STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Johnson City Environmental Field Office
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February 14, 2024

Mr. Michael Barry
Plant Manager
Cardinal FG Company – Greenland Plant
e-copy: mbarry@cardinalcorp.com
600 Cardinal Way
Church Hill, TN 37642

RE: **Compliance Evaluation Inspection (CEI)**
Stormwater Non-Construction Non-Sampling Inspection (TMSP)
Cardinal FG Company – Greenland Plant
NPDES Permit TN0002631
TMSP TNR051221
Hawkins County

Dear Mr. Barry:

On January 24, 2024, Ms. Brianne Begley of the Tennessee Department of Environment and Conservation, Division of Water Resources (the division), performed a routine compliance inspection at the above referenced facility. The purpose of the inspection was to evaluate compliance with individual NPDES permit TN0002631 and Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP) TNR051221. The division thanks you, Mr. Lucas Hughes, Mr. James Hatcher, Mr. Aaron Banks, and Mr. Jason Bishop for their time and assistance. Please see the sections below for details regarding the inspection.

I. Permit

Cardinal Glass produces float glass subject to the Effluent Limitation Guidelines (ELGs) of Title 40 CFR Part 426 Subpart E. The automotive tempering operations are subject to the ELGs in Title 40 CFR Part 426 Subpart F. NPDES permit TN0002631 authorizes the discharge of contact process wastewater from tempering washers via internal monitoring points (IMPs) 001A and 005; treated domestic wastewater from IMP 002; and contact process wastewater, treated domestic wastewater, non-contact cooling water, and storm water runoff through outfall 004 to an unnamed tributary at mile 0.6 to Holston River at mile 126.5. The permit became effective on October 1, 2019 and will expire on September 30, 2024. Effluent from IMP 001A and 005, along with condensate drains and non-contact cooling water, discharges through the "high head drain" located adjacent to the IMP 002 discharge; all of which combine into an open

ditch/waterway which then collects with stormwater and eventually exits the property through Outfall 004. TMSP TNR051221 authorizes discharges of stormwater runoff associated with industrial activities at the Cardinal FG – Greenland Plant. Current TMSP coverage will expire on June 30, 2025.

The facility also operates a raw water intake in the Holston River. The grounds around the intake facilities were observed, but the interior of the building was not reviewed during this site inspection. Treated water is used onsite for a variety of non-potable, manufacturing uses, including cooling water. Please be advised that a description of the backwashing procedures performed at the raw water intake and traveling screens must be included on the next permit renewal application so that the division may determine whether discharge coverage is needed.

II. Records/Reports

Selected records and reports, including logbooks, bench sheets, laboratory reports, chains-of-custody, invoices, maintenance records, and Discharge Monitoring Reports (DMRs) from January 2022 – January 2024 were evaluated during this inspection. NPDES permit TN0002631 Part I contains monitoring, reporting, and documentation requirements. In addition, records documenting laboratory analyses, including proper quality assurance and quality control (QA/QC), must be maintained to satisfy permit Part I B.3. and Part II A.4. Deficiencies pertaining to applicable requirements are summarized below or in other pertinent areas of this report.

1. The facility reported on the November 2023 DMR a total suspended solids (TSS) monthly average permit exceedance at IMP 002. According to the attached excursion log, solids build up in the package plant is removed on a monthly basis, or more frequently if needed. Cardinal will continue to monitor TSS levels and adjust solids removal frequency if needed. The exceedance was reported in accordance with TN0002631 Part I E. and Part II C., however, Part II A.4.a. requires the permittee to at all times properly operate and maintain all facilities and systems in order to maintain compliance.

III. Facility Site Review, Self-Compliance Program, and Operations & Maintenance

Cardinal FG – Greenland Plant is a dual line float glass operation. The facility is comprised of approximately 25 acres under roof, including 500,000 square feet of warehouse space and sits on roughly 350 acres. Wastewater within the facility is generated in part through the tempering process (IMP 001A), the coating process (IMP 005), condensate blowdown (IMP 005), reverse osmosis (IMP 005), non-contact cooling water (Outfall 004), and the domestic wastewater plant (IMP 002).

A walk-through was conducted at the Greenland Plant and all outfalls associated with TN0002631, as well as TNR051221. Routine facility operations were underway at the time of onsite observations. Operators at the onsite package plant have recently begun incorporating process control testing into their operations. The facility appeared to be generally well maintained; however, the following deficiency was noted.

1. Construction was in progress in the basement of the facility and much of the floor was coated in a fine layer of sand and/or crushed glass. The debris was near floor drains that contribute to the "high head drain," which discharges from the facility to waters of the state. While there were no

obvious signs of the debris entering floor drains at the time of inspection, frequent floor sweeping should be incorporated into the good housekeeping schedule while construction is underway. NPDES permit TN0002631 Part II A.4. requires proper operation and maintenance, and TMSP TNR051221 parts 11.E.3.2.3 and 11.E.3.2.3.1 require implementation of appropriate control measures to control pollutants and require housekeeping measures to prevent or minimize discharge of aggregate and other significant materials. It should be noted that this deficiency was previously identified in the December 13, 2021 Notice of Violation (NOV) and CEI.

IV. Effluent/Receiving Waters

Effluent at both internal monitoring points (001A and 005), the sanitary wastewater treatment plant (002), and the ultimate discharge point (004) were observed at the time of inspection. The process wastewater discharge from IMP 001 was observed to be clear with no visible foam or floating solids; however, there was a visible oil sheen on the surface. The weir box at IMP 005 was observed to have a small amount of solids settled in the bottom (see section IX. for additional comment), but the discharge was clear with no visible foam, sheen, or floating solids. The sanitary wastewater effluent at IMP 002 was observed to be clear with no visible foam, sheen, or floating solids. At the confluence of the "high head drain" (containing discharge from both IMPs 001A and 005) and IMP 002, the water was noted to have a muddy and turbid appearance; however, this could have been due to the large amount of snow melt occurring at that time. The effluent at outfall 004 was clear with no visible floating solids, scum, foam, or oil sheen and there were no visible indication of sludge deposits. Note that NPDES TN0002631 outfall 004 is also TNR051221 outfall 001, as stormwater discharge is also directed to this location. Outfall signage was present and visible to the public at all locations. The facility was in the process of ordering new signage at the time of this inspection. No deficiencies were noted in these program areas.

V. Flow Measurement

NPDES permit TN0002631 Part I A. requires instantaneous effluent flow measurement five days per week (5/week) for IMP 001A, IMP 005, and outfall 004 and weekly instantaneous effluent flow measurement for IMP 002. Flows were measured using a 22.5º v-notch weir for IMP 001A and 005, a 90º v-notch weir with an associated ultrasonic level sensor with flow indicator and continuous totalizer for IMP 002, and a 36-inch Parshall flume for outfall 004. Annual verification of flow measurement for IMP 002 is conducted in-house by Cardinal instrument technicians. No deficiencies were noted in this program area.

VI. Laboratory

Part I B.3. of NPDES permit TN0002631 requires pollutant analyses be performed in accordance with methods specified in Title 40 CFR Part 136, and permit Part II A.4. requires adequate laboratory controls and appropriate quality assurance procedures. Revisions to Part 136, effective July 19, 2021, explicitly detail required laboratory quality assurance and quality control (QA/QC) components.

Total residual chlorine (TRC), pH, dissolved oxygen (DO), settleable solids (SS), and temperature are performed in-house at Cardinal FG; while oil & grease, total phosphorus, total suspended solids (TSS), and biochemical oxygen demand (BOD) are contracted out to Pace Analytical. *E. coli* is run by the City

of Kingsport Water Treatment Plant. Selected laboratory logbooks, bench sheets, laboratory reports, standard operating procedures (SOPs), chains-of-custody, and QA/QC records were reviewed during this inspection. Available facilities and equipment generally appeared adequate to satisfy permit requirements, however, the following deficiencies were noted.

1. At the time of inspection, Cardinal FG operators were following manufacturer instructions for dissolved oxygen probe calibration, using water-saturated air. However, the DO result after initial calibration was not being verified against standard reference tables for the temperature and pressure conditions at the time of calibration. Additionally, no continuing calibration verification was being performed. DO meter initial and continuing calibration verifications (ICVs and CCVs) must be performed in accordance with methods approved for use in Title 40 CFR Part 136.3, and documentation of these routine verifications must be maintained. Also note that verifications must utilize local, uncorrected barometric pressures rather than a source based on altitude-corrected barometric pressures, such as an airport.

2. At the time of inspection, the TRC method detection limit (MDL) study was being conducted following Revision 1 procedures; however, the 2016 revision of the MDL procedure (Revision 2) became effective September 27, 2017. Please see 40 CFR 136 Appendix B *EPA Definition and Procedure for the Determination of the Method Detection Limit* – Revision 2 for current MDL procedure requirements.

3. The lab bench sheets and SOPs reviewed during the inspection included standard method numbers but did not include editorial revision dates. Bench sheets stated "23rd Edition Standard Method," but 40 CFR Part 136 references approved methods by adopted editorial revision dates rather than by hard copy edition numbers. Cardinal FG submitted to the division revised copies of the bench sheets and SOPs that included approved method revision dates; therefore, this deficiency was corrected prior to issuance of this report.

VII. Sludge Handling/Disposal

In accordance with NPDES permit Part I A. requirements, sludge management practices must be employed to ensure proper removal of sludge and solids that accumulate in the wastewater treatment plant and associated tanks. During the onsite walk-through, Cardinal FG personnel stated that Dons and Davis Sanitation is contracted to remove sludge from the chlorine contact basin on a monthly basis; and A & B Kerns Septic Services is contracted to remove sludge from the clarifier and/or aeration basin on an as needed basis. Selected invoices from both septic haulers were reviewed as part of this inspection. Neither Dons and Davis Sanitation or A & B Kerns Septic Services includes the final disposal location on invoices. Cardinal FG should request that both companies document the location of ultimate disposal of hauled material on future invoices.

VIII. Pollution Prevention and Storm Water

Multi-sector stormwater permit TNR051221 provides coverage for stormwater and specific non-stormwater discharges from the facility. The specific requirements of TMSP Sector E (part 11.E.) apply to this facility based on the reported SIC code of 3211. The facility's stormwater pollution prevention plan (SWPPP); quarterly visual examinations of stormwater quality records from February 2022 – January

2024; monthly stormwater inspection records; and other miscellaneous associated records were reviewed. The SWPPP indicated a document revision date of February 28, 2023 with a revision number of 12. The following deficiencies were noted in this program area.

1. Review of the Quarterly Visual inspection reports showed the forms did not include the time runoff began, nor did they include a notation regarding the last measurable storm event prior to the inspection. TMSP part 11.E.5.3.1 requires grab samples for examination to be collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) and that all such samples be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable storm event. Cardinal FG personnel submitted to the division on January 31, 2024 an amended "Quarterly Outfall Inspection" form that includes lines denoting the runoff event start times, as well as the qualifying rain event and corresponding rainfall amounts; therefore, this deficiency was corrected prior to issuance of this report.

2. Review of monthly area inspection forms revealed that most identified action items are assigned a due date of "As-needed" and no completion date is included. Cardinal FG personnel explained that this was due to the items being routine maintenance issues that are assigned "open" actions because they must be done routinely to ensure the areas stay clean. TMSP 11.E.3.2.3.4 requires tracking or follow-up procedures be used to ensure appropriate actions are taken in response to the specific inspections. Cardinal FG should modify the monthly inspection forms to include a definition of "open" actions and routine preventative maintenance schedules, while also following up on specific observations to ensure corrective action has been taken and completion dates are documented in accordance with TMSP 11.E.3.2.3.4.

IX. Additional Comments and Recommendations

Additional comments and recommendations noted during the inspection are listed below.

1. Review of Annual Stormwater Monitoring Reports from 2022 – 2023 denote Outfall Number "001" as the sample location. Cardinal FG personnel stated that the sample is collected from Outfall 004 (permitted through TN0002631), which is the same location as permitted outfall SW1 under TMSP permit TNR051221. Cardinal FG was advised to note the outfall location as Outfall 004 or SW1 on future annual reports to prevent possible confusion regarding sampling location.

2. At the time of inspection, several pipes associated with the coating cooling tower were leaking considerable amounts of non-contact cooling water onto a concrete pad which drained to the "high head drain." Cardinal FG personnel stated that the pipes were damaged in the recent below-freezing weather and that maintenance staff had been notified that the pipes needed repair.

3. At the time of the facility basement walk-through, two contract construction employees were in the process of intentionally draining a pipe in the ceiling and allowing the water to flow onto the ground where it could enter a drain that connected to the "high head drain." Cardinal FG staff were unaware of the source of the water being drained, or the purpose of the construction project; however, investigation into the issue and follow-up revealed it to be an abandoned city water line that was being permanently removed.

4. As stated above in section IV., there was a small amount of solids observed in the rear portion of the weir box at IMP 005. At the time of inspection, there did not appear to be enough solids to interfere with flow measurement accuracy; however, Cardinal FG must be diligent in their preventative maintenance schedule to ensure the solids are frequently removed. While this item did not warrant a deficiency during this inspection, note that solids buildup in IMP 001A and IMP 005 weir boxes was previously identified as a deficiency in the December 13, 2021 NOV.

XI. Conclusion

Compliance with TN0002631 and TNR051221 requirements helps ensure discharges that are protective of downstream fish and aquatic life and water quality. The division requests that you develop and submit, by March 15, 2024, a detailed action plan and proposed implementation schedule addressing the numbered points discussed in sections II. through VIII. above. Thank you for your efforts to ensure permit compliance and to protect state water quality. If I may be of assistance in matters concerning this report, please contact me via telephone at 423-268-4770 or via email at Brianne.Begley@tn.gov.

Sincerely,

J. Brianne Begley

Brianne Begley
Environmental Consultant
Division of Water Resources
Johnson City Environmental Field Office

cc: Mr. James Hatcher, EHS Manager, Cardinal FG (via email)
Mr. Lucas Hughes, Environmental Engineer, Cardinal FG (via email)
Mr. Aaron Banks, WWTP Operator, Cardinal FG (via email)
Mr. Jason Bishop, WWTP Operator, Cardinal FG (via email)
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Mr. Timothy Hunziker, DWR Water-Based Systems Unit, Nashville (via email)
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File Copy, DWR, Johnson City EFO
WaterLog database