development at the Metro Plant will have on them and their quality of life. There is a significant amount of St. Paulites who live between 4,700 feet and a mile west of the plant. Yet in multiple parts of the EAW, these residential areas are not described or considered. South St Paul neighbors live less than a mile from the plan, but they are not considered either.

Sacred Sites
Well known sites sacred to the indigenous Dakota people are not mentioned, including the burial mounds at Indian Mounds Regional Park and Wakan Tipi (aka Carver's) cave in Bruce Vento Nature Sanctuary. The historic village of the Kaposia Dakota was just north of the Metro Plant. After they were removed west of the Mississippi, the Kaposia village was within a mile of the plant. Riverview Cemetery is on the hill overlooking the river valley just over a mile from the plant, but it is not mentioned.

Land Use
The most this worksheet mentions these residents is in the following statement, "On the western bank of the Mississippi River, the land use is a combination of industrial uses, parkland, residential, and the Saint Paul Airport approximately one mile away." That is not enough and I ask that people living on the West Side be seriously considered.

Air quality
Another example is air quality. The general statement, "Based on the air dispersion modeling and cumulative impact analysis for the Project, the Metro Plant will comply with the applicable air quality standards and is not expected to contribute to an adverse cumulative potential air quality effect" is just not enough.

Noise
Without further study about noise impact this EAW is not complete. Despite what I've described above the worksheet states, "the Metro Plant is in a zone designated for industrial use and is not near residential properties." I disagree.

RAMSEY COUNTY
Board of Commissioners

August 25, 2023

Minnesota Pollution Control Agency
c/o Katrina Hapka
520 Lafayette Road
St. Paul, MN 55155

RE: Public Comment to the MPCA's EAW for the Met Council's Metropolitan Wastewater Treatment Plant

Dear Ms. Hapka,

This public comment in response to the Minnesota Pollution Control Agency's (MPCA) Environmental Assessment Worksheet (EAW) is written on behalf of Ramsey County Commissioner Mai Chong Xiong (District 6) and Ramsey County Commissioner Rafael E. Ortega (District 5).

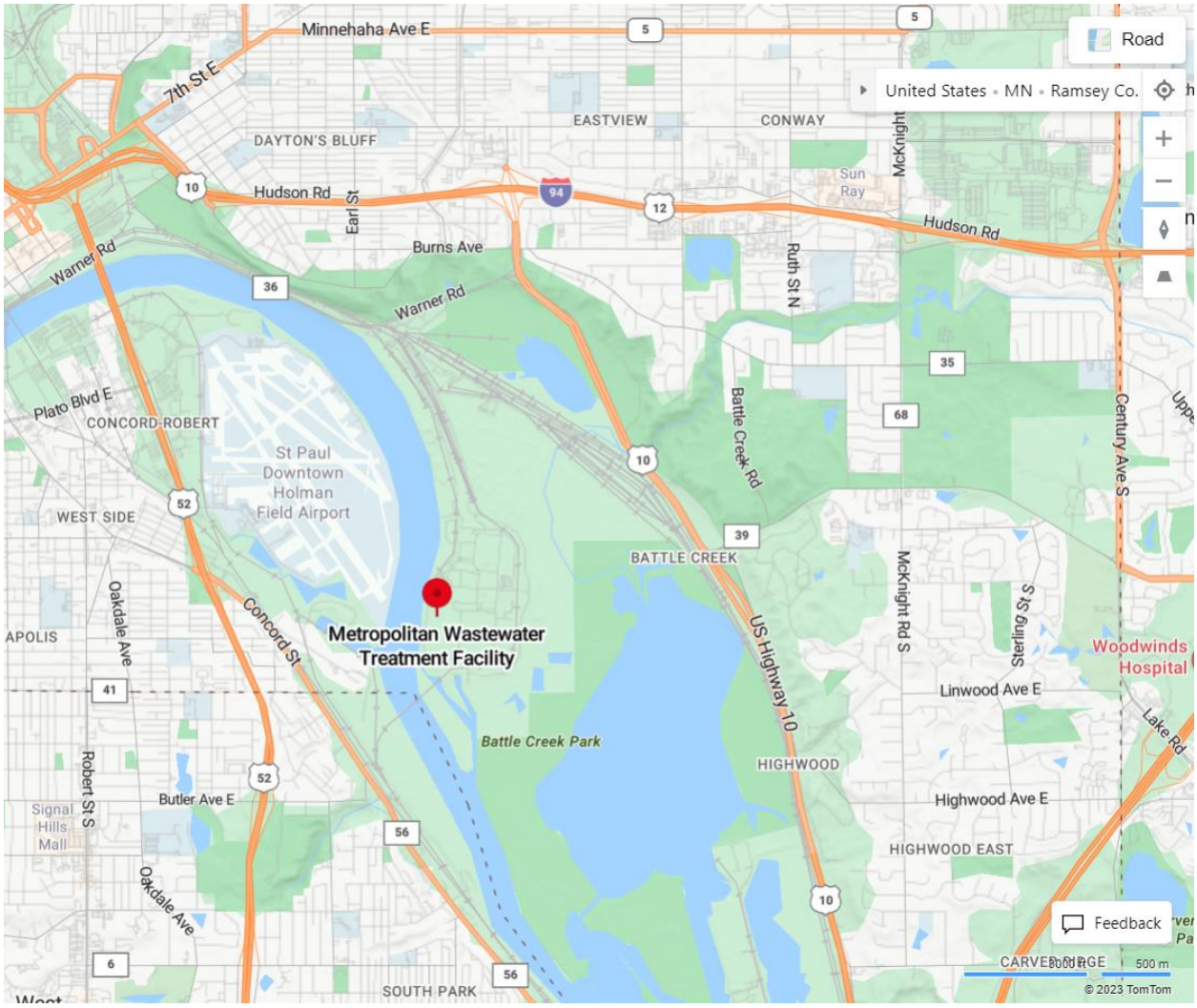
General Background of Agencies
The Metropolitan Council (Met Council) is a regional policy-making body, planning agency, and provider of essential services across the seven counties that make up the Twin Cities metro area. The Metropolitan Council Environmental Services (MCES) is a division of Met Council that owns the Metropolitan Wastewater Treatment Plant in Saint Paul, which is the largest wastewater treatment facility in Minnesota. The facility, located in Saint Paul between the Mississippi River and Pig's Eye Lake, processes waste from all metropolitan counties and additional solids trucked in from four other treatment plants. The facility currently treats 180 gallons of wastewater every day, which results in the capture of 850 tons of solids daily. The three incinerators burn the 850 tons of solids resulting in 40 tons of ash. MCES is proposing the addition of a fourth incinerator and associated equipment and facilities to accommodate a growing population within the Twin Cities.

To understand the scope of the addition of a fourth incinerator, Ramsey County Commissioners Xiong and Ortega have sought information and feedback from the Met Council, MCES, the MPCA, the City of Saint Paul, Saint Paul-Ramsey County Public Health, local district councils, environmental organizations, and concerned community members. Given that MCES's addition of a fourth incinerator is located near and within low-income communities and racially and ethnically diverse communities that are already susceptible to poor air quality and associated health risks, the representative county commissioners submit this comment for review.

Ramsey County and its commissioners do not oversee the functions of Met Council or MCES, although the Met Council partners with Ramsey County to deliver many programs and services.

220 Courthouse
15 West Kellogg Blvd.
Saint Paul, MN 55102
Phone: (651) 266-8350
www.co.ramsey.mn.us

Socioeconomic Demographics of Surrounding Area



(Google Map image captured on August 23, 2023)

The treatment facility is located on 2400 Childs Road in Saint Paul, MN within Ramsey County Commissioner District 5, adjacent to District 6. As determined by the EAW, residential areas are one mile east past Pig's Eye Lake, Highway 10, and the railroad. Humboldt Senior/Junior High is approximately two miles to the west. Nearby parks include Pig's Eye Regional Park immediately east/northeast and Battle Creek Regional Park about one mile east/northeast. These parks feature hiking and biking trails. Smaller parks in the residential areas include Kaposia, Port Crosby Thompson County, Pleasantview, Henry, Lower Landing, Harmon, and Northview Pool.

Furthermore, the Dayton's Bluff neighborhood is two miles northwest of the facility. The Dayton's Bluff Elementary School sits three miles northwest. Indian Mounds Regional Park is about 2 miles north.

According to Ramsey County's report on air quality (see Attachment A), poor air quality can affect lung and heart health. Scientific studies have shown that exposure to poor air quality can lead to a sore throat, persistent cough, burning eyes, wheezing, shortness of breath or

chest pain. Elevated pollution levels can also trigger asthma attacks, hospital admissions and emergency room visits, heart attacks, and premature death. The MPCA, by using the Air Quality Index (AQI), has determined that there has been an increase of good AQI days across Minnesota. However, Ramsey County found that the Twin Cities routinely has the fewest number of good days due to the density of air pollution sources that facilities like the treatment plant contribute to. The Twin Cities historically has also experienced the most air alert days since 2005 as compared to other regions over time.

Ramsey County also found that air pollution disproportionately impacts the health of communities living in areas with higher concentrations of poverty and people of color. Here, the facility sits between the West Side and Battle Creek neighborhoods. In these neighborhoods, up to 39% of households were estimated to be in poverty, with a higher poverty concentration in the West Side neighborhood where the facility is directly adjacent to (see Attachment A). Additionally, the Dayton's Bluff neighborhood, which is north of the facility, has an estimated poverty rate of 20% to 39%.

These air pollution-related health impacts are underlined by other health inequities such as limited access to healthcare, transportation barriers, lack of health insurance, and more. The county determined that "more work needs to be done to understand the interaction between air pollution and health inequities, and to address the disparities they produce."

The health concerns imposed by the addition of a fourth incinerator are made more significant because low-income communities and racially and ethnically diverse communities such as those surrounding the facility are historically under-engaged by the agencies and industries whose decisions impact them the most. Therefore, we pose the question as to whether the MPCA and MCES have implemented culturally-responsive community outreach strategies that go beyond traditional open houses. Culturally-responsive community outreach strategies may include but are not limited to:

1. Hiring a communications person or team that specializes in educating and engaging with local communities to be impacted, with an emphasis on engaging with low-income and racially and ethnically diverse communities;
2. Identifying the racial and linguistic demographics followed by direct mailing and/or targeted digital outreach in identified languages;
3. Distilling complex data into layman's terms followed by intentional publication and circulation of the materials, also made available in identified languages;
4. Directly engaging with organizations, district councils, and community leaders to facilitate deeper conversations;
5. Establishing long-term relationship building that precedes and extends beyond the periods of necessary engagement.

PFAS

Regarding per- and polyfluoroalkyl substances (PFAS) compounds, Page 23 of the EAW stated that the "level of PFAS in the wastewater recycle stream, and ultimately in the air, from the incineration process is currently unknown." However, "[i]f released into the air, they can impact soil, surface water and groundwater."

For context, the 180 million gallons of daily wastewater, which includes human excrements, toxic metals, hazardous chemicals, and industrial and commercial waste from 1.8 million residents from 66 communities flow into Saint Paul to be processed at this single location where it is burned, treated, and neutralized as best as possible. However, the incinerators

cannot reach a temperature hot enough to destroy PFAS. Although the facility is determined to not create additional PFAS, it is of incredible concern that the agencies are unaware of (1) how much PFAS may be in the wastewater, (2) how much is then emitted back into the air or river, and (3) the far-reaching effects of the PFAS unto nearby communities.

This enormous amount of wastewater flowing from across the metro area likely creates a significant amount of PFAS released into the air at this single location, resulting in discriminatory PFAS exposure.

Considering the financial projection that the fourth incinerator is expected to cost at least $210 million with a subsequent renewal project that will cost $30 million coupled with the lack of knowledge surrounding the facility's contribution of PFAS into the local environment, we request the change that this project await more research as to the effects and the amount of PFAS the incinerators both destroy and release into the air prior to permit approval.

Because the incinerators cannot destroy all PFAS from the solids, we also raise the question of whether the facility will be able to capture PFAS from the solids and transport them off site for destruction until more information is gathered and shared with the public. To move forward with another incinerator while remaining ignorant to the actual amount of PFAS released into the area is an act of environmental injustice that targets the surrounding communities and wildlife that live near the site.

Recommendations & Mitigation Strategies
As the addition of the fourth incinerator is expected to produce 25% more pollutants in incinerator emissions without knowledge of the spread of PFAS, MCES should implement mitigation strategies to protect the surrounding communities. These mitigation measures could include:

1. Ensuring that the community is adequately engaged in the site development and in the operational phases of the fourth incinerator, such that the fourth incinerator will transition from a supplementary function as the older incinerators are repaired to the final phase of simultaneous operation of all four incinerators, by
    a. holding virtual and in-person informational sessions,
    b. providing notice by mail to nearby residents and schools,
    c. and hosting online information available in several languages;
2. Investing in technology and investigative research to evaluate PFAS discharge caused by the incinerators, measuring any disparities, and reporting that data to the public;
3. Requiring that the use of trucks importing waste from the four other locations use zero-emissions technology;
4. Fully or partially reimbursing schools, residences, nonprofit organizations, and park facilities for installing or updating indoor air filtration within a minimum 2-mile radius, as the EAW has acknowledged that there are several nearby parks, trails, schools, and recreational areas;
5. Requiring all trucks and trailers entering the site to be in compliance with all current air quality regulations;
6. Improving, protecting, and expanding green spaces, such as tree canopies, around the treatment facility and in nearby neighborhoods;
7. Making risk assessments available and understandable to the public, including but not limited to flood plans, sediment and erosion controls, regulation of emissions and more, as indicated in the EAW; and

8. Transparently disclosing all environmental impacts of the addition of the fourth incinerator in accessible ways.

Conclusion
In conclusion, Commissioners Xiong and Ortega recognize the need for an increase in wastewater solids processing capacity to accommodate a growing population. The addition of a fourth incinerator is the most affordable and convenient option, and residents trust that the fourth incinerator will "have no odors during construction or during operation," as stated on Page 45 of the EAW.

However, there is a parallel need to promote and protect the health and wellbeing of vulnerable communities in the areas surrounding this site. The questions below are asked with intent to ensure that industries remain innovative and responsible for protecting the environment we all share. The questions reiterate those previously discussed and include additional inquiries.

1. Has the MPCA and MCES implemented culturally-responsive community outreach strategies that go beyond traditional open houses to discuss the need and implications of a fourth incinerator? If so, how?
2. Will the facility be able and willing to separate PFAS from the waste and transport them away from this treatment plant to be destroyed, transformed, or converted at another location outside of the metro area until more information is gathered and shared with the public? If no, why?
3. On Page 40, nitrogen oxide emissions were identified as one of four pollutants that exceed the significant impact level. Why are there no current plans or requirements via the Air Permit to install a urea or ammonia system for nitrogen oxides emissions control at the facility (see Page 31 of EAW)? Are emissions still at a safe level despite exceeding the significant impact level threshold?
4. Incineration at 1,375 degrees Fahrenheit is sufficient to destroy harmful bacteria, viruses, and other pathogens. Is it sufficient to destroy or capture pharmaceuticals and other chemicals of concern such as, but not limited to, PFAS in the solids? If not, what resolution will MCES implement to address this issue?
5. Met Council determined that adding anaerobic digesters followed by incineration was too expensive over incineration alone. Given that Met Council requires large amounts of energy to power Metro Transit and the extensive wastewater treatment system, was the value of captured biogas, which could be used to power Metro Transit buses using a carbon negative renewable fuel source, factored into the cost of the project?

Sincerely,

Commissioner Mai Chong Xiong (District 6)

Commissioner Rafael E. Ortega (District 5)

Air Quality

DESCRIPTION

Poor air quality can affect lung and heart health. Scientific studies have shown that exposure to poor air quality can lead to a sore throat, persistent cough, burning eyes, wheezing, shortness of breath or chest pain. Elevated pollution levels can also trigger asthma attacks, hospital admissions and emergency room visits, heart attacks, and premature death.[1]

The Air Quality Index, or AQI, was developed by the U.S. Environmental Protection Agency (EPA) to provide a simple, uniform way to report daily air quality conditions. Minnesota AQI numbers are determined by hourly measurements of five pollutants: fine particles (PM2.5), ground-level ozone (O3), sulfur dioxide (SO2), nitrogen dioxide (NO2), and carbon monoxide (CO). The pollutant with the highest AQI value determines the overall AQI for that hour; fine particles and ozone are the primary pollutants causing air alerts.[2]

The Minnesota Pollution Control Agency (MPCA) uses hourly air pollution monitoring results and daily air quality forecasts to determine whether air pollution concentrations have reached air quality alert levels. An air quality alert is issued when measured or forecasted air quality conditions are expected to result in an AQI of 101 or higher, meaning that adverse health effects can be expected for populations that are sensitive to air pollution.[3]

HOW WE ARE DOING

The number of good AQI days has been increasing over time while the number of moderate and higher days has been decreasing. The number of "unhealthy for sensitive groups" and "unhealthy" days is more variable, as it is driven by differences in weather conditions that affect air quality. Ramsey County in 2016 had two total "unhealthy" days. In the Twin Cities for 2015, there were seven alert days for AQI.

The number of AQI days in each category varies by region of the state. Typically, areas in the northern half of the state have the highest number of good days. The Twin Cities routinely has the fewest number of good days, due in part to the density of air pollution sources such as cars, trucks, homes, and industry in the metropolitan area.[4]

The number of air alert days per year across Minnesota has generally been declining over time (the slight increase noted for 2015 was primarily due to increased wildfire activity). On most days, air quality across Minnesota is healthy to breathe, but on some days each year the air can reach unhealthy levels.[5]

BENCHMARK INDICATOR

Healthy People 2020: Reduce the number of days the Air Quality Index (AQI) exceeds 100.

U.S. Target: 10% improvement.

DISPARITIES

Air pollution disproportionately impacts the health of some communities. Areas with higher concentrations of people living in poverty and people of color tend to experience higher levels of air pollution than those in predominantly white and higher-income areas, and are

[1] About air quality data. Health effects associated with poor air quality. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/about-air-quality-data. Accessed January 16, 2018.
[2] About air quality data. AQI monitor locations. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/current-condition-details. Accessed January 16, 2018.
[3] About air quality data. Issuing Air Quality Alerts. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/about-air-quality-data. Accessed January 16, 2018.
[4] Annual AQI summary reports. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/annual-aqi-summary-reports. Accessed January 16, 2018.
[5] Air Quality Index: facts and figures. Minnesota Department of Health. https://apps.health.state.mn.us/mndata/air_aqi. Accessed January 16, 2018.

Information to note

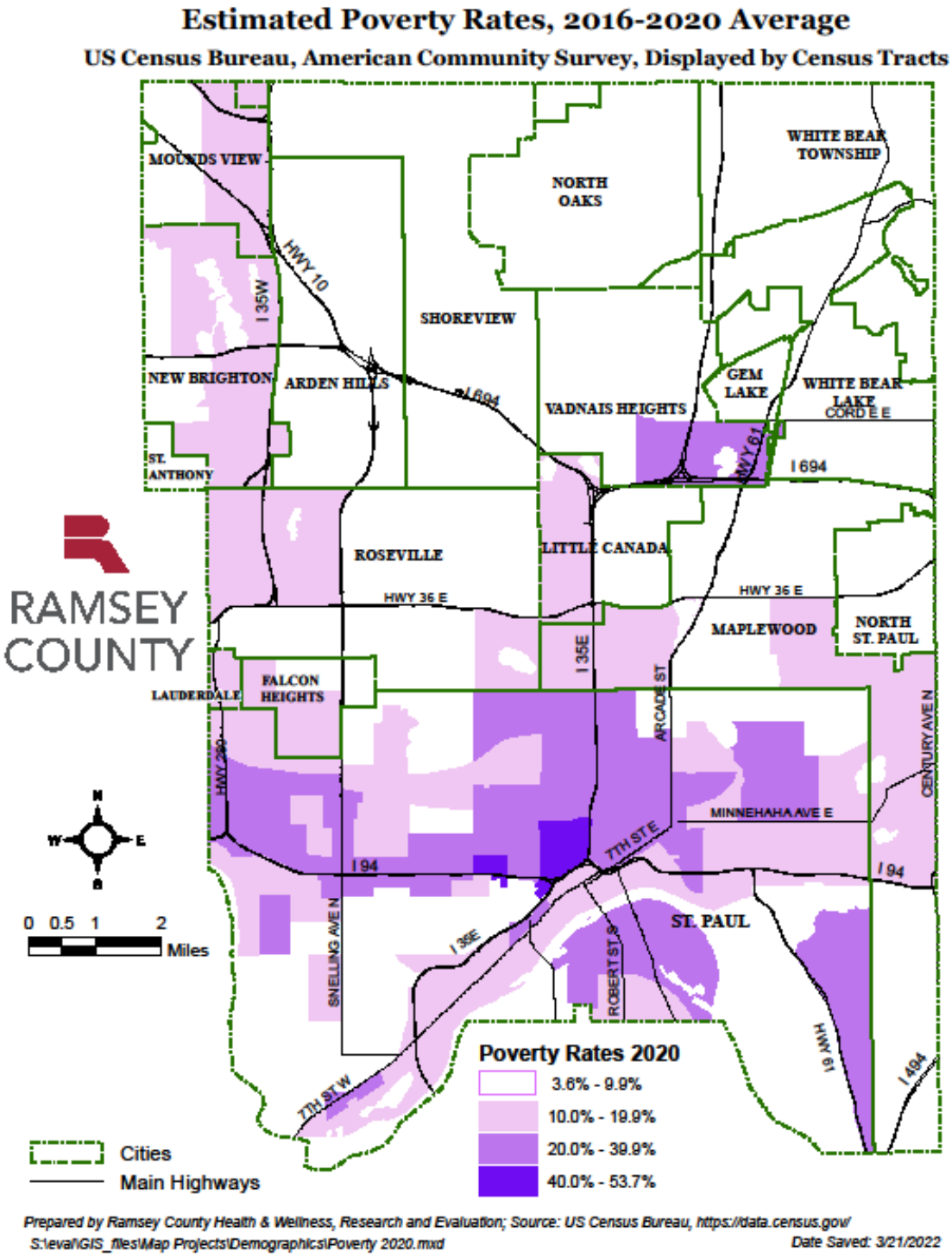
- Overall, the number of good air quality days in Ramsey County is increasing.
- The Twin Cities routinely has the fewest number of good air quality days, compared to other regions of the state.
- An air quality alert is issued when the AQI exceeds 100.

Community voice

"Pollution in the air, smoking."
- White Female, age 10-24

509 respondents mentioned the physical environment as a factor that influenced their health. Of these, 68 mentioned the adverse effects of air pollution.

Attachment B



SIERRA CLUB
NORTH STAR CHAPTER

2300 Myrtle Avenue, Suite 260
Saint Paul, MN 55114
612-659-9124
sierraclub.org/minnesota

August 25, 2023

Minnesota Pollution Control Agency
c/o Katrina Hapka
520 Lafayette Road North
St. Paul, MN 55155
Submitted via website

Re: Met Council Wastewater Treatment Plant (St. Paul) - Environmental Assessment Worksheet

Dear Katrina Hapka,

Sierra Club Healthy Communities is an initiative within the Sierra Club to create meaningful and impactful relationships with frontline environmental justice communities and prioritize environmental justice within our own campaigns. Through partnership with the local Sierra Club North Star chapter, Healthy Communities has worked to complement the expertise and knowledge of communities directly-affected by pollution, displacement, or climate change with our engaged statewide membership and our legislative and regulatory work.

The Metropolitan Wastewater Treatment Plant is the largest wastewater treatment facility in Minnesota, serving all metropolitan counties. It also features three fluid bed incinerators which help break down waste and generate power for electricity. Metropolitan Council Environmental Services, who own the facility, want to expand the water treatment campus by adding a fourth fluid bed incinerator, and in order to do so they are required to amend their existing air permit. To be approved for this, they need to provide an adequate assessment of the health and environmental impacts of the proposal.

After review of the Environmental Assessment Worksheet, we believe the following needs to be addressed before the air permit is to be approved and that an EIS would be the most appropriate next step in the process.

Additional Processing Capacity
Metropolitan Council Environmental Services (MCES) says that the additional truck traffic from the fourth fluid bed incinerator will average about one truck per day, and that ash generated will increase over time. The Empire, Blue Lake, or Seneca plants will also send cake to the

Metropolitan Plant on an emergency backup basis. What constitutes an emergency and what is the limit before it is considered an excess at these plants?

Given the increase over time of diesel-powered vehicles, are there plans in place to decarbonize operations at the facility? What is the extent to which the Metropolitan Council is able to restrict the use of diesel-powered vehicles?

Environmental Justice

The Metropolitan Wastewater Treatment Plant is located at 2400 Childs Road in Saint Paul. The facility is adjacent to multiple environmental justice communities of Saint Paul, including multiple neighborhoods with a majority BIPOC, low-income, and renter populations.

The Metropolitan Council's recommendation for the addition of the fourth fluid bed incinerator is to accommodate population growth in the Twin Cities metro area. Given that population growth is projected in several Minnesota counties, and given the addition of a new cake receiving facility at the Metro Plant to receive backup sludge from other nearby treatment plants, what are the reasons that increasing capacity at this site is the best course of action? Were alternative facilities within the metropolitan area considered for modernization and why or why not?

The Metropolitan Plant is located on land adjacent to greenspaces which are currently being restored by indigenous-led efforts, such as Bruce Vento Nature Sanctuary/Wakáŋ Tipi and Pig's Eye Regional Park/Ṗhokáŋ Taŋka, as well as Indian Mounds Regional Park, a site sacred to the Dakota people. Metropolitan Council has provided support to these efforts in the past, and should continue to contribute to indigenous-led land restoration. We would like to see Metropolitan Council consult with indigenous groups about the best ways to continue supporting these necessary restitution projects.

PFAS

There is not adequate research available about the transmission of PFAS into the air during the incineration of wastewater containing PFAS[1]. The Metropolitan Plant is listed as a likely source of PFAS[2] and is on the MPCA list of PFAS monitoring sites. The EAW does not describe in detail the MPCA's plan for monitoring PFAS either in water discharge or air emissions. []

Cumulative Impacts

The Cumulative Impact Assessment[3] provided within the EAW showed that pollutants of concern were below National Ambient Air Quality Standards threshold. Still, MCES recommends to restrict the facility emissions when necessary to contain its contributions of PM10. We agree with this discretion and would like to request that the responsible agencies hold a public meeting on the cumulative impact analysis. This is to promote the informed

[1] https://www.wwdmag.com/wastewater-treatment/article/10939565/destroying-pfas-in-sludge

[2] https://www.pca.state.mn.us/sites/default/files/p-gen1-22c.pdf

[3] https://scs-public.s3-us-gov-west-1.amazonaws.com/env_production/oid333/did200071/pid_206675/project-documents/MPCA%20Final%20-%20MCES%20EAW.pdf

participation of impacted communities and to ensure that the cumulative impact analysis can be effectively enforced.

Recycling and Re-use of Demolition Materials
The EAW says that it will evaluate the options for recycling demolition materials when possible. We would like to see future demolition and construction plans include what measures are being taken to recycle materials when possible.

We urge the Minnesota Pollution Control Agency to require an EIS which would allow for a comprehensive analysis of the impacts and concerns above, and include a transparent and robust public engagement process.

Thank you for the opportunity to comment.

Sincerely,

Margaret Levin
State Director
Sierra Club North Star Chapter

Dominique Diaddigo-Cash
Healthy Communities Senior Organizing Representative
Sierra Club

From:	Hapka, Katrina (MPCA)
To:	Hapka, Katrina (MPCA)
Subject:	FW: CONFIDENTIAL AND PROPRIETARY - Capturing CO2 from the Metro Wastewater Treatment Plant incinerators
Date:	Tuesday, September 12, 2023 10:59:52 AM

Katrina Hapka | Project Manager
Minnesota Pollution Control Agency (MPCA)
RMAD | Environmental Review
651.757.2418
520 Lafayette Road | St. Paul, MN | 55155
katrina.hapka@state.mn.us | pca.state.mn.us

MINNESOTA POLLUTION CONTROL AGENCY

Our mission is to protect and improve the environment and human health.

From: Dale Lutz <drlutz@msn.com>
Sent: Thursday, August 24, 2023 6:26 AM
To: Hapka, Katrina (MPCA) <Katrina.Hapka@state.mn.us>; Braaten, Bruce (MPCA) <bruce.braaten@state.mn.us>; megan.kuhlstennes@state.mn; Hartz, Owen <Owen.Hartz@chartindustries.com>; lrnereng Laura Nereng home <lrnereng@gmail.com>; Dale Lutz <drlutz@msn.com>
Subject: CONFIDENTIAL AND PROPRIETARY - Capturing CO2 from the Metro Wastewater Treatment Plant incinerators

CONFIDENTIAL

Katrina, Bruce, and Megan,

I spoke with you at the August 14 Open House at the Dayton's Bluff Recreation Center.

This is a follow-up to the public comments I submitted regarding the plan to add a 4th wastewater sludge incinerator to the Metro Wastewater Treatment Plant., arguing that the plant should also

include equipment to capture the produced CO2 greenhouse gas, which could then be converted to sustainable aviation fuel (SAF) or other useful hydrocarbons. I am attaching a proposal for such equipment that I obtained from Owen Hartz, the Business Development Manager for Carbon Capture, Utilization, and Storage (CCUS) at Chart Industries, Inc. The proposal describes how their Cryogenic Carbon Capture (CCC) technology could be added to the wastewater sludge incinerators. However, please note that the bottom of each page includes the statement:

"Confidential and Proprietary – This document shall not be reproduced or distributed outside
of the receiving party's organization without written permission from Chart Industries."

Therefore, PLEASE SHARE THIS INFORMATION ONLY WITH PEOPLE IN YOUR ORGANIZATION WHO HAVE A "NEED TO KNOW", and do not share it outside of the Minnesota Pollution Control Agency (MPCA) without written permission from Chart Industries, Inc.

Owen, copied here, provided such written permission to me in the following email message.

"We would ask that it not be shared as a "public comment" but could be shared directly with us copied and a statement that it should not be shared beyond that without our permission."

Please contact me or Owen if you have questions.

Best regards,

Dale R. Lutz

Minnesota Pollution Control Agency

Metropolitan Wastewater Treatment Plant Solids Management Improvements Project
Environmental Assessment Worksheet (EAW)

RESPONSES TO COMMENTS ON THE EAW

Procedural

Comments 6-1, 10-19, 10-12, 10-16, and 13-10: Commenters requested an Environmental Impact Statement (EIS).

Response: The Commissioner of the MPCA will make the determination on the need for an EIS after carefully reviewing all the information in the EAW, written public comments, and the Response to Comments. Upon reviewing all of the available information, the Commissioner determines if the Project has a potential for significant environmental effects following the criteria specified in Minn. R. 4410.1700 subp. 7. The Commissioner issues Findings of Fact, Conclusions of Law, and Order to support either a positive declaration on the need for an EIS, or a negative declaration on the need for an EIS.

Air Quality

Comment 1-2: Commenter states "Scope 1 Greenhouse gas (GHG) emissions from anthropogenic (man-made) sources were reported on the Metro Plant 2019 Air Emission Inventory Report. These emissions include only emissions from fossil fuel combustion at the Metro Plant and do not include biogenic greenhouse gases generated from treatment of wastewater or from carbon in the wastewater sludge."…. While this somewhat dubious approach simplifies accounting and reporting, it ignores the fact that addressing climate change requires quickly reducing the concentration of carbon dioxide (CO2) greenhouse gas in the atmosphere from the present 420+ parts per million (ppm) to at most 350 ppm, and preferably to the 280 ppm that existed before the Industrial Revolution. Technology now exists that can capture CO_2 from point sources and "recycle" the carbon into needed chemicals and "electrofuels". The proposed wastewater sludge incinerator provides an opportunity for "carbon negative" operation to offset other current emission sources, such as cement and steel making.

Response: Per the Environmental Quality Board's guidance, "*Unless released to the atmosphere as a result of permanent land use change, carbon dioxide (CO_2) emitted to the atmosphere from biomass combustion or ecosystem or animal respiration, is often rapidly removed from the atmosphere through subsequent photosynthesis and returned to storage in living biomass and soils."* The Project involves the treatment of wastewater sludge, a common biomass fuel, and thus carbon neutrality is assumed for the Project's carbon footprint.

Comment 4-1: Commenter states that this would increase fine particulate pollution in their area. Disgusting.

Response: Potential effects to air quality from the Project were evaluated using air dispersion modeling (AERMOD) for criterial pollutants, and an associated Air Emissions Risk Analysis (AERA) for air toxics/hazardous air pollutants (HAPs).

The purpose of the air dispersion modeling was to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), and the purpose of the AERA was to evaluate air emissions for potential impacts to human health.

The results of the air dispersion modeling analysis showed that carbon monoxide (CO) emissions were below the Significant Impact Level (SIL). Currently, ambient levels of CO in the Twin Cities area range from 0.4 to 1.2 parts per million (ppm), versus the ambient standard of 9 ppm. There is more than one SIL margin between the ambient CO levels and the NAAQS. Therefore, NAAQS modeling was not required for CO. Similarly, maximum Project 3-hour average sulfur dioxide (SO_2) concentrations are also below the SIL. The difference between ambient 3-hour average concentrations and the NAAQS is also more than one SIL margin. The results of the modeling analysis showed compliance with the NAAQS standards for $PM_{2.5}$, SO_2, nitrogen dioxide (NO_2), and lead (Pb), including background concentrations. MCES modeled PM_{10} concentrations are less than the 5 micrograms per cubic meter ($\mu g/m^3$) SIL for all day and location combinations where exceedances were modeled, implying neighboring facilities have contributed to the modeled concentrations above the NAAQS.

Further, the results of the AERA for air toxics (Appendix E of EAW) showed the hazard indexes and cancer risks were below Minnesota Department of Health (MDH) thresholds.

Scenario	**MDH Total Facility Threshold**	**MCES Wastewater Treatment Plant (WWTP) Risk Result**	**Exceeds MDH Threshold**
Acute Inhalation Hazard Index	1	1	No
Subchronic Noncancer Inhalation Hazard Index	1	0.4	No
Chronic Noncancer Inhalation Hazard Index	1	1	No
Cancer Risk from Inhalation	1E-5	1E-5	No
Total Urban Gardner Cancer Risk	1E-5	1E-5	No
Total Urban Gardener Noncancer Hazard Index	1	1	No
Total Resident Cancer Risk	1E-5	1E-5	No
Total Resident Noncancer Hazard Index	1	1	No

In absence of showing air impact contributions to the modeled exceedances above the NAAQSs or MDH thresholds, the MPCA cannot require any entity to reduce emissions below what is required by law.

Comment 5-1: Commenter's primary concerns are odors and air emissions. Over the years, I and my neighbors have been participants in meetings, giving testimonies, phoning, and writing complaints. I request that you be vigilant in preventing any odors and air emission problems. Thank you.

Response: The state of Minnesota does not currently have rules an ambient odor standard, however, odors can be considered a nuisance and be regulated as a nuisance per Minn. St. 561.01. The Project at the Metro plant will incorporate existing odor control systems to control odors. Therefore, the Metro Plant will not generate additional odors within the community because of the Project. The Project will obtain and comply with an MPCA air emissions permit, will meet the NAAQS, and will not pose any acute inhalation health hazards or any sub-chronic or chronic multi-pathway health hazards to the public.

Comment 9-1: Commenter states that the Cumulative Impact Assessment provided within the EAW showed that pollutants of concern were below National Ambient Air Quality Standards threshold, however this does not mean they are incapable from causing harm.

Response: Within toxicology, any substance including water and oxygen can be toxic at certain levels. The body has many mechanisms to clear toxins from the body including making the compound or molecule water soluble, to be eliminated via waste products. Biological accumulation is complex, as it has to do with the body's capacity to clear the compound or molecule (does it have the mechanism to clear it and how fast), what the compound or molecule is, the dose of the exposure of the compound or molecule, how often you are exposed, how you were exposed (skin, inhalation, drank or ate it, injection, etc.), and other factors.

While it is true that zero emissions would be the most ideal situation for any facility to have, even heating a building with a furnace would create emissions of toxins that fall under the NAAQS (carbon monoxide, particle pollution, etc.). In absence of showing air impact contributions to the modeled exceedances above the NAAQSs or MDH thresholds, the MPCA cannot require any entity to reduce emissions below what is required by law.

Also, refer to response 4-1 regarding air toxics modeling results below MDH thresholds.

Comment 9-2: Commenter states that according to any toxicologist there is no "healthy" or truly 'neutral' amount of toxins that can be processed through the body, so any addition of pollutants is accumulating effects regardless of those standards. More simply, if you asked any individual, which would you prefer in your neighborhood: Zero additions of pollutants; or pollutants below the National Ambient Air Quality Standard threshold, most would most certainly choose the former because these two options are not the same.

Response: Please see response to comment 9-1.

Comment 9-3: Commenter hopes efforts are made to hold a public meeting with the potentially impacted communities to explain more thoroughly the cumulative impacts analysis…

Response: The MPCA does not intend to hold additional public meetings because the MPCA held a public meeting on August 14, 2023 at Dayton Community Center. This public meeting provided the public an opportunity to ask MPCA staff any questions or address any concerns citizens may have had regarding this Project.

The MPCA dedicated over two and half years to engaging community members within St. Paul Districts 1, 3, 4, and 5, while engaging and informing community connectors and community organizations near the facility. The following were the community engagement meetings conducted by the MPCA prior to the August 14, 2023, public meeting for to inform the public about the Project.

i. April 12, 2022, West Side Community Organization
ii. April 26, 2022, District 5 Payne-Phalen
iii. May 2, 2022, District 1 Southeast Community Organization
iv. October 4, 2022, West Side Community Organization
v. April 25, 2023, Community Information Meeting

Also refer to response to comment 9-1.

Comment 10-8: Commenter states that the Cumulative Impact Assessment provided with this EAW indicated that pollutants of concern were below the National Ambient Air Quality Standards threshold, but this is not a complete story – it is well known that for human health no amount of toxins are ok. Any increase in a community that is already being impacted by existing pollutants should not be allowed.

Response: Please see response to comment 9-1.

Comment 10-9: Commenter is requesting that the responsible agencies hold a public meeting on the cumulative impact analysis. This is to promote the informed participation of impacted communities and to ensure that the cumulative impact analysis can be effectively enforced.

Response: Please see response to comment 9-1.

Comment 11-6: Commenter states that the general statement, "Based on the air dispersion modeling and cumulative impact analysis for the Project, the Metro Plant will comply with the applicable air quality standards and is not expected to contribute to an adverse cumulative potential air quality effect" is just not enough.

Response: Please see response to comment 4-1.

Comment 12-1: Commenter states that according to Ramsey County's report on air quality (see Attachment A), poor air quality can affect lung and heart health. Scientific studies have shown that exposure to poor air quality can lead to a sore throat, persistent cough, burning eyes, wheezing, shortness of breath or chest pain. Elevated pollution levels can also trigger asthma attacks, hospital admissions and emergency room visits, heart attacks, and premature death.

Response: Comment noted.

Comment 12-2: Commenter states that the MPCA, by using the Air Quality Index (AQI), has determined that there has been an increase of good AQI days across Minnesota. However, Ramsey County found that the Twin Cities routinely has the fewest number of good days due to the density of air pollution sources that facilities like the treatment plant contribute to. The Twin Cities historically has also experienced the most air alert days since 2005 as compared to other regions over time.

Response: Comment noted.

Comment 12-22: Commenter states that on Page 40, nitrogen oxide emissions were identified as one of four pollutants that exceed the significant impact level. Why are there no current plans or requirements via the Air Permit to install a urea or ammonia system for nitrogen oxides emissions control at the facility (see Page 31 of EAW)? Are emissions still at a safe level despite exceeding the significant impact level threshold?

Response: The significant Impact level (SIL) is a screening value in a Source Impact Analysis (SIA) model, that is generally a small percentage of the NAAQs. The Project failed to model nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, and $PM_{2.5}$ below the SIL., and A more in-depth, rigorous analysis, known as a cumulative impact analysis (CIA) was performed. The CIA included full dispersion modeling including nearby sources and background was performed. All of the pollutants passed the CIA by modeling under the ambient air quality standards for NAAQS/MAAQS except for PM_{10}, which then underwent a third analysis called a Source Contribution Analysis (SCA).

Comment 13-8: Commenter states that the Cumulative Impact Assessment provided within the EAW showed that pollutants of concern were below National Ambient Air Quality Standards threshold. Still, MCES recommends to restrict the facility emissions when necessary to contain its contributions of PM_{10}. We agree with this discretion and would like to request that the responsible agencies hold a public meeting on the cumulative impact analysis. This is to promote the informed participation of impacted communities and to ensure that the cumulative impact analysis can be effectively enforced.

Response: Please see response to comment 9-1.

Environmental Justice

Comment 7-4: Commenter states that the BIPOC majority neighborhoods that surround Pig's Eye have been waiting 43 years for a Met Council agreement with the City or County so recreational use and natural resource restoration can move forward on 80 acres of public land. An agreement should be a priority in any discussion about possible expansion tied to adding another burner.

Response: Comment noted.

Comment 8-1: Commenter states that the Met Council has a responsibility to address negative impacts to our BIPOC majority neighborhoods.

Response: The MPCA recognizes that there are environmental justice areas in the vicinity of the Metro Plant and Project area. The Project evaluated the cumulative potential effects of the Metro Plant, fourth incinerator Project, and other nearby emission sources. The Metro Plant with construction of the Project will meet applicable state and federal air emission standards which have been developed to be protective of human health and environment.

- Results from air dispersion modeling analyses show that emissions from the Metro Plant with the fourth incinerator are below applicable NAAQs at its facility boundary.
- Results from an AERA for the Metro Plant with the fourth incinerator meet applicable risk scenario MDH thresholds at its facility boundary.
- As a requirement of the MCES air emissions permit, air emissions from the fourth incinerator and associated air pollution control equipment will meet the federal New Source Performance Standard (NSPS) limits for new sewage sludge fluid bed incinerators, which are some of the stringent and lowest limits in the world.

The MPCA is also beginning work to implement a groundbreaking new law to remedy Minnesotans' disproportionate exposure to pollutants. The law defines environmental justice areas and requires the MPCA to conduct a rulemaking process to address the cumulative impacts of pollution during permitting processes. The MPCA is currently in the early stages of implementing Minnesota's new cumulative impacts law, with an initial public comment period open until October 6. The initial stage is a "scoping stage" and includes working with the community to solicit ideas and approaches to develop a thoughtful cumulative impacts analysis process for air permitting decisions. The MPCA will be actively collaborating with stakeholders and community groups to develop the required regulations by the May 2026 deadline. More information about this ongoing rulemaking project—including mapping tools, schedules for upcoming public meetings, and next opportunities for providing feedback—is available at https://www.pca.state.mn.us/get-engaged/cumulative-impacts.

Comment 8-4: Commenter states that the Regional Park System and residents of BIPOC majority neighborhoods would benefit from management of the flood plain forest as part of the Regional Park.

This flood plain forest should be managed as part of Pig's Eye Lake Regional Park. The flood plain is of Regional Significance and part of Saint Paul's Great River Passage plan. The area is a National Park, State Critical Area and State Scientific and Natural Area.

Response: Please see response to comment 7-3.

Comment 8-7: Commenter states that the BIPOC majority neighborhoods around Pig's Eye Lake Park have waited 43 years for the Met Council to implement an agreement with the City or County so recreational use and natural resource restoration can move forward on 80 acres of public land outside of the berm. An agreement should be in place prior to any discussion about possible expansion with adding another burner.

Response: Comment noted.

Comment 9-4: Commenter hopes efforts are made to hold a public meeting with the potentially impacted communities to explain more thoroughly the… reason for location vs non ej communities…

Response: Please see response to comment 9-3.

Comment 10-1: Commenter is concerned about the proposal to expand the Metropolitan Wastewater Treatment Plant Solids Management Improvements Project (MWTP) which is in an incredibly wrong location to begin with. This plant is mere feet from Pigs Eye Lake, the Mississippi River, Mississippi National River and Recreation Area, and many other public parklands, as well as being adjacent to multiple environmental justice communities of Saint Paul, including multiple neighborhoods with a majority BIPOC, low-income, and renter populations.

Response: Site location is a local zoning issue that the local government unit oversees and approves.

Comment 10-5: Commenter states that when multiple sources of pollution and other destabilizing factors are in the same place, the added pollution of each facility leads to more negative impacts on the health and environment of the community. Polluters have treated certain communities as "sacrifice zones" for decades, purposefully polluting those communities instead of others. This has created and contributed to a number of disparities in health, environment, quality of life, and economic stability.

Response: Please see response to comment 8-1.

Comment 10-6: Commenter states that Minnesota should ensure that the cumulative effects of pollution are incorporated into environmental permitting.

Response: Please see response to comment 8-1.

Comment 10-7: Commenter states that this will ensure that Minnesota's regulatory process cannot continue forcing pollution on overburdened communities. The Minnesota Pollution Control Agency (MPCA) should deny permits for facilities that are causing or contributing to a substantial adverse impact to the health or environment of an environmental justice area unless a community benefit agreement is developed.

Response: Please see response to comment 8-1.

Comment 12-3: Commenter states that Ramsey County also found that air pollution disproportionately impacts the health of communities living in areas with higher concentrations of poverty and people of color. Here, the facility sits between the West Side and Battle Creek neighborhoods. In these neighborhoods, up to 39% of households were estimated to be in poverty, with a higher poverty

concentration in the West Side neighborhood where the facility is directly adjacent to (see Attachment A). Additionally, the Dayton's Bluff neighborhood, which is north of the facility, has an estimated poverty rate of 20% to 39%.

Response: Please see response to comment 8-1.

Comment 12-4: Commenter states that these air pollution-related health impacts are underlined by other health inequities such as limited access to healthcare, transportation barriers, lack of health insurance, and more. The county determined that "more work needs to be done to understand the interaction between air pollution and health inequities, and to address the disparities they produce."

Response: Please see response to comment 8-1.

Comment 12-5: Commenter states that the health concerns imposed by the addition of a fourth incinerator are made more significant because low-income communities and racially and ethnically diverse communities such as those surrounding the facility are historically under-engaged by the agencies and industries whose decisions impact them the most.

Response: Please see response to comment 8-1.

Comment 12-6: Commenter poses the question as to whether the MPCA and MCES have implemented culturally-responsive community outreach strategies that go beyond traditional open houses. Culturally-responsive community outreach strategies may include but are not limited to:

1. Hiring a communications person or team that specializes in educating and engaging with local communities to be impacted, with an emphasis on engaging with low-income and racially and ethnically diverse communities;
2. Identifying the racial and linguistic demographics followed by direct mailing and/or targeted digital outreach in identified languages;
3. Distilling complex data into layman's terms followed by intentional publication and circulation of the materials, also made available in identified languages;
4. Directly engaging with organizations, district councils, and community leaders to facilitate deeper conversations;
5. Establishing long-term relationship building that precedes and extends beyond the periods of necessary engagement.

Response: MPCA is committed to authentic community engagement. The MPCA dedicated over two and a half years to engaging community members within St. Paul Districts 1, 3, 4, and 5, while engaging and informing community connectors and community organizations near the facility. The MPCA held over five community conversations and a public meeting.

The MPCA's commitment is to establish an understanding of communities' environmental concerns. This is done by being in the community, creating relationships, and engaging residents on projects and activities about facilities the MPCA regulates in the community, to ensure that communities are involved in the public comment period.

The MPCA is in dialog with community members and community organizations to build trust even when conversations are difficult, unrelated, and related to the facility that the MPCA is working on in the community.

Also refer to response 9-3.

Comment 12-20: 1. Commenter asks has the MPCA and MCES implemented culturally-responsive community outreach strategies that go beyond traditional open houses to discuss the need and implications of a fourth incinerator? If so, how?

Response: Please see response to comment 12-6.

Comment 13-3: Commenter states that the facility is adjacent to multiple environmental justice communities of Saint Paul, including multiple neighborhoods with a majority BIPOC, low-income, and renter populations.

Response: Comment noted.

Per- and Polyfluoroalkyl Substances (PFAS)

Comment 8-9: Commenter states that PFAS is only one of the toxic pollutants that should be a focus of the cleanup at Pig's Eye. The waste treatment plant was supposed to protect us from pollutant. Instead it operated for years with pipes that dumped toxic pollutant into our aquifer. We can get angry or we can do something to correct the mistakes of the past.

Response: As the EAW is designed to evaluate a project as proposed, this comment is beyond the scope of the EAW.

Comment 9-5: Commenter hopes efforts are made to hold a public meeting with the potentially impacted communities to explain more thoroughly the…clearer analysis of the potential to spread PFAS…

Response: The MPCA dedicated over two and half years to engaging community members within St. Paul Districts 1, 3, 4, and 5, while engaging and informing community connectors and community organizations near the facility. Over five community conversations and a public meeting were held.

The MPCA held a public meeting on August 14 at Dayton Community Center for the EAW and major amendment to the Title V Air Permit. The public meeting provided the public an opportunity to ask MPCA staff any questions or address any concerns citizens may have had regarding this Project.

MPCA distinguishes between PFAS *sources*, such as industrial facilities, and *conduits* such as waste treatment facilities that may release PFAS to the environment. Wastewater treatment plants do not produce PFAS, but rather receive and pass along PFAS chemicals conveyed to them via industrial, commercial, and residential use of PFAS or PFAS-containing products.

In 2021, the MPCA, along with other state agencies, released Minnesota's PFAS Blueprint – a strategic, coordinated approach to reducing PFAS in the environment to protect families and communities.

In March of 2022, the MPCA developed a PFAS Monitoring Plan. The PFAS Monitoring Plan addresses PFAS monitoring at several different types of industries including Wastewater Treatment Plants.

The focus of the wastewater PFAS Monitoring Plan is to understand the landscape of PFAS influent concentrations, identify where source reduction and source elimination efforts are needed, and measure the effectiveness of source reduction interventions.

As noted in the EAW, the proposed addition of the fourth incinerator will not in itself add to the total amount of PFAS processed at this facility. PFAS loading at the facility is dependent on the PFAS content discharged from industrial and domestic users. The expected increase in number of users over time may

increase the total amount of PFAS discharged to the plant, but this is independent of the addition of the proposed Project.

In the major amendment to the Metro Plant's Title V Air Permit, the MPCA will include new performance-based stack testing requirement for PFAS using EPA Other Test Method 45 (OTM-45). This will establish baseline monitoring data for PFAS emissions from the Metro Plant. This data will inform whether future regulatory MCES air and water permit modifications may be necessary.

A broad new Minnesota law was enacted in 2023 to reveal through manufacturer reporting where PFAS are being intentionally used in consumer products and where their packaging is being sold in the state. Further, within nine years, the law requires a ban on all but the most essential or currently irreplaceable uses in those products. Some aspects of the law relate to the Preventing PFAS pollution options discussed in the MPCA's 2022 PFAS Blueprint. The policy will help prevent the flow of PFAS through products and packaging to direct releases or to various wastewater, solid waste or biosolids releases into the environment.

Also refer to response 9-3.

Comment 9-6: Commenter hopes efforts are made to hold a public meeting with the potentially impacted communities to explain more thoroughly…why development would move forward if there is still no clear answers around this issue or ways to mitigate from PFAS harm.

Response: Please see response to comment 9-5.

Comment 10-11: Commenter states that there is not adequate research available about the transmission of PFAS into the air during the incineration of waste or wastewater containing PFAS. The MWTP is listed as a likely source of PFAS and is on the MPCA list of PFAS monitoring sites. The EAW does not describe in detail the MPCA's plan for monitoring PFAS either in water discharge or air emissions. This fact alone requires a hard look and further analysis before any permitting can move forward.

Response: Please see response to comment 9-5.

Comment 12-7: Commenter states that regarding per- and polyfluoroalkyl substances (PFAS) compounds, Page 23 of the EAW stated that the "level of PFAS in the wastewater recycle stream, and ultimately in the air, from the incineration process is currently unknown." However, "[i]f released into the air, they can impact soil, surface water and groundwater."

For context, the 180 million gallons of daily wastewater, which includes human excrements, toxic metals, hazardous chemicals, and industrial and commercial waste from 1.8 million residents from 66 communities flow into Saint Paul to be processed at this single location where it is burned, treated, and neutralized as best as possible. However, the incinerators cannot reach a temperature hot enough to destroy PFAS. Although the facility is determined to not create additional PFAS, it is of incredible concern that the agencies are unaware of (1) how much PFAS may be in the wastewater, (2) how much is then emitted back into the air or river, and (3) the far-reaching effects of the PFAS unto nearby communities.

Response: Please see response to comment 9-5.

Comment 12-8: Commenter states that this enormous amount of wastewater flowing from across the metro area likely creates a significant amount of PFAS released into the air at this single location, resulting in discriminatory PFAS exposure.

Response: Please see response to comment 9-5.

Comment 12-9: Commenter states that considering the financial projection that the fourth incinerator is expected to cost at least $210 million with a subsequent renewal project that will cost $30 million coupled with the lack of knowledge surrounding the facility's contribution of PFAS into the local environment, we request the change that this project await more research as to the effects and the amount of PFAS the incinerators both destroy and release into the air prior to permit approval.

Response: Please see response to comment 9-5.

Comment 12-10: Commenter states that because the incinerators cannot destroy all PFAS from the solids, we also raise the question of whether the facility will be able to capture PFAS from the solids and transport them off site for destruction until more information is gathered and shared with the public. To move forward with another incinerator while remaining ignorant to the actual amount of PFAS released into the area is an act of environmental injustice that targets the surrounding communities and wildlife that live near the site.

Response: Please see response to comment 9-5.

Comment 12-11: Commenter states that as the addition of the fourth incinerator is expected to produce 25% more pollutants in incinerator emissions without knowledge of the spread of PFAS, MCES should implement mitigation strategies to protect the surrounding communities. These mitigation measures could include:

1. Ensuring that the community is adequately engaged in the site development and in the operational phases of the fourth incinerator, such that the fourth incinerator will transition from a supplementary function as the older incinerators are repaired to the final phase of simultaneous operation of all four incinerators, by
    a. holding virtual and in-person informational sessions,
    b. providing notice by mail to nearby residents and schools,
    c. and hosting online information available in several languages;

Response: Comment noted. This information will be forwarded to MCES.

Comment 12-12: 2. Commenter states that investing in technology and investigative research to evaluate PFAS discharge caused by the incinerators, measuring any disparities, and reporting that data to the public.

Response: Comment noted. This information will be forwarded along to MCES.

Comment 12-21: 2. Commenter asks will the facility be able and willing to separate PFAS from the waste and transport them away from this treatment plant to be destroyed, transformed, or converted at another location outside of the metro area until more information is gathered and shared with the public? If no, why?

Response: Please see response to comment 10-11.

Comment 12-23: 4. Commenter states that incineration at 1,375 degrees Fahrenheit is sufficient to destroy harmful bacteria, viruses, and other pathogens. Is it sufficient to destroy or capture pharmaceuticals and other chemicals of concern such as, but not limited to, PFAS in the solids? If not, what resolution will MCES implement to address this issue?

Response: Please see response to comment 10-11.

Comment 13-7: Commenter states that there is not adequate research available about the transmission of PFAS into the air during the incineration of wastewater containing PFAS. The Metropolitan Plant is listed as a likely source of PFAS and is on the MPCA list of PFAS monitoring sites. The EAW does not describe in detail the MPCA's plan for monitoring PFAS either in water discharge or air emissions.

Response: Please see response to comment 9-5.

Miscellaneous

Comment 1-1: Commenter states that the Metro Wastewater Treatment Plant wastewater sludge incinerators should be modified to capture and "recycle" their anthropogenic AND BIOGENIC CARBON DIOXIDE (CO2), using existing technologies.

Response: As the EAW is designed to evaluate a project as proposed, comments on alternative technologies are beyond the scope of the EAW.

Comment 1-3: Commenter states that considering the current record global heat wave, air quality alerts from Canadian wildfires, prolonged drought in the Southwest, record flooding in Vermont, etc., Minnesota needs to quickly demonstrate its commitment to significantly reducing the state's CO2 greenhouse gas emissions!

Response: Comment noted.

Comment 2-1: Commenter asks what point on the Mississippi river is the mileage being measured from Itasca or the gulf of Mexico.

Response: As the EAW is designed to evaluate a project as proposed, this comment is beyond the scope of the EAW.

Comment 3-1: Commenter states that the purpose of this letter is to inform you that based on the document Project Information and Request for Comments Regarding the Environmental Assessment Worksheet for the project referenced above a Department of the Army (DA) permit would not be required for your proposed activity.

Response: Comment noted.

Comment 3-2: Commenter states that in lieu of a specific response, please consider the following general information concerning our regulatory program that may apply to the proposed project.

If the proposal involves activity in navigable waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Section 10 prohibits the construction, excavation, or deposition of materials in, over, or under navigable waters of the United States, or any work that would affect the course, location, condition, or capacity of those waters, unless the work has been authorized by a Department of the Army permit.

If the proposal involves discharge of dredged or fill material into waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 404 of the Clean Water Act (CWA Section 404). Waters of the United States include navigable waters, their tributaries, and adjacent wetlands (33 CFR § 328.3). CWA Section 301(a) prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404. Information about the Corps permitting process can be obtained online at http://www.mvp.usace.army.mil/regulatory.

The Corps evaluation of a Section 10 and/or a Section 404 permit application involves multiple analyses, including (1) evaluating the proposal's impacts in accordance with the National Environmental Policy Act (NEPA) (33 CFR part 325), (2) determining whether the proposal is contrary to the public interest (33 CFR § 320.4), and (3) in the case of a Section 404 permit, determining whether the proposal complies with the Section 404(b)(1) Guidelines (Guidelines) (40 CFR part 230).

If the proposal requires a Section 404 permit application, the Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Time and money spent on the proposal prior to applying for a Section 404 permit cannot be factored into the Corps' decision whether there is a less damaging practicable alternative to the proposal.

If an application for a Corps permit has not yet been submitted, the project proposer may request a pre-application consultation meeting with the Corps to obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process. A pre-application consultation meeting is strongly recommended if the proposal has substantial impacts to waters of the United States, or if it is a large or controversial project.

Response: Comments noted and have been forwarded to MCES.

Comment 6-2: Commenter states that a list of six alternative biosolids process alternatives which were not fairly and accurately evaluated are:

1. Upgrade 20-year-old, multiple hearth incinerators (MHI) 9 and/or 10.
2. Upgrade multiple hearth incinerators 9 and/or 10 and utilize the unused biosolids dryers associated with MHI 9 and 10, to market a biosolids for land application.
3. Convert the two unused, sludge dryers from using MHI waste heat to using natural gas.
4. Install new, state-of-art sludge dryers, in place of the unused sludge dryers.
5. Continue to landfill excess biosolids during periods of FB downtime.
6. Truck excess biosolids to Seneca for processing in either MHI and/or N-Viro (which would need to be rehabilitated).

Response: As the EAW is designed to evaluate a project as proposed, comments on alternative technologies are out of scope of the EAW.

Comment 6-3: Commenter contends that the 2001 consent decree, requiring new fluid bed incinerators was based on fraud, misrepresentation and concealment of documents to the public, EPA, MPCA, and the Honorable Judge Donovan Frank. This section deals with the nine (9) MHI issues involved in the EPA lawsuit and the Met Council misleading justifications for new FBs, which are: 1) Leaking Emergency Dampers, 2) Particulate Test Failures, 3) Not Operating & Maintaining MHI, 4) Concealment of Documents, 5) $92 Million MHI Rehab Cost, 6) Life Cycle Cost, 7) Mercury Removal, 8) Misc. Justifications for FB, and 9) Conflict of Interest.

Response: As the EAW is designed to evaluate a project as proposed, and not alternatives; this comment is out of scope of the EAW.

Comment 6-4: Commenter states that spending an additional $150 million for a new FB complex to process biosolids during FB shutdown time is unacceptable expenditure of public funds and shows a complete disregard for ratepayers, while sitting idle are: six (6) Metro MHI's, two (2) unused Metro Plant sludge dryers, Seneca N-Viro, and one (1) MHI at Seneca. There is an incredible amount of unused

biosolids processing capacity. All these processes have been paid for by this community and have been used in the past. Also, there is the availability of landfill for disposal. The proposed $150 million project is an economical and environmental injustice to ratepayers.

Response: As the EAW is designed to evaluate a project as proposed, and not socioeconomics; this comment is out of scope of the EAW.

Comment 6-5: Commenter states that the proposer has clearly failed to 'minimize the contributions from the project', by not fairly evaluating alternatives, which will result in an irreversible lost of public money and irreversible higher carbon emissions due to significantly higher project costs.

Response: As the EAW is designed to evaluate a project as proposed, and not socioeconomics; this comment is out of scope of the EAW.

Comment 7-1: Commenter states that the Metropolitan Council assured surrounding neighborhoods the ash ponds would be taken care of. How can the public trust new Met Council assurances with a record of 43 years of inaction regarding cleanup of polluted ash pits and 80 acres of public open space?

Response: As the EAW is designed to evaluate a project as proposed. This comment is out of scope of the EAW.

Comment 7-2: Commenter states that the Metropolitan Council should transfer 80 acres east of the Waste Treatment Plant to the Regional Park System.

Response: As the EAW is designed to evaluate a project as proposed. This comment is out of scope of the EAW.

Comment 7-3: Commenter states that the Regional Park System and residents of BIPOC majority neighborhoods would benefit from management of the flood plain forest as part of the Regional Park. This flood plain forest was jointly owned by St. Paul and Minneapolis and should be managed as part of Pig's Eye Lake Regional Park. The flood plain is of Regional Significance and part of Saint Paul's Great River Passage plan. The area is a National Park, State Critical Area and State Scientific and Natural Area.

Response: As the EAW is designed to evaluate a project as proposed. This comment is out of scope of the EAW.

Comment 7-5: Commenter states that the Met Council should support City or County efforts to remove the ash pit berms, built with pollutant, and wetland restoration. The public should not wait another 43 years.

Response: As the EAW is designed to evaluate a project as proposed. This comment is out of scope of the EAW.

Comment 8-2: Commenter states that MCES's past and proposed waste burning along with pollutant discharges into wetlands and aquifer have negative consequences that affect people, wildlife, the water we drink and air we breathe.

Response: The Metropolitan Wastewater Treatment Plant (Metro Plant) demonstrates compliance with its water and air emission permits which were developed for protection of public health and the environment.

Comment 8-3: Commenter states that the Metropolitan Council should transfer the land outside the berm for use as Regional Parkland.

Response: Please see response to comment 7-2.

Comment 8-5: Commenter states that in 1975, the Metropolitan Council received a Pig's Eye Park Reserve Master Plan from Ramsey County. The plan called for picnicking along the river shore, boating in the lake, access to the river, and protection of the heron rookery. The Met Council approved the plans. Pig's Eye Lake Park Plan implementation is overdue. Our neighborhood, the region, and State deserve better. We deserve better opportunities to enjoy what the Park has to offer when access is enhanced, pollution removed, and habitat restored.

Response: As the EAW is designed to evaluate a project as proposed, this comment is out of scope of the EAW.

Comment 8-6: Commenter states that in the 1980 Critical Area Plan review the Met Council approved removal of 278 acres from the park plan. Saint Paul called for the 80 acres east of the levee to be included in the park and ash pit area restored. After decades of waiting, it is time to act and include the land outside the berm in the park.

Response: As the EAW is designed to evaluate a project as proposed, this comment is out of scope of the EAW.

Comment 8-8: Commenter states that the Met Council should support removal of the ash pit berms built with pollutant, removal of the pollutant that soaked into the ground, and restoration of wetland. The public has waited too long to enjoy the amazing potential of this park as illustrated in the Great River Passage Plan.

Response: As the EAW is designed to evaluate a project as proposed, this comment is out of scope of the EAW.

Comment 8-10: Commenter appreciates and supports comments submitted by Saint Paul Councilmember Jane Prince, and Ramsey County Commissioners Rafael Ortega and Mia Chong Xiong.

Response: Comment noted.

Comment 10-2: Commenter states that permit decisions and the siting of polluting facilities was not considering equity or justice when this plant was originally constructed in 1938. Even in 2005, when the solids management building (SMB) was constructed, and the facility was expanded, important science and statistics regarding the health and well-being of local communities was not taken into consideration. Today we must do better.

Response: Comment noted.

Comment 10-3: Commenter asks what are the reasons that increasing capacity at this site is the best course of action?

Response: The Metro Plant needs additional processing capacity for two main reasons.

- Additional capacity is needed to serve regional population growth. 500,000 new residents are expected in the Metro Plant service area by 2050.
- Additional capacity is needed to facilitate rehabilitation of the existing three incinerators. The incinerators are almost 20 years old, and each incinerator needs to be taken down for roughly 6-

months to a 1-year for major rehabilitation work. There is not currently enough capacity to rehabilitate the incinerators because all three incinerators need to be running to keep up with solids loadings.

Comment 10-4: Commenter asks were alternative facilities within the metropolitan area considered for modernization and why or why not?

Response: As the EAW is designed to evaluate a project as proposed, comments on alternatives are out of scope of the EAW.

Comment 10-13: Commenter is concerned about the local natural public lands within this location, the endangered Rusty Patched Bumble Bee and other species of special concern that are found in close proximity to this project.

Response: Given that the Project building addition will be constructed within a developed area consisting of primarily paved or mowed lawn with no nectar resources or potential nesting habitat, it was determined that no suitable habitat for the rusty patched bumble bee would be impacted by the Project.

Comment 10-14: Commenter is concerned with additional pollution affecting the waters of the Mississippi River, Pig's Eye Lake and the many creeks and wetlands in this location.

Response: The Project will not impact the plant's ability to continue to comply with National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) discharge limits. Effluent limitations for MCES in the NPDES/SDS Permit (Permit No. MN0029815) are designed to mitigate impacts. Multiple seasonal limits and monitoring conditions apply to the discharge of effluent from the Metro Plant to the Mississippi River. From April 1 to October 31, Metro Plant effluent is disinfected with bleach and dechlorinated with sodium bisulfite. Effluent is aerated with a cascade aerator during conditions of low flow, as defined by the permit. Additionally, the Metro Plant adheres to the Mississippi Basin Total Phosphorus Permit (Permit No. MN0070629) that establishes a total phosphorous water quality based effluent limit.

The Project will not result in physical effects or alterations to wetlands. No wetlands are inside the Metro Plant floodwall and berm area, where the Project will be constructed. The Project will not require conversion of natural areas to industrial uses. Adjacent wetlands associated with the Mississippi River and the Pig's Eye Lake area are not expected to be impacted by the Project.

Comment 10-15: Commenter states that it appears that a Rusty Patched Bumble Bee ground survey has not been done in this area for close to 10 years. It is imperative that up-to-date wildlife and plant life species of concern surveys be done – for which an EIS would allow the opportunity to do.

Response: The information included in the EAW was the data reasonably available. Survey data from within 10 years are considered valid.

Comment 11-1: Commenter's comments come from the perspective of a community member who has lived near the Metro plant my whole life. I am concerned about all the sources of pollution and contamination that are competing with our healthy air, soil and water and I'm afraid they will dominate if projects like this are not described and impacts on them accurately measured. While the construction of the fourth incinerator at the Metro Plant has merits which are described in the EAW, it is not complete.

Response: Per Minn. R. 4410.1000, the EAW is a brief document prepared in worksheet format which is designed to rapidly assess the environmental effects which may be associated with a proposed project. Further, per Minn. R. 4410.0400 subp. 3, the EAW is intended to only include information that the proposer has in their possession or has reasonable access to, related to potential direct impacts and cumulative potential effects from the proposed project.

Comment 11-2: Commenter has lived in the area and been exposed to the human progress and folly in this are most of my life. The early years in my parent's home and in my elementary school were spent 5.25 miles southwest of the Metro Plant, as the crow flies. Now, for more than 30 years, I have lived 2.5 west of it. However, some of my neighbors live less than a mile from it, less than 5,000 feet due west, just west of Southport industrial area.

Response: Comment noted.

Comment 11-3: Commenter states that the EAW has not fully considered the residents who live close by, in the West Side neighborhood, and the impact the current and future development at the Metro Plant will have on them and their quality of life. There is a significant amount of St. Paulites who live between 4,700 feet and a mile west of the plant. Yet in multiple parts of the EAW, these residential areas are not described or considered. South St Paul neighbors live less than a mile from the plan, but they are not considered either.

Response: Please see response to comment 8-1.

Comment 11-4: Commenter states that well known sites sacred to the indigenous Dakota people are not mentioned, including the burial mounds at Indian Mounds Regional Park and Wakan Tipi (aka Carver's) cave in Bruce Vento Nature Sanctuary. The historic village of the Kaposia Dakota was just north of the Metro Plant. After they were removed west of the Mississippi, the Kaposia village was within a mile of the plant. Riverview Cemetery is on the hill overlooking the river valley just over a mile from the plant, but it is not mentioned.

Response: The MPCA acknowledges that these sites were not specifically mentioned in the environmental assessment worksheet. The Minnesota State Historic Preservation Office reviewed the Project and their database found no archeological records for the given Project area. The Project proposes to construct a fourth incinerator at the Metro Plant entirely within the existing Metro Plant facility boundary and will not impact the sites stated above.

Comment 11-5: Commenter states that the most this worksheet mentions these residents is in the following statement, "On the western bank of the Mississippi River, the land use is a combination of industrial uses, parkland, residential, and the Saint Paul Airport approximately one mile away." That is not enough and I ask that people living on the West Side be seriously considered.

Response: Comment noted.

Comment 11-7: Commenter states that without further study about noise impact this EAW is not complete. Despite what I've described above the worksheet states, "the Metro Plant is in a zone designated for industrial use and is not near residential properties." I disagree.

Response: The noise standard (Minn. Rules Ch. 7030) means that at the receptor – in the case mentioned here: property lines of nearby homes – the L_{10} and L_{50} levels of 65 decibels A (dBA) and 60 dBA daytime and 55 dBA and 50 dBA nighttime, respectively, have to be met. At Pigs Eye Park, since it is

not a residential area, the L_{10} and L_{50} levels that must be met are 70 dBA and 65 dBA. The levels for residential areas do not have to be met on site or even just off site/at the fence line unless there are homes right next door. That is the statement they are addressing in the EAW based on the noise rule.

This plant is already in existence and has not received any noise complaints, so additional study is likely not needed as noise increases from the Project would be minimal. Additionally, decibels are a logarithmic formula, and increases do not increase like turning up the volume on a stereo. A minimal increase may not increase the sound pressure level at a home's property line.

Comment 12-13: Commenter requests that MCES require the use of trucks importing waste from the four other locations use zero-emissions technology.

Response: Comment noted. This information will be passed along to MCES.

Comment 12-14: Commenter states that fully or partially reimbursing schools, residences, nonprofit organizations, and park facilities for installing or updating indoor air filtration within a minimum 2-mile radius, as the EAW has acknowledged that there are several nearby parks, trails, schools, and recreational areas.

Response: Comment noted. This information will be passed along to MCES.

Comment 12-15: Commenter states that requiring all trucks and trailers entering the site to be in compliance with all current air quality regulations;

Response: Comment noted. This information will be passed along to MCES.

Comment 12-16: Commenter states that improving, protecting, and expanding green spaces, such as tree canopies, around the treatment facility and in nearby neighborhoods;

Response: Comment noted. This information will be passed along to MCES.

Comment 12-17: Commenter states that making risk assessments available and understandable to the public, including but not limited to flood plans, sediment and erosion controls, regulation of emissions and more, as indicated in the EAW.

Response: Comment noted. This information will be passed along to MCES.

Comment 12-18: Commenter states that transparently disclosing all environmental impacts of the addition of the fourth incinerator in accessible ways.

Response: Comment noted. This information will be passed along to MCES.

Comment 12-19: Commenter states that Commissioners Xiong and Ortega recognize the need for an increase in wastewater solids processing capacity to accommodate a growing population. The addition of a fourth incinerator is the most affordable and convenient option, and residents trust that the fourth incinerator will "have no odors during construction or during operation," as stated on Page 45 of the EAW.

Response: Comment noted.

Comment 12-24: Commenter states that the Met Council determined that adding anaerobic digesters followed by incineration was too expensive over incineration alone. Given that Met Council requires large amounts of energy to power Metro Transit and the extensive wastewater treatment system, was

the value of captured biogas, which could be used to power Metro Transit buses using a carbon negative renewable fuel source, factored into the cost of the project?

Response: As the EAW is designed to evaluate a project as proposed, this comment is out of scope of the EAW.

Comment 13-1: Commenter states that Metropolitan Council Environmental Services (MCES) says that the additional truck traffic from the fourth fluid bed incinerator will average about one truck per day, and that ash generated will increase over time. The Empire, Blue Lake, or Seneca plants will also send cake to the Metropolitan Plant on an emergency backup basis. What constitutes an emergency and what is the limit before it is considered an excess at these plants?

Response: MCES considers an emergency at the Empire, Blue Lake, or Seneca plants a failure or downtime of the solids processing systems. Examples of these failures or downtime include the following:

- Empire – Running out of biosolids storage which could be impacted by ability to land apply due to unforeseen weather conditions and field availability.
- Blue Lake – The failure or extended downtime of the plant's biosolids drying process.
- Seneca – The failure or rehabilitation of the incineration process.

The Metro Plant would serve as an emergency backup but not as a permanent or long-term solution for Empire, Blue Lake, or Seneca.

Comment 13-2: Commenter states that given the increase over time of diesel-powered vehicles, are there plans in place to decarbonize operations at the facility? What is the extent to which the Metropolitan Council is able to restrict the use of diesel-powered vehicles?

Response: Adding a fourth incinerator at the Metro Plant will minimize truck trips and emissions from trucks as the incineration process reduces the amount of wastewater solids to be disposed of by 95%.

The Metropolitan Council has developed a Climate Action Work Plan which outlines commitments and strategies to reduce the Council's contributions to greenhouse gas emissions and make its services and facilities resilient to the impacts of climate change. In addition, the Council is accelerating emission reductions from operations to achieve carbon neutrality. The Council will achieve this by strengthening and expanding efforts to identify and pursue energy efficiency and electrification opportunities; finding ways to increase purchase and generation of renewable energy; maximizing energy and resource recovery from operations; transitioning fleet to electric and alternative fuel vehicles; and better understanding and publicly reporting on greenhouse gas emissions.

Comment 13-4: Commenter states that the Metropolitan Council's recommendation for the addition of the fourth fluid bed incinerator is to accommodate population growth in the Twin Cities metro area. Given that population growth is projected in several Minnesota counties, and given the addition of a new cake receiving facility at the Metro Plant to receive backup sludge from other nearby treatment plants, what are the reasons that increasing capacity at this site is the best course of action?

Response: Adding a fourth incinerator at the Metro Plant will serve the Metro Plant service area which includes 1.8 million people from 66 communities. The Metro Plant needs additional processing capacity for two main reasons.

- Additional capacity is needed to serve regional population growth. 500,000 new residents are expected in the Metro Plant service area by 2050.

- Additional capacity is needed to rehabilitate the existing three incinerators. The incinerators are almost 20 years old, and each incinerator needs to be taken down for roughly 6-12 months for major rehabilitation work. There is not currently enough capacity to rehabilitate the incinerators because all three incinerators need to be running to keep up with solids loadings.

The proposed cake receiving facilities serve as an emergency backup to Empire, Blue Lake, and Seneca and are not related to growth in the Metro Plant service area. The cake receiving facilities will increase the reliability of MCES's entire wastewater treatment system.

Comment 13-5: Commenter asks were alternative facilities within the metropolitan area considered for modernization and why or why not?

Response: As the EAW is designed to evaluate a project as proposed, this comment is out of scope of the EAW.

Comment 13-6: Commenter states that the Metropolitan Plant is located on land adjacent to greenspaces which are currently being restored by indigenous-led efforts, such as Bruce Vento Nature Sanctuary/Wakáŋ Tipi and Pig's Eye Regional Park/Ṗhokáŋ Taŋka, as well as Indian Mounds Regional Park, a site sacred to the Dakota people. Metropolitan Council has provided support to these efforts in the past, and should continue to contribute to indigenous-led land restoration. We would like to see Metropolitan Council consult with indigenous groups about the best ways to continue supporting these necessary restitution projects.

Response: Please see response to comment 11-4.

Comment 13-9: Commenter states that the EAW says that it will evaluate the options for recycling demolition materials when possible. We would like to see future demolition and construction plans include what measures are being taken to recycle materials when possible.

Response: The Project to construct a fourth incinerator at the Metro Plant will result in a minimal amount of construction demolition debris. The EAW states MCES will recycle asphalt and steel tanks removed during the demolition. MCES will evaluate options for recycling construction demolition debris during preliminary design development.

Comment 14-1: Commenter states that this is a follow-up to the public comments I submitted regarding the plan to add a 4th wastewater sludge incinerator to the Metro Wastewater Treatment Plant., arguing that the plant should also include equipment to capture the produced CO2 greenhouse gas, which could then be converted to sustainable aviation fuel (SAF) or other useful hydrocarbons. I am attaching a proposal for such equipment that I obtained from Owen Hartz, the Business Development Manager for Carbon Capture, Utilization, and Storage (CCUS) at Chart Industries, Inc. The proposal describes how their Cryogenic Carbon Capture (CCC) technology could be added to the wastewater sludge incinerators.

Response: As the EAW is designed to evaluate a project as proposed. This comment is out of scope of the EAW.

Minnesota Pollution Control Agency

Metropolitan Wastewater Treatment Plant Solids Management Improvements Project
Environmental Assessment Worksheet (EAW)

ERRATA SHEET

1. Table 18 of the EAW did not clearly display the Actual 2019 Anthropogenic Metro Plant Fossil Fuel Combustion GHG Emissions. The corrected table is provided below.

Table 18: Actual 2019 Anthropogenic Metro Plant Fossil Fuel Combustion GHG Emissions

Greenhouse Gas	Fossil Fuel Emissions (tons/yr)	Anthropogenic Emissions from Sludge* (tons/yr)	Total Emissions (tons/yr)
Carbon Dioxide, CO2	5,138	Biogenic, non-reportable)**	5,138
Methane, CH4	0.1	33.0	33.1
Nitrous Oxide, N2O	0.01	4.3	4.3
CO2e*	5,144	2,106	7,250

2. Table 19 of the EAW did not clearly display the Project-related GHG Operational Emissions. The corrected table is provided below.

Table 19: Project-related Operational Greenhouse Gas Emissions

Source	Scope	CO2e (tons/yr)
Increased Incineration, biogenic	Scope 1	92,729
Increased Incineration, anthropogenic CH_4 and N_2O	Scope 1	1,803
Fire Pump Engine	Scope 1	76
Boiler Backup Fuel Change	Scope 1	-2,474
Land-Use conversion	Scope 1	0.3
Electricity	Scope 2	-2,015
Solid Waste Management	Scope 1	696
Off-Site Traffic	Scope 3	5,151
Total Operations, excluding biogenic wastewater treatment emissions		3,237

3. Table 20 of the EAW did not clearly display the Construction-related GHG Operational Emissions. The construction emissions are the total for all three years of construction. The corrected table is provided below.

Table 20: Construction-related Greenhouse Gas Emissions

Source	Scope	CO_2e (tons/3yrs)
Off-Road Construction Vehicles	Scope 1	4,344
On-Road Construction Vehicles	Scope 1	558
Total Construction for 3 years		4,902

4. Table 22 of the EAW did not clearly display the Summary of Potential Greenhouse Gas Emissions. The corrected table is provided below.

Table 22: Summary of Potential Greenhouse Gas Emissions

	Pre-Project Total Facility Emissions (tpy)	Change in Facility Potential Emissions (tpy)	Post-Project Total Facility Emissions (tpy)
Biogenic CO2	271,872	92,729	364,601
Anthropogenic CO2	44,808	-2,437	42,371
CH4	69.73	28.53	98.25
N2O	26.60	3.79	30.39
Anthropogenic CO2e	54,478	-594	53,883
Biogenic CO2e	271,872	92,729	364,601
Total CO2e	326,350	92,135	418,485

**Table 21 shows all direct greenhouse gas emissions including biogenic CO_2 from wastewater treatment.*