



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES

William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

September 23, 2021

Mr. Wendell Christian
General Manager
e-copy: wendell.christian@rocket.com
Aerojet Ordnance Tennessee
1367 Old State Route 34
Jonesborough, TN 37659

Subject: **Minor Modification NPDES Permit No. TN0057983**
Aerojet Ordnance Tennessee
Jonesborough, Washington County, Tennessee

Dear Mr. Christian:

In accordance with the provisions of "The Tennessee Water Quality Control Act" (Tennessee Code Annotated, Sections 69-3-101 through 69-3-120) the above referenced NPDES Permit is hereby modified by the Division of Water Resources. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

This minor modification revises the formatting of the final permit for permittees and regulators to reference parts and subparts. Please replace your current permit with the minor modification below.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application.

Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment.

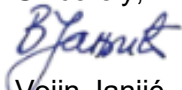
Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the

commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

TDEC has activated a new email address to accept appeals electronically. If you wish to file an appeal, you may do so by emailing the appeal and any attachments to TDEC.Appeals@tn.gov. If you file an appeal electronically, you do not have to send a paper copy. If you have questions about your electronic filing, you can call (615) 532-0131. Electronic filing is encouraged, but not required.

If you have questions, please contact the Johnson City Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Ms. Shannon McClellan at (615) 532-0485 or by E-mail at Shannon.McClellan@tn.gov.

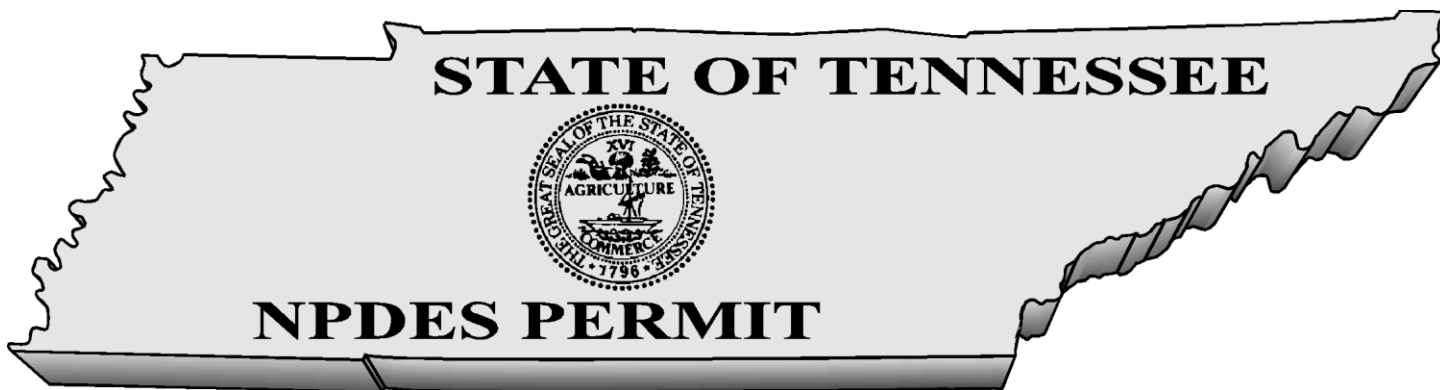
Sincerely,



Vojin Janjić
Manager, Water-Based Systems

Enclosure

CC: Permit File
Johnson City Environmental Field Office
Mr. Tim Wright, Manager, Environmental Health & Safety, Aerojet Ordnance Tennessee,
timothy.wright@rocket.com
NPDES Permit Section, EPA Region IV, r4npdespermits@epa.gov
Mr. Benny Cole, Wastewater Technician IV, Aerojet Ordnance Tennessee, robert.cole@rocket.com
Keri Clayton, Civil and Environmental Consultants, Inc., kclayton@cecinc.com
Mr. Jeff Winters, Senior Manager, Safety, Health, and Environment, Aerojet Ordnance Tennessee, Inc.,
jeff.winters@rocket.com



No. TN0057983

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102**

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger: **Aerojet Ordnance Tennessee**
is authorized to discharge: **treated process wastewater through Outfall 001, noncontact cooling water and cooling tower blowdown through Outfall 002, and treated sanitary wastewater and shower water through Outfall 003**
from a facility located at: **1367 Old State Route 34, Jonesborough, Washington County, Tennessee**
to receiving waters named: **Little Limestone Creek at miles 8.7 (Outfall 001) and 8.8 (Outfalls 002 and 003)**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on: **January 1, 2021 (modified 9/23/2021)**

This permit shall expire on: **December 31, 2025**

Issuance date: **November 16, 2020**



for Jennifer Dodd
Director

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Aerojet Ordnance Tennessee is authorized to discharge treated process wastewater through Outfall 001, noncontact cooling water and cooling tower blowdown through Outfall 002, and treated sanitary wastewater and shower water through Outfall 003 to Little Limestone Creek at miles 8.7 (Outfall 001) and 8.8 (Outfalls 002 and 003).

These discharges shall be limited and monitored by the permittee as specified below:

Outfall 001 Tier 1 Discharge Requirements (for < 2,500 to 3,750 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9.0	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	0.7	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	.3343	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.34	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.21	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	.32	lb/d	Grab	Semiannual	Daily Maximum

00951	Fluoride, total (as F)	<=	.14	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.001	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0004	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0019	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0008	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0069	lb/d	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu)	<=	.0035	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0014	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.0007	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.0269	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0119	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.003	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.002	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4.0	mg/L	Grab	Once Per Discharge	Daily Maximum

Permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production.

Permit parameters shown above in **bold font** are subject to effluent limitation guidelines, and compliance with Daily Maximum and Monthly Average Amounts based on number of days the production facility was operating as defined in Part I.C.

(a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.

(b) Permittee must report effluent total uranium (via ICP-MS), not effluent total natural uranium.

Outfall 001 Tier 2 Discharge Requirements (for 3,751 to 5,000 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9.0	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	1.216	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	0.634	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.62	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.42	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.1534	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.5041	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.0015	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0006	lb/d	Grab	Semiannual	Monthly Average

01034	Chromium, total (as Cr)	<=	.0028	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0011	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0245	lb/d	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu)	<=	.0119	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0021	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.001	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.096	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0425	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.0105	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0071	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4.0	mg/L	Grab	Once Per Discharge	Daily Maximum

Permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Permit parameters shown above in **bold font** are subject to effluent limitation guidelines, and compliance with Daily Maximum and Monthly Average Amounts based on number of days the production facility was operating as defined in Part I.C.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) Permittee must report effluent total uranium (via ICP-MS), not effluent total natural uranium.

Outfall 001 Tier 3 Discharge Requirements (for 5, 001 to 6,250 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9.0	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	1.6213	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	.8453	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.8322	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.5604	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.5138	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.6721	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.002	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0008	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0037	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0015	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0327	lb/d	Grab	Semiannual	Daily Maximum

01042	Copper, total (as Cu)	<=	.0159	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0028	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.0013	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.128	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0567	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.014	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0094	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4.0	mg/L	Grab	Once Per Discharge	Daily Maximum

Permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Permit parameters shown above in **bold font** are subject to effluent limitation guidelines, and compliance with Daily Maximum and Monthly Average Amounts based on number of days the production facility was operating as defined in Part I.C.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) Permittee must report effluent total uranium (via ICP-MS), not effluent total natural uranium.

Outfall 001 Tier 4 Discharge Requirements (for 6,251 to 7,500 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9.0	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	2.0267	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	1.0567	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	1.04	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	0.7	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.8922	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.8401	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.0025	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.001	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0047	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0019	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0408	lb/d	Grab	Semiannual	Daily Maximum

01042	Copper, total (as Cu)	<=	.0199	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0036	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.0017	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.1601	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0709	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.0175	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0118	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum
Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season : All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4.0	mg/L	Grab	Once Per Discharge	Daily Maximum

Permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Permit parameters shown above in **bold font** are subject to effluent limitation guidelines, and compliance with Daily Maximum and Monthly Average Amounts based on number of days the production facility was operating as defined in Part I.C.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) Permittee must report effluent total uranium (via ICP-MS), not effluent total natural uranium.

Outfall 001 Tier 5 Discharge Requirements (for 7,501 to = 12,000 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9.0	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	2.432	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	1.268	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	1.25	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.84	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	2.2707	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.0081	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.003	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0012	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0056	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0023	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.049	lb/d	Grab	Semiannual	Daily Maximum

01042	Copper, total (as Cu)	<=	.0238	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0043	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.002	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.1921	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.085	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.021	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0141	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4.0	mg/L	Grab	Once Per Discharge	Daily Maximum

Permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Permit parameters shown above in **bold font** are subject to effluent limitation guidelines, and compliance with Daily Maximum and Monthly Average Amounts based on number of days the production facility was operating as defined in Part I.C.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) Permittee must report effluent total uranium (via ICP-MS), not effluent total natural uranium.

Outfall 002 Effluent Limits:

Description: External Outfall, Number: 002, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00010	Temperature, water deg. C	Report	-	deg C	Grab	Twice Per Month	Daily Maximum
00094	Conductivity	Report	-	umho/cm	Grab	Twice Every Month	Daily Maximum
00400	pH	>=	6.0	SU	Grab	Twice Per Month	Minimum
00400	pH	<=	9.0	SU	Grab	Twice Per Month	Maximum
50050	Flow	Report	-	MGD	Estimate	Twice Per Month	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Twice Per Month	Monthly Average

Outfall 003 Effluent Limits:

Description: External Outfall, Number: 003, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00300	Oxygen, dissolved (DO)	>=	1.0	mg/L	Grab	Twice Per Week	Minimum
00310	BOD, 5-day, 20 C	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
00310	BOD, 5-day, 20 C	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
00400	pH	>=	6.0	SU	Grab	Two Per Week	Minimum
00400	pH	<=	9.0	SU	Grab	Two Per Week	Maximum
00530	Total Suspended Solids (TSS)	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Two Per Week	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.5	mg/L	Grab	Twice Per Month	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	5.0	mg/L	Grab	Twice Per Month	Monthly Average
50050	Flow	Report	-	MGD	Recorder	Continuous	Daily Maximum

50050	Flow	Report	-	MGD	Recorder	Continuous	Monthly Average
50060	Chlorine, total residual (TRC)	<=	2.0	mg/L	Grab	Four Per Week	Daily Maximum
51040	E. coli	<=	941	CFU/100mL	Grab	Twice Per Month	Daily Maximum
51040	E. coli	<=	126	CFU/100mL	Grab	Twice Per Month	Monthly Geometric Mean

(a) Total Residual Chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidant are added. The acceptable methods for TRC analysis are any method specified in Title 40 CFR Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/L unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

Additional monitoring requirements and conditions applicable to Outfalls 001, 002, and 003 include:

There shall be no distinctly visible floating solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner, which prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

NOTE: For the monitoring and reporting of measurements of FLOW, the "Monthly Avg." shall be the total flow volume during the reporting period divided by the number of calendar days in that period. The "Daily Max." shall be the total flow volume for the day with the greatest amount of discharge during the reporting period. Example: 3 discharges of 15,000 gallons/day and 1 discharge of 20,000 gallons/day during a 1-month period results in a Monthly Avg. of 65,000 gallons/30 days, or 2,166 gallons/day (to be reported as 0.002166 MGD). The Daily Maximum to be reported for this example is 20,000 gallons/day or 0.020 MGD.

Temperature will be limited according to the State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3)(e)]. It is recognized that the temperature of the cooling water discharge will be greater than the temperature of the water prior to its use for cooling or other purposes. This discharge must not cause the temperature change

in receiving stream to exceed 3°C relative to an upstream control point. Also, this discharge must not cause the temperature of receiving stream to exceed 30.5°C (except as a result of natural causes), and this discharge must not cause the maximum rate of temperature change in receiving stream to exceed 2°C per hour (except as a result of natural causes).

Since Outfall 002 discharges to a receiving stream with a large critical low flow relative to the wastewater, effluent temperature shall be monitored on the basis of "report only" and reported as such on the Discharge Monitoring Reports (DMRs). If the reported wastewater temperature exceeds the instream water quality temperature limit of 30.5°C, a permit violation may not have occurred, since the 30.5°C value applies to the receiving stream, not the effluent. Therefore, if the effluent temperature exceeds 30.5°C, the permittee should note in the "comments" section of the DMR that this is the temperature of the effluent. A temperature check in the receiving stream below the discharge point may be performed in order to prove facility's compliance with the Tennessee Water Quality Standards and should also be noted in the "comments" section of the DMR.

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below current analytical detection capabilities for any given effluent characteristics, the analyses shall be performed using sufficiently sensitive methods in accordance with TN Rules, Chapter 0400-40-03-.05(8). For any results reported as Non-Detect (ND) or Below Detection Limit (BDL), the actual Minimum Detection Level (MDL) value(s) shall be reported in the DMR "Comments" section.

B. MONITORING PROCEDURES

1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge and shall be taken after treatment and prior to mixing with uncontaminated storm water runoff or the receiving stream. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated¹ and maintained to ensure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

2. Sampling Frequency

If there is a discharge from a permitted outfall on any given day during the monitoring period, the permittee must sample and report the results of analyses accordingly, and the permittee should

¹ The division expects for permittees to meet EPA's guidance on proper operation and maintenance of flow measurement devices, as stated in the [NPDES Compliance Inspection Manual](#). On page 120, the documents states, in part: "The facility must ensure that their flow measurement systems are calibrated by a qualified source at least once a year to ensure their accuracy."

not mark the 'No Discharge' box on the Discharge Monitoring Report form. The permittee should mark the 'No Discharge' box on the Discharge Monitoring Report form only if a permitted outfall does not discharge at any time during the monitoring period. If the outfall discharges effluent at any time during the monitoring period, the permittee must provide at least one sampling result from the effluent of that outfall.

3. Test Procedures

- a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required. Total Uranium monitoring and analyses shall be performed using the inductively coupled plasma spectroscopy (ICP) approach using MS instrumentation methods pursuant to permit requirements provided in Part IA. The permittee shall obtain written division approval for using analytical procedures not provided in Title 40, CFR Part 136 for permit compliance.
- b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using methods as described in the TN Rules, Chapter 0400-40-03-.05(8).

- c. If the MDLs for all methods available in accordance with TN Rules and 40 CFR 136 are above the stated permit limit or applicable water quality criteria for that parameter, then the method with the lowest stated MDL shall be used.
- d. Where the analytical results are below method detection limits, the permittee shall report the actual laboratory MDL values for the analyses that were performed.
- e. Where necessary, the permittee may request approval of alternate methods or for alternative MDLs for any approved analytical method. Approval of alternate laboratory MDLs is not necessary if the laboratory reported MDLs are less than or equal to the permit limit or the applicable water quality criteria, if any, stated in TN Rules, Chapter 0400-40-03. Approval of an alternative method is not necessary if the analytical method is in accordance with 40 CFR 136.

Outfall 003 discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the E. coli group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for E. coli within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an E. coli group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the E. coli group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit

of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling or measurements;
- b. The exact person(s) collecting samples or measurements;
- c. The dates and times the analyses were performed;
- d. The person(s) or laboratory who performed the analyses;
- e. The analytical techniques or methods used, and;
- f. The results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

C. DEFINITIONS

For the purpose of this permit, **annually** is defined as a monitoring frequency of once every twelve (12) months beginning with the date of issuance of this permit so long as the following set of measurements for a given 12 month period are made approximately 12 months subsequent to that time.

A **bypass** is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A **calendar day** is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

For the purposes of this permit, a **Composite Sample** for non-storm water discharges is a sample collected continuously over a period of 24-hours at a rate proportional to the flow.

Cooling water means water used for contact or non-contact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content.

The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises.

The **Daily Maximum Amount** is a limitation measured in pounds per day (lb/day), on the total amount of any pollutant in the discharge by weight during any calendar day.

For pollutants subject to effluent limitations guidelines, the **Daily Maximum Amount** is a limitation measured in pounds per day (lb/day) of the total amount, by weight, of any pollutant present in any given batch discharge divided by the number of days from the previous batch discharge that the production facility was operating. For all other parameters (including those not subject to effluent limitations guidelines), the **Daily Maximum Amount** is a limitation measured in lb/day, or the total amount of any pollutant in the discharge, by weight, during any calendar day and the relevant **Daily Maximum Concentration** is the daily maximum concentration (mg/L) actually discharged during the calendar month, regardless of ELG applicability.

For pollutants subject to effluent limitations guidelines, the **Monthly Average Amount** is the discharge limitation measured in pounds per day (lb/day) or calendar day, for any pollutant in the discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. For all other parameters (including those not subject to effluent limitations guidelines), the **Monthly Average Amount**, shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made, and the relevant **Monthly Average Concentration** is the average of the daily concentrations actually discharged during the calendar month, regardless of ELG applicability.

"Degradation" means the alteration of the properties of waters by the addition of pollutants, withdrawal of water, or removal of habitat, except those alterations of a short duration.

"De Minimis" - Degradation of a small magnitude, as provided in this paragraph.

(a) Discharges and withdrawals

1. Subject to the limitation in part 3 of this subparagraph, a single discharge other than those from new domestic wastewater sources will be considered de minimis if it uses less than five percent of the available assimilative capacity for the substance being discharged.
2. Subject to the limitation in part 3 of this subparagraph, a single water withdrawal will be considered de minimis if it removes less than five percent of the 7Q10 flow of the stream.
3. If more than one activity described in part 1 or 2 of this subparagraph has been authorized in a segment and the total of the authorized and proposed impacts uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be de minimis. Where the total of the authorized and proposed impacts uses 10% of the assimilative capacity, or 7Q10 low flow, additional degradation may only be treated as de minimis if the Division finds on a scientific basis that the additional degradation has an insignificant effect on the resource.

(b) Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the Division finds that the impacts, individually and cumulatively are offset by impact minimization and/or in-system mitigation, provided however, in ONRWs the mitigation must occur within the ONRW.

Discharge or “discharge of a pollutant” refers to the addition of pollutants to waters from a source.

Dry Weather Flow shall be construed to represent discharges consisting of process and/or non-process wastewater only.

An **ecoregion** is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The **geometric mean** of any set of values is the n^{th} root of the product of the individual values where “n” is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A **Grab Sample**, for the purposes of this permit, is defined as a single effluent sample of at least 100 milliliters (sample volumes <100 milliliters are allowed when specified per standard methods, latest edition) collected at a randomly selected time over a period not exceeding 15 minutes. The sample(s) shall be collected at the period(s) most representative of the total discharge.

The **Instantaneous Concentration** is a limitation on the concentration, in milligrams per liter (mg/L), of any pollutant contained in the discharge determined from a grab sample taken at any point in time.

The **monthly average amount** shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

The **monthly average concentration**, other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A **one-week period** (or **calendar-week**) is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

Pollutant means sewage, industrial wastes, or other wastes.

A **Qualifying Storm Event** is one which is greater than 0.1 inches and that occurs after a period of at least 72 hours after any previous storm event with rainfall of 0.1 inches or greater.

For the purpose of this permit, a **Quarter** is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, or October 1 through December 31.

A **rainfall event** is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A **rationale** (or "fact sheet") is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

A **reference site** means least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A **reference condition** is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

For the purpose of this permit, **semi-annually** means the same as "once every six months." Measurements of the effluent characteristics' concentrations may be made anytime during a 6-month period beginning from the issuance date of this permit so long as the second set of measurements for a given 12-month period are made approximately 6 months subsequent to that time, if feasible.

A **subecoregion** is a smaller, more homogenous area that has been delineated within an ecoregion.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term, **washout** is applicable to activated sludge plants and is defined as loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

Waters means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

The **weekly average amount** shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The **weekly average concentration** is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

Wet Weather Flow shall be construed to represent storm water runoff which, in combination with all process and/or non-process wastewater discharges, as applicable, is discharged during a qualifying storm event.

D. ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval
30Q5 – 30-day minimum, 5-year recurrence interval
7Q10 – 7-day minimum, 10-year recurrence interval
BAT – best available technology economically achievable
BCT – best conventional pollutant control technology
BDL – below detection level
BOD₅ – five-day biochemical oxygen demand
BPT – best practicable control technology currently available
CBOD₅ – five-day carbonaceous biochemical oxygen demand
CEI – compliance evaluation inspection
CFR – code of federal regulations
CFS – cubic feet per second
CFU – colony forming units
CIU – categorical industrial user
CSO – combined sewer overflow
DMR – discharge monitoring report
D.O. – dissolved oxygen
E. coli – *Escherichia coli*
EFO – environmental field office
LB (lb) - pound
IC₂₅ – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms
IU – industrial user
IWS – industrial waste survey
LC₅₀ – acute test causing 50% lethality
MDL – method detection level
MGD – million gallons per day
MG/L(mg/L) – milligrams per liter
ML – minimum level of quantification
mL – milliliter
MLSS – mixed liquor suspended solids
MOR – monthly operating report
NODI – no discharge
NPDES – national pollutant discharge elimination system
PL – permit limit
POTW – publicly owned treatment works
RDL – required detection limit
SAR – semi-annual [pretreatment program] report
SIU – significant industrial user
SSO – sanitary sewer overflow
STP – sewage treatment plant
TCA – Tennessee code annotated

TDEC – Tennessee Department of Environment and Conservation
TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation
TMDL – total maximum daily load
TRC – total residual chlorine
TSS – total suspended solids
WQBEL – water quality based effluent limit

E. REPORTING

1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using NETDMR. Submittals shall be no later than 15 days after the completion of the reporting period. If NETDMR is not functioning, a completed DMR with an original signature shall be submitted to the following address:

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT SECTION
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102**

If NETDMR is not functioning, a copy of the completed and signed DMR shall be mailed to the Johnson City Environmental Field Office (EFO) at the following address:

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Johnson City Environmental Field Office
2305 Silverdale Road
Johnson City, Tennessee 37601**

A copy should be retained for the permittee's files. In addition, any communication regarding compliance with the conditions of this permit must be sent to the two offices listed above.

The first DMR is due on the 15th of the month following permit effectiveness. The permittee shall also submit its Monthly Operating Report (MOR) for Outfall 003 to the division's Johnson City Environmental Field Office.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMR data will be accepted only if formally approved beforehand by the division. For purposes of determining compliance with this permit, data approved by the division to be submitted electronically is legally equivalent to data submitted on signed and certified DMR forms.

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

4. Reporting Less Than Detection; Reporting Significant Figures

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report "BDL" or "NODI =B" on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit.

For example, if the limit is 0.02 mg/L with a detection level of 0.05 mg/L and detection is shown; 0.05 mg/L must be reported. In contrast, if nothing is detected reporting "BDL" or "NODI =B" is acceptable.

Reported results are to correspond to the number of significant figures (decimal places) set forth in the permit conditions. The permittee shall round values, if allowed by the method of sample analysis, using a uniform rounding convention adopted by the permittee.

5. Outlier data

Outlier data include analytical results that are probably false. The validity of results is based on operational knowledge and a properly implemented quality assurance program. False results may include laboratory artifacts, potential sample tampering, broken or suspect sample containers, sample contamination or similar demonstrated quality control flaw.

Outlier data are identified through a properly implemented quality assurance program, and according to ASTM standards (e.g. Grubbs Test, 'h' and 'k' statistics). Furthermore, outliers should be verified, corrected, or removed, based on further inquiries into the matter. If an outlier was verified (through repeated testing and/or analysis), it should remain in the preliminary data set. If an outlier resulted from a transcription or similar clerical error, it should be corrected and subsequently reported.

Therefore, only if an outlier was associated with problems in the collection or analysis of the samples and as such does not conform with the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR §136), it can be removed from the data set and not reported on the Discharge Monitoring Report forms (DMRs). Otherwise, all results (including monitoring of pollutants more frequently than required at the location(s) designated, using approved analytical methods as specified in the permit) should be included in the calculation and reporting of the values required in the DMR form. You are encouraged to use "comment" section of the DMR form (or attach additional pages), in order to explain any potential outliers or dubious results.

F. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit.

PART II

G. GENERAL PROVISIONS

1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of the Division of Water Resources (the "Director") no later than 180 days prior to the expiration date. Such applications must be properly signed and certified.

2. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

- b. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- c. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Director.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

4. Proper Operation and Maintenance

- a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.
- b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and/or other technology-based effluent limitations such as those in State of Tennessee Rule 0400-40-05-.09.

5. Treatment Facility Failure

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored, or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

8. Other Information

If the permittee becomes aware that he failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Director, then he shall promptly submit such facts or information.

H. CHANGES AFFECTING THE PERMIT

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).
- c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices.

2. Permit Modification, Revocation, or Termination

- a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.
- b. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

- c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.
- d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

- a. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;
- b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and
- c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), "Signatories to permit applications"; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

I. NONCOMPLIANCE

1. Effect of Noncompliance

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate regional Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The regional Field Office should be contacted for names and phone numbers of environmental response personnel).

A written submission must be provided within five calendar days of the time the permittee becomes aware of the circumstances, unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

- i. A description of the discharge and cause of noncompliance;
- ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
- iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which do not cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to

reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Sanitary Sewer Overflow

- a. **"Sanitary Sewer Overflow"** means the discharge to land or water of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls.
- b. Sanitary Sewer Overflows are prohibited.
- c. The permittee shall operate the collection system so as to avoid sanitary sewer overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic sanitary sewer overflows (greater than 5 overflows per year) or would otherwise overload any portion of the system.
- d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to a Monthly Operating Report submitted to the regional TDEC Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.
- e. In the event that more than five (5) sanitary sewer overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Resources field office staff to petition for a waiver based on mitigating evidence.

4. Upset

- a. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

- b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred, and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;
 - iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and
 - iv. The permittee complied with any remedial measures required under "Adverse Impact."

5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

6. Bypass

- a. "**Bypass**" is the intentional diversion of wastewater away from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- b. Bypasses are prohibited unless the following 3 conditions are met:
 - i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There are not feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment down-time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of

reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment down-time or preventative maintenance;

- iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate environmental assistance center within 24-hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the Director, if possible, at least 10 days before the date of the bypass.
- c. Bypasses not exceeding limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 6.b.iii, above.

7. Washout

- a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.
- b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate regional Field Office within 24-hours by telephone. A written submission must be provided within 5 days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

J. LIABILITIES

1. Civil and Criminal Liability

Except as provided in permit conditions for "**Bypass**," "**Sanitary Sewer Overflow**," and "**Upset**," nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or the Federal Water Pollution Control Act, as amended.

PART III

OTHER REQUIREMENTS

K. TOXIC POLLUTANTS

The permittee shall notify the Division of Water Resources as soon as it knows or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic substance(s) (listed at 40 CFR 122, Appendix D, Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. One hundred micrograms per liter (100 ug/l);
 - b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - c. Five (5) times the maximum concentration value reported for that pollutant(s) in the permit application in accordance with 122.21(g)(7); or
 - d. The level established by the Director in accordance with 122.44(f).
2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. Five hundred micrograms per liter (500 ug/l);
 - b. One milligram per liter (1 mg/L) for antimony;
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 122.21(g)(7); or
 - d. The level established by the Director in accordance with 122.44(f).

L. REOPENER CLAUSE

If an applicable standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(B)(2), and 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked and reissued to conform to that effluent standard or limitation.

The division also retains the right to modify the permit for cause based on the permittee's discharge monitoring results for the following areas: (In each case the permit modification is subject to applicable public participation.)

- The results from the permittee's Nitrite/Nitrate Nitrogen Control Program (NNNCP) may demonstrate adverse water quality instream from the standpoint of its livestock/wildlife water supply designated usage. Treated effluent ammonia nitrogen results will be considered as part of the NNNCP.
- Tributyltin is no longer being used as an additive in the Outfall 002 cooling water and doesn't show the reasonable potential to cause pollution. Due to there no longer being a reasonable potential for acute toxicity in Outfall 002 discharge, the acute toxicity monitoring requirements have been deleted. The LC50 limit has been revised to exclude the flow of Outfall 002 and has been changed to 1.6%. If the permittee changes its Outfall 002 characteristics, such that a chemical is added that is a concern for acute toxicity, then the division may (based on the permittee's request and backup data) proceed with a permit modification.

M. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream or from the nearest public property/right-of-way, if applicable. The minimum sign size should be two feet by two feet (2' x 2') with one inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following is given as an example of the minimal amount of information that must be included on the sign:

<p>TREATED INDUSTRIAL WASTEWATER-OUTFALL 001 Aerojet Ordnance Tennessee (Permittee's Phone Number) NPDES Permit NO. TN0057983 TENNESSEE DIVISION OF WATER RESOURCES 1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Johnson City</p>
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NON-CONTACT COOLING WATER-OUTFALL 002
Aerojet Ordnance Tennessee
(Permittee's Phone Number)
NPDES Permit NO. TN0057983
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Johnson City

TREATED SANITARY WASTEWATER-OUTFALL 003
Aerojet Ordnance Tennessee
(Permittee's Phone Number)
NPDES Permit NO. TN0057983
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Johnson City

N. ANTIDegradation

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06, titled "Tennessee Antidegradation Statement," which prohibits the degradation of exceptional Tennessee waters and the increased discharges of substances that cause or contribute to impairment, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

O. ACUTE BIOMONITORING REQUIREMENTS, OUTFALL 001 DISCHARGE

The permittee shall conduct a 48-hour static acute toxicity test on two test species on the same samples of final effluent from Outfall 001. The test species to be used are Water Fleas (*Ceriodaphnia dubia*) and Fathead Minnows (*Pimephales promelas*).

The measured endpoint for toxicity will be the concentration causing 50% lethality (LC50) of the test organisms. The LC50 shall be determined based on a 50% lethality as compared to the controls.

Test shall be conducted, and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing for Outfalls 001					
4 X PL	2 X PL	Permit Limit (PL)	0.50 X PL	0.25 X PL	Control
% effluent					
6.4	3.2	1.6	0.8	0.4	0

Due to using an updated 7Q10 flow and wastewater discharge flow, the Permit Limit has changed from 2.4% to 1.6% to better reflect the newest flow calculation.

The dilution/control water used will be a moderately hard water as described in [Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms](#), EPA-821-R-02-012 (or the most current edition). Results from an acute standard reference toxicant quality assurance test for each species tested shall be submitted with the discharge monitoring report. Reference toxicant tests shall be conducted as required in EPA-821-R-02-012 (or the most current edition). Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the LC50 is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

The WET tests for the Outfall 001 discharge shall be conducted using final effluent grab samples which are representative of the treated wastewater. Elevated toxicity is a test failure and constitutes a permit violation will be demonstrated if a LC50 value is less than or equal to 1.6%, for either species.

If, in any control more than 10% of the test organisms die in 48 hours, the test (control and effluent) is considered invalid and the test shall be repeated within 30 days of the date the initial test is invalidated. Furthermore, if the results do not meet the acceptability criteria as defined in [Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms](#), EPA-821-R-02-012, or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests for the Outfall 001 treated effluent shall be completed semi-annually.

The toxicity tests specified herein shall be conducted once, within 180 days of effective date of this permit. If the effluent does not exhibit any toxicity during the first test, and the processes and production levels don't change, WET testing will not be required during the term of this permit. Additionally, if the permittee changes its production level to a different tier or changes processes, toxicity tests shall be conducted once, within 180 days of the tier level/process change. If the WET testing does show toxicity of the effluent, toxicity tests specified herein shall be conducted semi-annually from thereon for the duration of the permit.

In the event of a test failure for the Outfall 001-samples, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation which must also be reported.**

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification

shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary, to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices and determination of effluent lethality values will be made in accordance with [Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms](#), EPA-821-R-02-012, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analysis shall be compiled in a report. The report shall be written in accordance with [Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms](#), EPA-821-R-02-012, or the most current edition.

Biomonitoring reports (including follow-up reports) shall be submitted to the division. A copy of the report(s) shall be submitted along with the electronic discharge monitoring report (netDMR).

P. DISCHARGE NITRITE/NITRATE NITROGEN CONTROL PROGRAM

This permit continues to require Aerojet to develop a Nitrite/Nitrate Nitrogen Control Program (NNNCP) NNNCP, to include a summary of wastewater control measures being used to reduce the Outfall 001 effluent nitrite and nitrate discharges. If the permittee only operates pursuant to the Tier 1 discharge requirements as presented in Part 1A, then submission of the above NNNCP will not be necessary.

Q. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a wastewater system certified operator in accordance with the Water Environmental Health Act of 1984.

R. INSTREAM MONITORING

To assess the impact of the permittee's discharges on Little Limestone Creek, the permittee shall continue to conduct instream analyses. Instream monitoring points are shown on the map included in Attachment 1.

1. Water Quality Analysis

The permittee shall conduct analyses for the following parameters in the water column: estimated flow, pH, temperature, dissolved oxygen, conductivity, gross alpha, gross beta, total uranium, nitrite, nitrate, total phosphorus, and total dissolved solids. These analyses must be conducted once every four months based on grab samples collected at Stations #3, #4, #5. The estimated flow shall be determined based on Station #4 measurements. The permittee shall use its updated division-approved instream monitoring procedures, which provides sampling sequencing information to ensure that the intermittent Outfall 001 discharge impacts are actually being evaluated via the instream monitoring. The permittee shall attach its Water Quality Analysis results with its DMR for the month when laboratory analyses are received.

2. Sediment Quality Analysis

The permittee shall conduct analyses for the following parameters in the sediment: total chromium, total nickel, total uranium, and total thorium. These analyses shall be conducted once during the term of the permit by a grab sample at Stations #3, #4, and #5. The permittee shall submit the division a Sediment Summary Report, which includes the current results plus instream sediment sampling results for the past two permits. The permittee shall include an overall assessment regarding sediment characteristics and trends in the report.

The permittee must perform stream monitoring as specified below. Adherence by the permittee or its consultant at the time of the assessment to any modifications of these specified procedures recommended in writing by either division biologists or division permit or assessment staff shall not be construed as a violation of this part.

3. Biological Monitoring

The permittee shall develop and implement a biological monitoring plan to define the biological impact of its storm water discharges on the receiving stream(s). To complete this, monitoring will be required to determine the biological integrity and diversity of the receiving streams, pursuant to the relevant Tennessee Water Quality Criteria for those streams. Specifically, this permit requires assessment of the biological integrity of the receiving streams in accordance with the Tennessee Water Quality Criteria for all streams classified for Fish and Aquatic life per Tennessee Rule 0400-40-03-.03(k). The permittee's biological monitoring permit requirements shall involve completing a biosurvey at two locations (upstream and downstream) on Little Limestone Creek as well as an ecoregion reference site on Big War Creek (ECO67F17). **Aerojet must obtain the Excel spreadsheet format for data on benthic macroinvertebrates by contacting the DWR Planning & Standards Section (Attn: Debbie Arnwine or Kim Laster) – contact information is shown below.**

Reports of the final results at minimum will include the raw data, field forms, taxa lists, and biometric calculations. Taxa lists and field data should be submitted electronically in Excel format specified in the TDEC QSSOP for Macroinvertebrate Surveys. Final study reports shall be submitted to two locations: 1) WPC central office along with a DMR, 2) WPC Johnson City EFO along with an MOR.

1. Frequency

Biological monitoring shall be conducted once during each 5-year permit cycle, samples collected during low flow, high temperature conditions. (Exceptions are for specific streams that are dry in low flow). For intermittent or batch discharges, sampling should take place within 30 days of discharge in lowest flow conditions.

2. Location

Locations for sampling are detailed in Attachment 1.

3. Sampling

The survey will be conducted by a qualified biologist, professional credentials specified in Protocol 1.G (form in Appendix B) of the TDEC QSSOP for all samplers and taxonomist must be maintained on file with the Planning and Standards Unit, Central Office. The permittee will notify the appropriate EFO, Division of Water Resources, at least **two weeks** prior to conducting the biological survey.

The biosurvey will consist of a single habitat semi-quantitative macroinvertebrate sample and a habitat survey. Habitat assessments, sample collection, subsampling, taxonomy, quality assurance and metric calculation must adhere exactly to the methodology found in the most recent revision of the State of Tennessee Department of Environment and Conservation, Division of Water Resources, Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys (referred to as TDEC QSSOP).

a. Habitat Assessment

Appropriate habitat assessment forms will be completed concurrent with each biological survey in accordance with protocol D in the TDEC SQQOP. These forms can be found in Appendix B in the TDEC QSSOP. The High Gradient Form will be used in conjunction with riffle kick collections and the Low Gradient Form will be used in conjunction with rooted bank collections. Per Johnson City field office personnel, the station near Aerojet's outfalls does not have the habitat for the SQKICK sampling. Due to the nature of Little Limestone Creek in the vicinity of the discharge, the Low Gradient Form (included in Appendix B of the above referenced document) shall be used in conjunction with semi-quantitative bank collections. Protocol D-2 shall be used for conducting the habitat assessment. If requested by the permittee, procedural variances may be division approved prior to performing the sampling.

b. Macroinvertebrate Sample Collection

A semi-quantitative single habitat macroinvertebrate sample will be collected at each site following Protocol G in the TDEC QSSOP. The habitat to be sampled will be appropriate for ecoregion 67f. (to be determined by PAS – WPC).

3 rooted bank jabs will be collected using a 500-micron mesh triangular dip net. These are to include at least one jab from each bank, jabs from different velocities and incorporate different

bank types when available. Approximately one meter is to be sampled during each jab. Additional banks jabs are collected if needed to ensure at least 200 organisms. The debris from all jabs will be composited and preserved. All sorting and identification is to be conducted in the laboratory.

c. Subsampling

All samples will be reduced to 200+/- 20% organisms following subsampling protocols detailed in Protocol I of the TDEC QSSOP.

d. Taxonomy

All taxa in the subsample will be identified to genus level or as specified in Protocol J of the TDEC QSSOP.

e. Biometrics

The following biometrics will be calculated for each subsample following protocol K in the TDEC QSSOP (without extrapolation).

- Taxa Richness (TR)
- EPT Richness (EPT)
- EPT Abundance - Cheumatopsyche (%EPT-C)
- Chironomidae and Oligochaeta Abundance (%OC)
- North Carolina Biotic Index (NCBI) using values found in Appendix C of the TDEC QSSOP
- Percent Contribution of Nutrient Tolerant Organisms (%TNUTOL)
- Percent Clingers Cheumatopsyche (%CLINGERS -Cheum) using designations found in Appendix C of the TDEC QSSOP

Scoring for each metric must follow the draft SQBANK guidelines for ecoregion 67f (below). Scoring criteria may be adjusted for subsequent samples based on SQBANK data collected from the ecoregion reference site based on Protocol K – Alternative Reference Method using the 90th percentile of all SQBANK data collected from the 67f ecoregion reference site. The division will notify the permittee in writing of any revisions prior to the next sampling period.

4. Station Information

Draft SQBANK Guidelines - Scoring based on 3 samples collected from ECO67F14 and ECO67F17. Revised 08/11/2017.

Bioregion: 67fghi Season: January – June Target TMI = 32 Scoring calibrated to 160-240 organism sample			Method = SQBANK Drainage >2.5 sq miles Genus Level Identification	
Metric	6	4	2	0
Taxa Richness (TR)	> 28	20 – 28	10 – 19	< 10
EPT Richness (EPT)	> 6	5 – 6	2 – 4	< 2
% EPT-Cheum	> 25.9	17.4 – 25.9	8.7 – 17.3	< 8.7
% OC	< 50.0	50.0 – 66.6	66.7 – 83.3	> 83.3
NCBI	< 6.67	6.67 – 7.77	7.78 – 8.89	> 8.89
% Clingers	> 20.1	13.5 – 20.1	6.7 – 13.4	< 6.7
% TNutol	< 45.1	45.1 – 63.3	63.4 – 81.7	> 81.7

Bioregion: 67fghi Season: July - December Target TMI = 32 Scoring calibrated to 160-240 organism sample			Method = SQBANK Drainage >2.5 sq miles Genus Level Identification	
Metric	6	4	2	0
Taxa Richness (TR)	> 27	18 – 27	9 – 17	< 9
EPT Richness (EPT)	> 5	4 – 5	2 – 3	< 2
% EPT-Cheum	> 43.6	29.2 – 43.6	14.6 – 29.1	< 14.6
% OC	< 29.4	29.4 – 52.9	53.0 – 76.4	> 76.4
NCBI	< 5.85	5.85 – 7.22	7.23 – 8.61	> 8.61
% Clingers	> 34.9	23.3 – 34.9	11.7 – 23.2	< 11.7
% TNutol	< 41.7	41.7 – 61.1	61.2 – 80.5	> 80.5

The following information will be recorded at each station during the biosurvey

- Water temperature (°C)
- Dissolved Oxygen (mg/L)
- pH (S.U.)
- Conductivity (umhos)
- Stream Flow (cfs)
- TSS (mg/L)
- TDS (mg/L)
- Turbidity (NTU)

5. Reporting

Electronic Excel format specified in the TDEC QSSOP SOP should be used to report biometrics, taxa lists habitat assessments and field survey sheets to the Planning

and Standards Section. Results of the biological stream sampling including complete taxa lists and habitat assessments shall be electronically submitted via email to the following division contacts below:

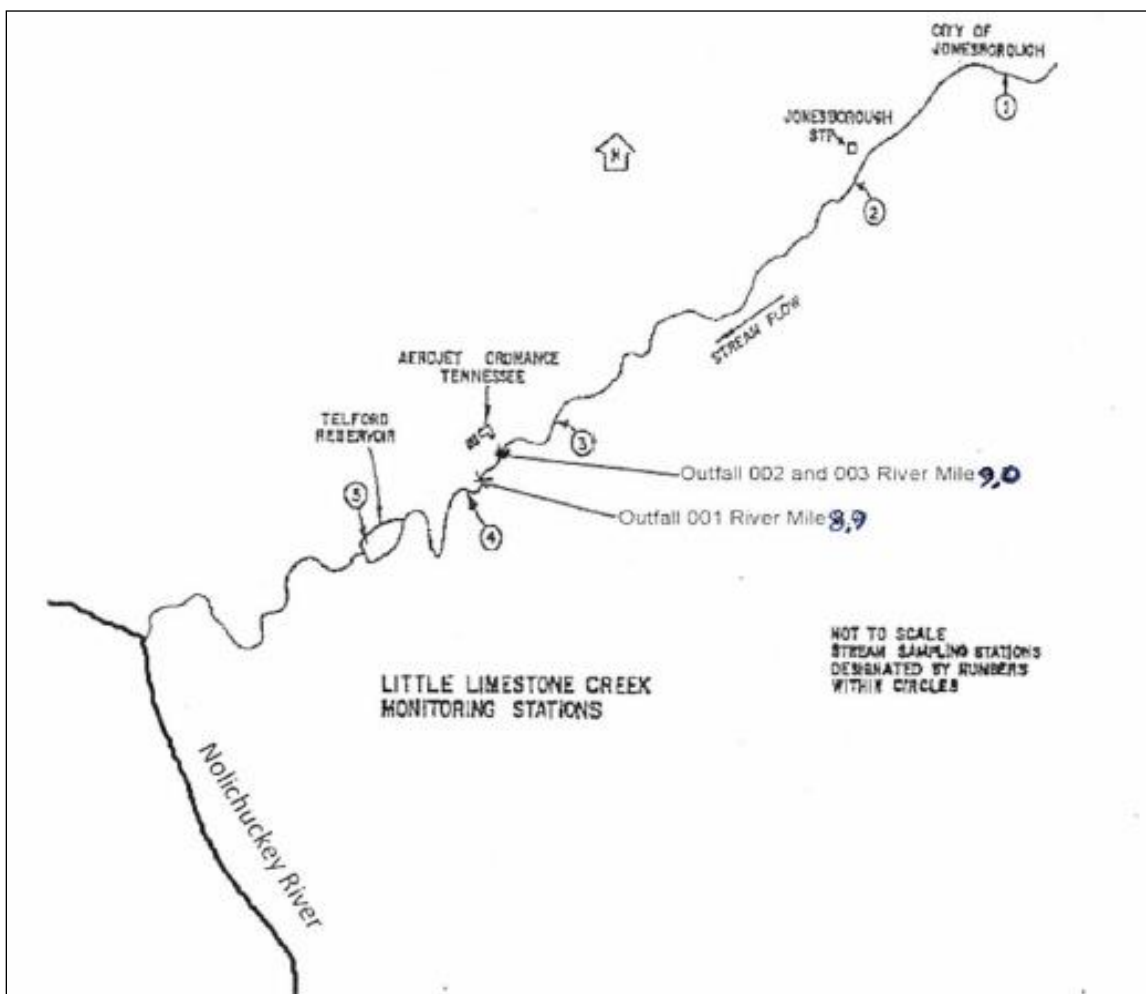
Debbie Arnwine	Debbie.arnwine@tn.gov	Planning & Standards Section	615-532-0703
Kim Laster	Kim.laster@tn.gov	Planning & Standards Section	615-770-1805
Bryan Carter	Bryan.carter@tn.gov	Johnson City EFO	423-854-5456
Angela Hall	Angela.Hall@tn.gov	Enforcement/Compliance Sec.	615-532-9506

Electronic reporting will include Excel spreadsheets of benthic macroinvertebrate taxa.

ATTACHMENT 1

LITTLE LIMESTONE CREEK MONITORING STATIONS

The following map shows the Instream Monitoring Stations.



Additional ecoregion reference monitoring site - Big War Creek (ECO67F17) for biological and habitat assessment is at 36.42626/-83.34663.

ADDENDUM TO RATIONALE

Aerojet Ordnance Tennessee

NPDES PERMIT NO. TN0057983
Jonesborough, Washington County, Tennessee

Permit Writer: Ms. Shannon McClellan

Revision suggestions were submitted by EFO staff Bryan Carter on October 14, 2020 and by Aerojet permittees Monday, October 26, 2020 via phone call. Comments are included below:

Bryan Carter suggested language be included in the Definitions of the permit regarding permit parameters listed in bold font are subject to Effluent Limitation Guidelines (ELGs).

I have changed this in the permit and added a few paragraphs regarding ELGs to the definitions that is included in the current permit.

Bryan Carter suggested removing pH language regarding sampling within 15 minutes of sample collection, due to being covered in Title 40 CFR Part 136.3(e) Table II and its inclusion extraneous.

I have removed this language from the permit body and should be removed in the Rationale of the next permit.

Bryan Carter stated there are no Tennessee MDLs in last paragraph of “Effluent Limitations and Monitoring Results” section. Suggested revising language.

We have replaced the language with a more current statement.

Bryan Carter suggested to include language for submittal requirements for MORS for Outfall 003 into permit.

I have included language for submittal requirements for Outfall 003 that are included in the current permit.

Bryan Carter suggested revision to language of last bullet in “Reopener Clause” regarding removal of WET testing/acute toxicity for Outfall 002, due to Tributyltin no longer being used in cooling water process.

I have removed language regarding biomonitoring /WET testing for Outfall 002 in the permit and revised LC50 number for Outfall 001, not including flow of Outfall 002. Due to WET testing no longer being required for Outfall 002 due to discontinuation of Tributyltin in the cooling water,

LC50 limits have also been removed from the permit effluent limits for Outfall 002. The permit Rationale cannot be changed once put on Public Notice, but will be updated to reflect these calculations and changes in the next permit cycle.

Bryan Carter mentioned to change a frequency error for WET testing from “annually” to “semi-annually” as it was stated in the previous paragraph on page 33 of the permit.

I have corrected this error in the permit.

After internal discussion regarding submitting a hardcopy of a biomonitoring test to the EFO, the Division of Water Resources has agreed to remove the language in “Acute Biomonitoring Requirements” section and revised to reflect the electronic submittals of biomonitoring tests with the netDMRs.

Bryan Carter and Aerojet permittees both expressed concern regarding the “Acute Biomonitoring Requirements(stormwater)” paragraph in the permit.

This has been removed from the body of the permit.

Bryan Carter mentioned in the “Location” section of the permit, that the EFO already approved of the sampling sites in the previous permit.

The paragraph regarding sampling locations has been revised.

Bryan Carter mentioned additional SIC codes applied in the Rationale.

Additional SIC codes will be included in the Rationale of the next permit.

Aerojet permittees expressed concern for the Lead and Cadmium limits in the new effluent limits tables. They stated the Daily Max and Monthly Average were the same numbers in Tier 1, where as the current permit limits are different.

These limits were rounding errors. I agree with the permittees and have revised the data tables in the appendices and the effluent limits. I have included further decimal places to show the correct limits that are also in the current permit for all tiers.

Aerojet requested the sampling frequency for DO to be twice a week rather than 5 times a week, as it is in the current permit.

I have reviewed the sampling frequency in the current permit and agree the frequency can be changed to twice a week rather than 5 times a week.

Aerojet requested the sampling frequency for E.Coli to be twice a month rather than 5 per month as shown in the current permit.

I have reviewed the current permit and agree with this change. I have updated the sampling frequency.

Aerojet requested sampling frequency for TRC to be 4 times a week, rather than 5 per week, due to their work rotations being 4, 10 hr days.

I agree and have made the necessary changes in the permit.

Aerojet and Bryan Carter requested sampling number for WET testing be 1 grab sample rather than 4 separate, as it is in the current permit.

I agree and have made the necessary changes in the permit.

Aerojet commented on temperature reporting requirements for Outfall 001. Asked if they were to start reporting temperature.

I have reviewed this error and removed the temperature limits from Outfall 001, since it's ambient effluent and not related to the cooling tower blowdown discharge.

Bryan Carter and Aerojet commented that the WET limits for Outfall 001 in the appendices didn't match the proposed effluent limits in the permit.

I have updated the limits in all tables and updated the appendices.

Aerojet commented the permit number for Radiological Health in the Rationale should be updated from H96 to J21.

The newest Radiological Health permit number will be reflected in the next renewed permit.

Aerojet asked for clarification on toxicity testing and submittal paragraph in "Acute Biomonitoring Requirements, Outfall 001". Asked if their sample didn't show acute toxicity that was submitted within 180 days, then they wouldn't have to sample the rest of the permit term.

After discussion with colleagues, we agree to keep this language and have modified it accordingly to include monitoring whenever there is a process or tier level change. If each WET test passes and shows no acute toxicity, then biomonitoring will not be required for the rest of the permit term. If the sample results show toxicity that exceeds its permit limit requirements, then testing will be required semi-annually and must meet permit limits.

RATIONALE

Aerojet Ordnance Tennessee

NPDES PERMIT NO. TN0057983
Jonesborough, Washington County, Tennessee

Permit Writer: Ms. Shannon McClellan

I. DISCHARGER

Aerojet Ordnance Tennessee
1367 Old State Route 34
Jonesborough, Washington County, Tennessee
Site Longitude: -82.526258 Site Latitude: 36.25249

Official Contact Person:
Mr. Wendell Christian
General Manager
(423) 753-1262

Nature of Business:
Manufacturer of tungsten and uranium metals alloys,
castings, and machined pieces. Manufacturer of steel
grenade bodies.

SIC Code(s): 3369
Industrial Classification: Primary
Discharger Rating: Minor

PRIMARY INDUSTRY CATEGORY means any industry category listed in the NRDC Settlement Agreement (Natural Resources Defense Council v. Train, 8 ERC 2120 [D.D.C. 1976], modified 12 ERC 1833 [D.D.C. 1979]).

II. PERMIT STATUS

Issued December 01, 2016
Expired December 31, 2020
Application for renewal received July 14, 2020

Watershed Scheduling

Environmental Field Office: Johnson City
Outfall 001 Longitude: -82.52828 Primary Outfall Latitude: 36.249859
Hydrocode: 06010108 Watershed Group: 5
Watershed Identification: Nolichucky
Target Reissuance Year: 2025

III. FACILITY DISCHARGES, RECEIVING WATERS, AND OTHER PERMITS

Aerojet Ordnance, a subsidiary of Aerojet Rocketdyne, is an industrial facility located in Jonesborough, TN. This facility primarily manufactures depleted uranium and tungsten metals alloys, castings, machined pieces, and steel grenade bodies. Aerojet Ordnance Tennessee is a main supplier of M67 hand grenade body assemblies to the governments of the United States and Canada and possesses specialty metal capabilities, including: powder metallurgy, primary metal processing, metal casting, heat treatment, computer-aided machining, forging and swaging (Source: Aerojet Rocketdyne Holdings, Inc.).

Aerojet Ordnance Tennessee discharges treated process wastewater and stormwater through Outfall 001 in batches that are intermittently discharged at mile 8.7. All 001 flows are combined prior to 2-stage physical/chemical treatment involving pH adjustment, flocculation and chlorination, breakpoint chlorination when required for ammonia removal, followed by filtration and carbon adsorption. Sludge solids are dewatered by centrifugation prior to radioactive waste burial and coolant and oily mop water from Building 200 is trucked offsite. Grenade process water is pumped to the water treatment plant and processed through an evaporator. The cleanout from the evaporator is also trucked offsite. Daily wastewater volumes are accumulated until sufficient volume is reached to undergo treatment. Once treated, the discharge is released in batches. During batch discharges, a long term average volume of less than 10,000 GPD is released, at most, once a week within a 24 hour period.

At Outfall 002, noncontact cooling water and cooling tower blowdown effluent is discharged at mile 8.8 of Little Limestone Creek with an average volume of 3,260 GPD. The non contact cooling water effluent that helps cool four cooling towers comes from a drinking water source and is not in contact with any processes; therefore not needing treatment.

Outfall 003 consists of treated sanitary wastewater and shower water. The two flows are combined for biological treatment and extended aeration process followed by effluent U.V. disinfection. The biological sludge is combined with process sludges prior to dewatering by centrifuge and burial. The sewage treatment plant has a 15,000 GPD capacity and discharges an average volume of 2,500 GPD to Little Limestone Creek at mile 8.8. Appendix 1 summarizes facility discharges and the receiving stream information for Outfall 001.

Low flows on unregulated streams are estimated using guidance from the EPA document *Low Flow Statistics Tools: A How-To Handbook for NPDES Permit Writers*¹. When sufficient and

¹ https://www.epa.gov/sites/production/files/2018-11/documents/low_flow_stats_tools_handbook.pdf
Released October 2018 (EPA-833-B-18-001).

representative USGS gage data is available, USGS SWToolbox² is used to analyze the flow data and calculate 7Q10 and 30Q5 values. Using these low flow values at the gage, the permit writer then determines the flow at the point of discharge using the following equation:

$$Q_{outfall} = Q_{gage} \times \frac{A_{outfall}}{A_{gage}}$$

Where:

$Q_{outfall}$ = Low flow statistic at outfall location
 Q_{gage} = Low flow statistic at gage location
 $A_{outfall}$ = Area draining to outfall
 A_{gage} = Area draining to gage

In the absence of sufficient gage data, the division relies on USGS Streamstats³ to calculate low flows statistics.

In this permit, no sufficient gage data is available to characterize the receiving stream. Thus, USGS Streamstats was used to delineate the critical low flow at the point of discharge. Appendix 1 includes the Streamstats output used for this estimation.

Little Limestone Creek is assessed in 2018 as unavailable waters for nitrate and nitrite, total phosphorus, ammonia, physical substrate habitat alterations, and E. coli and is needing additional controls to meet water quality criteria. Appendix 1 also provides Little Limestone Creek's flows (7Q10 and 30Q5) and its designated uses.

Storm water discharges associated with the industrial activity of this facility are covered by the Tennessee Multi-Sector General Storm Water Permit TNR051099. Storm water concerns associated with this facility are covered in this general permit and will, therefore, not be addressed in the new permit.

The State Division of Radiological Health regulates the permittee's plant pursuant to Permit No. S-90009-J21. As such, radiological assessments/results are not addressed in the new NPDES permit or corresponding rationale.

IV. APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

The Standard Industrial Classification (SIC) code for Aerojet Ordnance Tennessee are 3369 (Non-Ferrous Foundries, Except Aluminum and Copper), 3489 (Precision Turned Product Manufacturing, 3451 (Fabricated Metal Products Industry, and 3499 Powder Metallurgy Products). Process wastewater discharged through Outfall 001 is regulated by 40 CFR Part 471 Subpart G Uranium Forming and 40 CFR Part 471 Subpart E – Refractory Metals (Tungsten) Forming. Additionally, the existing evaporator effectively eliminates consideration of wastewater discharges from the permittee's point sources subject to Metal Finishing Point Source Category pursuant to 40 CFR Part 433. The Federal Effluent Limitations Guidelines (ELGs) for Point Sources are shown in the schematic diagram presented in Appendix 1, with detailed calculations provided in Appendix 3. As shown in Appendix 3, ELGs for both existing and new sources are applicable for the permittee's Outfall 001 discharge and were applied in developing permit

² <https://www.usgs.gov/software/swtoolbox-software-information>

³ https://www.usgs.gov/mission-areas/water-resources/science/streamstats-streamflow-statistics-and-spatial-analysis-tools?qt-science_center_objects=0#qt-science_center_objects

requirements. Appendix 3 lists the applicable best available technology (BAT) and best practicable control technology (BPT) effluent limitations guidelines for 40 CFR Part 471 Subparts G and E.

The Uranium limit specified in the previous permit was developed from facility treatment system data and will be retained in the new permit. There are no promulgated water quality criteria for Uranium for the designated use classifications of the receiving stream. The facility is regulated by the State Division of Radiological Health (Permit No. S-90009-H96) for protection against radiation hazards.

The renewed permit includes Outfall 001 discharge mass loading allocations pursuant to EPA ELGs for both regulated and non-regulated wastestreams. The renewed permit retains Outfall 001 mass loading allocations from the 2015 permit, which was based on production rates and wastestreams subject to the federal ELGs. The 2015 permit also set limit using Best Professional Judgment (BPJ) to determine mass loading allocations for the permittee's nonregulated wastestreams, e.g., foundry cooling pad wastewater, pickle room stormwater/caustic scrubber blowdown that must be treated via the permittee's wastewater treatment facility. To account for potentially increased production due to U.S. Army requirements, a five-tiered Outfall 001 technology-based discharge permit approach has been defined. This renewed permit retains the following rationale for defining technology-based allocations:

Tier 1 = 1.0 * ELGs

Tier 2 = 1.5 * Tier 1 ELGs

Tier 3 = 2.0 * Tier 1 ELGs

Tier 4 = 2.5 * Tier 1 ELGs

Tier 5 = 3.0 * Tier 1 ELGs

This approach requires that the permittee select and report pursuant to the appropriate permit tier limitations. Although both ELG allocations for Subparts E and G were used to define the overall discharge limits, it was assumed that monthly average production per Subpart G Uranium Forming would be most representative for selecting the permit tier. Since the permittee has a batch wastewater treatment process with intermittent discharge, the following factors per 40 CFR Part 122.45(e) were considered in determining the new permit's discharge limitations and monitoring requirements:

Discharge frequency;

Total mass;

Maximum pollutant discharge rate;

Prohibitions/limitations for the discharge of pollutant mass, concentration, or other appropriate measures.

The overall technology based effluent limitations for the 40 CFR listed pollutants discharged from Outfall 001 were determined in the following manner:

1. Daily Maximum and Monthly Average production-based mass limits were calculated for each of the eight wastestreams subject to 40 CFR guidelines and totaled BPT effluent limitations were applied to certain pollutants where BAT limitations were absent.

2. Equivalent concentrations were calculated for the 40 CFR regulated wastestreams, using the corrected flow for each wastestream, and the totaled mass of each pollutant.
3. The resulting concentration values were then applied to the oxide wash, dye penetrant testing, and decontamination unit wastestream flows and pollutant mass limits calculated. Although these wastestreams were not subject to 40 CFR guidelines, they were considered to be process related flows that merited similar limitations to the regulated wastestreams.
4. State of Tennessee maximum limits per Rule 0400-40-05-.08 were applied to the non-contact cooling water, showers, and laboratory wastestreams which were considered to be non-process related. Equivalent pollutant mass limits were calculated.
5. The total pollutant mass limits were determined by summing the mass limits of the individual wastestreams, then multiplying by 1.125 to give an increase of 12.5% that was agreed upon in the previous permit cycle.

V. PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

Appendix 3 lists the permit limitations and monitoring requirements as defined in the previous permit.

VI. HISTORICAL MONITORING AND INSPECTION

The facility was inspected by Environmental Field Office (EFO) staff Mr. Bryan Carter and Mr. Jason Benton during the period of July 24, 2017 to August 1, 2017. The facility, wastewater plant, operating area, and facility outfalls were in good condition and good working order. The Compliance Evaluation Inspection (CEI) report addressed several analytical methods shortcomings/upgrade requirements. The permittee provided its CEI response in a September 2017 letter presenting its detailed corrective action plan and a proposed implementation schedule. The division's CEI results and the permittee's response letter are available in the permit file. A summary of the data reported on Discharge Monitoring Report forms during the previous permit term is summarized in Appendix 4.

VII. NEW PERMIT LIMITS AND MODIFICATION

The proposed new permit limits have been selected by determining a technology-based limit and evaluating if that limit protects the water quality of the receiving stream including antibacksliding provisions considerations and assessing if such limits protect the receiving stream's water quality. If the technology-based limit would cause violations of water quality, the water quality-based limit is chosen. The technology-based limit is determined from EPA effluent limitations guidelines and BPJ assessments. The State of Tennessee maximum effluent limits for effluent limited segments per Rule 0400-40-05-.08, receiving stream impairments, and operational and/or treatability data, and any applicable approved Total Maximum Daily Load

(TMDL) studies were also addressed in defining the new permit requirements. Note that in general, the term “anti-backsliding” refers to a statutory provision that prohibits the renewal, reissuance, or modification of an existing NPDES permit that contains effluents limits, permit conditions, or standards that are less stringent than those established in the previous permit.

INDUSTRIAL WASTEWATER OUTFALL 001

Outfall 001 Tier 1 Discharge Requirements (for < 2,500 to 3,750 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	.7	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	.3343	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.34	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.21	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	.32	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.14	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.001	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.004	lb/d	Grab	Semiannual	Monthly Average

01034	Chromium, total (as Cr)	<=	.0019	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0008	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0069	lb/d	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu)	<=	.0035	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0014	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.0007	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.0269	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0119	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.003	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.002	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4	mg/L	Grab	Once Per Discharge	Daily Maximum

Notes are applicable for all tiered limits:

Permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production.

Permit parameters shown above in **bold font** are subject to effluent limitation guidelines, and compliance with Daily Maximum and Monthly Average Amounts based on number of days the production facility was operating as defined in Part I.C.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
(b) pH analyses shall be performed within fifteen (15) minutes of sample collection.
(c) Permittee must report effluent total uranium (via ICP-MS), not effluent total natural uranium.

Outfall 001 Tier 2 Discharge Requirements (for 3,751 to 5,000 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	1.216	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	.634	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.62	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.42	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.1534	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.5041	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.0015	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0006	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0028	lb/d	Grab	Semiannual	Daily Maximum

01034	Chromium, total (as Cr)	<=	.0011	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0245	lb/d	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu)	<=	.0119	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0021	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.001	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.096	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0425	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.0105	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0071	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4	mg/L	Grab	Once Per Discharge	Daily Maximum

Outfall 001 Tier 3 Discharge Requirements (for 5, 001 to 6,250 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	1.6213	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	.8453	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.8322	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.5604	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.5138	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.6721	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.002	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0008	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0037	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0015	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0327	lb/d	Grab	Semiannual	Daily Maximum

01042	Copper, total (as Cu)	<=	.0159	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0028	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.0013	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.128	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0567	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.014	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0094	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4	mg/L	Grab	Once Per Discharge	Daily Maximum

Outfall 001 Tier 4 Discharge Requirements (for 6,251 to 7,500 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	2.0267	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	1.0567	lb/d	Grab	Once Per Discharge	Monthly Average

00545	Settleable Solids	<=	.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	1.04	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.7	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.8922	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	.8401	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.0025	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.001	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0047	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0019	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.0408	lb/d	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu)	<=	.0199	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0036	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.0017	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.1601	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.0709	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.0175	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0118	lb/d	Grab	Semiannual	Monthly Average

50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4	mg/L	Grab	Once Per Discharge	Daily Maximum

Outfall 001 Tier 5 Discharge Requirements (for 7,501 to = 12,000 off-lb/day Monthly Average Production per 40 CFR Part 471 Subpart G):

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	7.5	SU	Grab	Once Per Discharge	Minimum
00400	pH	<=	9	SU	Grab	Once Per Discharge	Maximum
00530	Total Suspended Solids (TSS)	<=	2.432	lb/d	Grab	Once Per Discharge	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	1.268	lb/d	Grab	Once Per Discharge	Monthly Average
00545	Settleable Solids	<=	.5	mL/L	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	1.25	lb/d	Grab	Once Per Discharge	Daily Maximum
00556	Oil & Grease	<=	.84	lb/d	Grab	Once Per Discharge	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	15.2	mg/L	Grab	Once Per Discharge	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.6	mg/L	Grab	Once Per Discharge	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Quarterly	Daily Maximum

00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Annual	Daily Maximum
00951	Fluoride, total (as F)	<=	2.2707	lb/d	Grab	Semiannual	Daily Maximum
00951	Fluoride, total (as F)	<=	1.0081	lb/d	Grab	Semiannual	Monthly Average
01027	Cadmium, total (as Cd)	<=	.003	lb/d	Grab	Semiannual	Daily Maximum
01027	Cadmium, total (as Cd)	<=	.0012	lb/d	Grab	Semiannual	Monthly Average
01034	Chromium, total (as Cr)	<=	.0056	lb/d	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	<=	.0023	lb/d	Grab	Semiannual	Monthly Average
01042	Copper, total (as Cu)	<=	.049	lb/d	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu)	<=	.0238	lb/d	Grab	Semiannual	Monthly Average
01051	Lead, total (as Pb)	<=	.0043	lb/d	Grab	Semiannual	Daily Maximum
01051	Lead, total (as Pb)	<=	.002	lb/d	Grab	Semiannual	Monthly Average
01062	Molybdenum, total (as Mo)	<=	.1921	lb/d	Grab	Semiannual	Daily Maximum
01062	Molybdenum, total (as Mo)	<=	.085	lb/d	Grab	Semiannual	Monthly Average
01067	Nickel, total (as Ni)	<=	.021	lb/d	Grab	Semiannual	Daily Maximum
01067	Nickel, total (as Ni)	<=	.0141	lb/d	Grab	Semiannual	Monthly Average
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Once Per Discharge	Monthly Average
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	>	1.6	%	Grab	Semiannual	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	>	1.6	%	Grab	Semiannual	Minimum

Description: External Outfall, Number: 001, Monitoring: See Comments - Tier I, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
22708	Uranium, natural, total	Report	-	mg/L	Grab	Once Per Discharge	Monthly Average
22708	Uranium, natural, total	<=	4	mg/L	Grab	Once Per Discharge	Daily Maximum

Outfall 001:

Outfall 001 treated process wastewater is stored in two 5,000 gal tanks, which allows the 9,600-gal treated wastewater to be discharged over a 24-hour period. The treated wastewater is discharged batch-wise based on production schedule, cleanup operations and rainfall. Currently, the treated Outfall 001 wastewater is discharged approximately 1x/week. For some operational conditions, it may be necessary for the permittee to discharge over a longer period and/or more frequently.

To maintain the ability to adjust its depleted uranium production rate from its current level, the five-tiered Outfall 001 permit approach from the current permit was retained.

- For Tier 1 the Outfall 001 limits and monitoring requirements are for the permittee's current production level, without allocations for additional U. S. Army depleted uranium production.
- Renewed permit's Tiers 2, 3, 4 and 5 provide for increased Outfall 001 discharge mass loadings pursuant to Army requirements and relevant ELGs/BPJs.
- Increased mass loadings (relative to Tier 1) were calculated using the approach explained in Section IV, for the following parameters: total suspended solids, oil/grease, fluorides, and heavy metals (cadmium, chromium, copper, lead, molybdenum, and nickel).
- No increases in nitrite, nitrate and nitrite + nitrate mass loadings and ammonia-nitrogen concentrations beyond the new permit's Tier 1 permit values are authorized.
- For reporting purposes, the permittee must define which production rate is applicable for each month, comply with the correct Outfall 001 permit tier requirements, and complete/submit to the division the appropriate discharge monitoring report (DMR).

The permittee uses an evaporator (a zero-discharge system) to treat all its wastewaters from processes subject to Metals Finishing Point Source Category ELGs. As such, the total toxic organics (TTO) monitoring/certification requirements are not required.

Metals and Toxics

Technology-based mass loading limits pursuant to the applicable EPA ELGs and BPJ were included for the Outfall 001 discharge for cadmium, chromium, copper, lead, molybdenum, and nickel. These parameters must be sampled as grabs and reported as totals, based on semi-annual monitoring, per the existing permit. Metals and toxics can be found in Appendix 4.

Total Uranium (Outfall 001)

There are no federally or State of Tennessee promulgated total uranium water quality criteria for the permittee's receiving stream designated usages. Based on the permittee's decision to use EPA Method 200.8 for all metals reporting, the renewed permit limits total uranium daily maximum limits for only the ICP-MS method.

This permit retains the 4.0 mg/L daily maximum total uranium limit from previous permits. The permit's reopener clause provides for making changes to the Outfall 001 total uranium discharge requirements if warranted based on DMR results. Any permitting changes are subject to applicable public participation provisions.

Flow

Monitoring of flow quantifies the load of pollutants to the stream. The permit requires that the permittee's discharge flow (MGD) be estimated/ reported as maximum daily and calculated monthly average (determined based on total volume discharged divided by the number of days when discharges actually occurred) values. The flow data provides the basis for determining mass loadings discharged to the receiving stream. Discharge flow must be estimated on a once/batch discharge basis.

Total Suspended Solids (TSS), Oil and Grease, and Fluoride

The State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3) (c)] state there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life in the receiving stream.

The Outfall 001 discharge total suspended solids, oil & grease, and fluoride mass loading limitations in the new permit are based on the relevant EPA ELGs and BPJ considerations. For monitoring these parameters, grab samples must be collected based on a once per discharge frequency for total suspended solids and oil & grease, and semiannually for fluoride.

Settleable Solids

Due to the permittee's industrial wastewater characteristics and physical/chemical treatment system used, the daily maximum settleable solids limit of 0.5 ml/l based on BPJ will be retained in the new permit. Sample type will be grab, with a once per discharge monitoring frequency.

pH

The technology-based pH limit specified in §471.71 for the regulated waste streams is within the range 7.5 – 10 SU. The permittee's regulated and unregulated wastewaters combine prior to treatment and the permittee has documented that no practicable internal monitoring point for pH monitoring exists. As shown in Appendix 5, instream water quality requires a pH of 6.0 to 9.0 SU. As such, the upper limit water quality limit of 9.0 SU and the technology-based approach applying the minimum pH value of 7.5 SU will be retained in the new permit. As with the current permit, the new permit Outfall 001 discharge pH limits will be 7.5 to 9.0 SU. The monitoring frequency shall be once per discharge collected as a grab sample.

Total Residual Chlorine

The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/L unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit. The MDL of 0.05 mg/L is higher than the monthly average limit of 0.011 mg/L and the daily maximum limit of 2.0 mg/L for TRC. Therefore, the reportable limit of 0.05 mg/L will effectively be used to demonstrate compliance with the effluent limitations. Please note that any TRC detected at or above the detection level will constitute a violation of the permit.

Effluent Temperature

Temperature will be limited according to the State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3)(e)]. It is recognized that the temperature of the cooling water discharge will be greater than the temperature of the water prior to its use for cooling or other purposes. This discharge must not cause the temperature change in receiving stream to exceed 3°C relative to an upstream control point. Also, this discharge must not cause the temperature of receiving stream to exceed 30.5°C (except as a result of natural causes), and this discharge must not cause the maximum rate of temperature change in receiving stream to exceed 2°C per hour (except as a result of natural causes).

Considering that Outfall 001 discharges to a receiving stream with a large critical low flow proportional to the effluent flow rate, there is no reasonable potential of exceeding any applicable WQ criteria. Therefore, effluent temperature is monitored on "report only" basis on the Discharge Monitoring Reports (DMRs). Considering the reported temperature will be the one of the effluent, an exceedance of the above mentioned 30.5°C water quality criteria is not necessarily a permit violation. The 30.5°C value applies to the receiving stream, not the effluent. Therefore, if the effluent temperature exceeds 30.5°C, the permittee should note in the "comments" section of the DMR that this is the temperature of the effluent. A temperature check in the receiving stream below the discharge point may be performed in order to prove facility's compliance with the Tennessee Water Quality Standards and should also be noted in the "comments" section of the DMR.

Ammonia as N

To assess toxicity impacts, the state utilizes the EPA Ambient Water Quality Criteria for Ammonia (<https://www.epa.gov/wqc/aquatic-life-criteria-ammonia>), which is promulgated in Tennessee Rules, Chapter 0400-40-03-.03-3(3)(j), dated *September 11, 2019*, and assumed stream temperatures of 25°C and 15°C and pH of 7.5 or 8.0 to derive an allowable instream protection value protective of chronic exposure to a continuous discharge. A mass balance equation with sewage treatment facility and stream flows and this allowable value determines the monthly average permit limit. The criteria document states that a 30Q5 flow value is protective in deriving allowable values. Where the division has 30Q5 flow values, the division may use them. Otherwise, the division utilizes the available 7Q10 or 1Q10 values that are generally more conservative. The criteria continuous concentrations (CCC) derived from assumed temperature and pH values are as follows:

CCC values based on temperature and pH, in mg/L:

Temperature (°C)	7.5 pH	8.0 pH	Temperature (°C)	7.5 pH	8.0 pH
25	1.01	0.56	15	1.92	1.07
27	0.89	0.49	17	1.69	0.94
30	0.73	0.41	20	1.39	0.78

The mass balance equation is as follows:

$$CCC = \frac{Q_S C_S + Q_{STP} C_{STP}}{Q_S + Q_{STP}} \quad \text{or,} \quad C_{STP} = \frac{CCC(Q_S + Q_{STP}) - (Q_S C_S)}{Q_{STP}}$$

where:

CCC = Criteria continuous concentration (mg/L)
 Q_S = 7Q10 flow of receiving stream (MGD)
 Q_{STP} = Long term average flow of STP (MGD)
 C_S = Assumed/Measured instream NH_3 (mg/L)
 C_{STP} = Allowable STP discharge of NH_3 (mg/L)

$$C_{STP} = \frac{0.56 (1.83\text{MGD} + .0093 \text{ MGD}) - (1.83\text{MGD} \times 0.1\text{mg/L})}{.0093 \text{ MGD}} = 91.08\text{mg/L (summer)}$$

$$C_{STP} = \frac{1.07 (1.83 \text{ MGD} + .0093 \text{ MGD}) - (1.83\text{MGD} \times 0.1\text{mg/L})}{.0093 \text{ MGD}} = 191.94\text{mg/L (winter)}$$

Because the previous permit's $\text{NH}_3\text{-N}$ concentration limits calculated to protect dissolved oxygen are more restrictive than the toxicity limits calculated above, the current limits of 7.6 mg/L monthly average and 15.2 mg/L daily max are retained in this permit. Instream biological nitrification of the discharged ammonia-nitrogen would result in additional instream nitrite/nitrate. With respect to the aquatic toxicity associated with ammonia discharges from Outfalls 001 and 003, the contributions from each were assessed in Appendix 4.

Nitrite and Nitrate

Data on effluent concentrations for nitrate+nitrite and nitrate indicate no substantial difference between the values of these two parameters. The nitrate+nitrite parameter is considered sufficient and will continue to be report only in the renewed permit. If the permittee only operates pursuant to the Tier 1 discharge requirements as presented in Part 1A, then the above NNNCP submittal requirements will not be necessary.

Based on their DMR data results(see Appendix 5) for nitrate+nitrite of a maximum of 270 mg/L being vastly below the previous permit limits of 1,114 mg/L, the limits for nitrate+nitrite will be removed and nitrate+nitrite will be report only on a quarterly basis to coincide with the Total Nitrogen monitoring.

Total Nitrogen and Phosphorus (Outfall 001)

Nutrients are naturally occurring and essential components of healthy aquatic systems. Excessive amounts of nutrients, however, can impact water quality. The enrichment of a waterbody with nutrients, called eutrophication, can result in dense, rapidly multiplying growths, or blooms, of algal species and other nuisance aquatic plants. These have potential for negatively impacting the habitat for fish and aquatic life and degrading the water quality for drinking water supply and recreation uses. These impacts can present both locally from an individual activity and much further downstream from the cumulative impact of multiple activities. The division has therefore developed and begun to implement a strategy to accomplish long-term nutrient reduction in Tennessee waters. The document referred to as the Tennessee Nutrient Reduction Framework (NRF), contains proposed rationale and the methodology for implementing the strategy within a watershed area. Consequently, the framework considers impacts from both point and non-point sources of nutrients and potentially recommends reduction goals for both point and non-point sources. The NRF approach to nutrient reduction is intended to utilize an adaptive management approach in consideration of the facts presenting within a watershed and reevaluation of the effectiveness of progress being made. Regular reassessments of goals and action plans will be conducted by reviewing monitoring data, modeling results and other measures of success. As additional data becomes available (such as WWTP effluent characterization and instream water quality data), model results can be re-evaluated. Therefore, for purposes of implementing this strategy, the division is imposing a minimum of quarterly effluent characterization for total nitrogen and total phosphorus on all discharges of treated domestic wastewater. These values will be used to reevaluate the nutrient loads from discharges within a watershed over time for comparison with those loads from non-point sources. The framework may be reviewed on the division's webpage at

<http://www.tn.gov/environment/article/wr-ws-tennessee-nutrient-reduction-framework>.

Acute Toxicity Biomonitoring - LC₅₀

The permittee continues to use batch treatment and discharges over a 24-hour period. Due to a newly calculated 7Q10 flow of 1.83MGD and the long-term average flow of 0.0093MGD the acute toxicity percentage has changed from 2.4% to 2.2% to represent the changed flows.

INSTREAM MONITORING RESULTS AND RELATED NEW PERMIT REQUIREMENTS

The new permit requires Aerojet to maintain the instream monitoring water column analyses, sediment quality analysis, and biological testing programs to confirm water quality effects of the plant's improvements in wastewater treatment.

1. Water Column Quality Analysis

Aerojet shall conduct analyses for the following parameters in the water column: estimated flow, pH, temperature, dissolved oxygen, conductivity, gross alpha, gross beta, total uranium, nitrite+nitrate, phosphorus and total dissolved solids. These analyses will be conducted once every four months based on grab samples collected at Stations #3, #4, #5. The estimated flow shall be determined based on Station #4 measurements.

The permittee shall use division-approved instream monitoring procedures, which provides sampling sequencing information to ensure that the intermittent Outfall 001 discharge

impacts are actually being evaluated via the instream monitoring. The permittee shall submit any recommended revisions to its proposed instream monitoring procedures to the division's Johnson City Environmental Field Office and the Nashville Central Office within 90 days from the new permit's effective date.

[Note: The dye tracer test is not required to be repeated. The test was conducted during the previous permit and has been used to develop a simple computer model used for timing of sampling based on the actual receiving stream flow and Outfall 001 treated effluent discharge rate and duration. Given the dilution ratio in the mixing zone of over 100:1, current practices for sample collection are deemed valid.]

3. Biological Monitoring

The new permit includes detailed requirements for the permittee to complete biological monitoring to examine the impact of permittee's discharges on the receiving stream's biological characteristics. The permittee must update its biological monitoring program and coordinate with the Johnson City Environmental Field Office to complete the new permit's requirements. The results of all the evaluation (two copies) must be submitted with the monthly Discharge Monitoring Reports within 90 days of the completion of the analysis sampling.

NONCONTACT COOLING WATER AND COOLING TOWER BLOWDOWN OUTFALL 002

Proposed Effluent Limits:

Description: External Outfall, Number: 002, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00010	Temperature, water deg. C	Report	-	deg C	Grab	Twice Per Month	Daily Maximum
00094	Conductivity	Report	-	umho/cm	Grab	Twice Every Month	Daily Maximum
00400	pH	>=	6.0	SU	Grab	Twice Per Month	Minimum
00400	pH	<=	9.0	SU	Grab	Twice Per Month	Maximum
50050	Flow	Report	-	MGD	Estimate	Twice Per Month	Daily Maximum
50050	Flow	Report	-	MGD	Estimate	Twice Per Month	Monthly Average

Flow

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in Million Gallons per Day (MGD) and monitored at the time of sample collection at a frequency of twice per month.

pH

According to the State of Tennessee Water Quality Standards [Chapter 0400-40-03-.03(3)(b)], the pH for the protection of Fish and Aquatic Life shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24-hours. Considering that the receiving stream will provide some buffering capacity, effluent limitation for pH will be retained in a range 6.0 to 9.0. The sample type will be grab.

Effluent Temperature

Temperature will be limited according to the State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3)(e)]. It is recognized that the temperature of the cooling water discharge will be greater than the temperature of the water prior to its use for cooling or other purposes. This discharge must not cause the temperature change in receiving stream to exceed 3°C relative to an upstream control point. Also, this discharge must not cause the temperature of receiving stream to exceed 30.5°C (except as a result of natural causes), and this discharge must not cause the maximum rate of temperature change in receiving stream to exceed 2°C per hour (except as a result of natural causes).

Considering that Outfall 002 discharges to a receiving stream with a large critical low flow proportional to the effluent flow rate, there is no reasonable potential of exceeding any applicable WQ criteria. Therefore, effluent temperature is monitored on "report only" basis on the Discharge Monitoring Reports (DMRs). Considering the reported temperature will be the one of the effluent, an exceedance of the above mentioned 30.5°C water quality criteria is not necessarily a permit violation. The 30.5°C value applies to the receiving stream, not the effluent. Therefore, if the effluent temperature exceeds 30.5°C, the permittee should note in the "comments" section of the DMR that this is the temperature of the effluent. A temperature check in the receiving stream below the discharge point may be performed in order to prove facility's compliance with the Tennessee Water Quality Standards and should also be noted in the "comments" section of the DMR.

Supplemental Monitoring Parameters including TRC (Outfall 002)

Due to permittee's cooling towers operation (e.g., varying cycles and chemical additives used) and based on the division's water quality reasonable potential evaluations for Outfall 002 provided in Appendix 3:

- Acute toxicity testing will continue to be monitored annually as stated in the current permit.
- No limit is required for Total Residual Chlorine due to the facility using city water for cooling water.

TREATED SANITARY WASTEWATER AND SHOWER WATER OUTFALL 003

Proposed Effluent Limits:

Description: External Outfall, Number: 003, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00300	Oxygen, dissolved (DO)	>=	1.0	mg/L	Grab	Five Per Week	Minimum
00310	BOD, 5-day, 20 C	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
00310	BOD, 5-day, 20 C	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
00400	pH	>=	6.0	SU	Grab	Two Per Week	Minimum
00400	pH	<=	9.0	SU	Grab	Two Per Week	Maximum
00530	Total Suspended Solids (TSS)	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
00545	Settleable Solids	<=	0.5	mL/L	Grab	Two Per Week	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.5	mg/L	Grab	Twice Per Month	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	5.0	mg/L	Grab	Twice Per Month	Monthly Average
50050	Flow	Report	-	MGD	Recorder	Continuous	Daily Maximum
50050	Flow	Report	-	MGD	Recorder	Continuous	Monthly Average
50060	Chlorine, total residual (TRC)	<=	2.0	mg/L	Grab	Five Per Week	Daily Maximum
51040	E. coli	<=	941	CFU/100mL	Grab	Five Per Week	Daily Maximum
51040	E. coli	<=	126	CFU/100mL	Grab	Five Per Week	Monthly Geometric Mean

Flow

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in Million Gallons per Day (MGD) and monitored at the time of sample collection at a frequency of twice per month.

Total Suspended Solids (TSS)

Total Suspended Solids is a general indicator of the quality of a wastewater and will be limited in this permit. The permit writer's technology-based limit for TSS of 30 mg/L, taken from Tennessee Rule 0400-40-05-.09(1)(a) 1., "Conventional Secondary Treatment Plants."

The State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3) (c)] state there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life in the receiving stream.

The permit writer believes the limit of 30 mg/L daily maximum concentration will provide protection of water quality in the receiving stream. Considering the nature of wastewater collection and discharge system, the sample type will be grab.

pH

According to the State of Tennessee Water Quality Standards [Chapter 0400-40-03-.03(3) (b)], the pH for the protection of Fish and Aquatic Life shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24-hours. Considering that the receiving stream will provide some buffering capacity, effluent limitation for pH will be retained in a range 6.0 to 9.0. The sample type will be grab.

Total Residual Chlorine

The sanitary wastewater system uses a UV system for disinfection before discharge. However, the permittee wants the capacity to use the chlorine-based system for disinfection should problems with the UV unit occur. As such, the as noted in Appendix 3, the technology based TRC limit of 2.0 mg/l will apply if an oxidant (e.g., chlorine) is used for disinfection.

BOD5

Biochemical oxygen demand, or BOD, is a measure of the oxygen used when biological processes break down organic pollutants in wastewater. The amount of oxygen used is more specifically referred to as the five-day biochemical oxygen demand, or BOD5. This parameter is used in the wastewater industry to measure both the strength of wastewater and the performance of wastewater treatment processes.

Limits on the oxygen demand remaining in the treated wastewater is often necessary to prevent pollutants in the wastewater from driving oxygen in the receiving stream down below the levels necessary to support fish and aquatic life. Additionally, the breakdown of ammonia into

other forms of nitrogen also requires oxygen and therefore exerts an oxygen demand on receiving wastewaters.

The BOD₅ limits are technology-based and established in accordance with the State of Tennessee maximum limits per Rule 0400-40-05-.09(1)(a)1. The current permit limits of 30 mg/l monthly average concentration and 45 mg/l daily maximum concentration will be retained for the new permit. The sample type will be grab.

Dissolved Oxygen

The dissolved oxygen limit is established in accordance with State of Tennessee Water Quality Criteria Rule 0400-40-03-.03(3) to protect fish and aquatic life. The Outfall 003 discharge must contain as a daily minimum at least 1.0 mg/l dissolved oxygen. The sample type will be grab.

Settleable Solids

The limit for Settleable Solids discharge limit from the current permit of 0.5 ml/l, as a daily maximum will be retained for the new permit. The sample type will be grab.

E.Coli Requirements

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. Fecal coliform and *E. coli* are indicator organisms used as a measure of bacteriological health of a receiving stream and the effectiveness of disinfection. The concentration of the *E. coli* group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for *E. coli* within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an *E. coli* group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 colonies per 100 ml applies to lakes and Exceptional Tennessee Water. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

Ammonia-Nitrogen

The new permit retains the current permit's discharge ammonia-nitrogen limits (5.0 mg/L monthly average and 7.5 mg/L daily maximum). Instream biological nitrification of the discharged ammonia-nitrogen would result in additional instream nitrite/nitrate. With respect to the aquatic toxicity associated with ammonia discharges from Outfalls 001 and 003, the contributions from each were assessed in Appendix 4.

VIII. ANTIDEGRADATION

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the division as segment ID# TN06010108510_2000.

Unavailable Conditions Waters (assessed as needing additional pollution controls)

The division has made a water quality assessment of the receiving waters associated with the subject discharge(s) and has found the receiving stream to be neither an exceptional nor outstanding national resource water.

Additionally, this water is not fully supporting of its designated uses due to Nitrate/Nitrite as N, physical substrate habitat alterations, and E.Coli from grazing riparian or shoreline zones, un-ionized Ammonia, and total Phosphorus from municipal (urbanized high density area). It was noted in the previous permit that most of the concerns were due to the Town of Jonesborough Wastewater Treatment Plant upstream of the facility. The WWTP relocated their outfall downstream of Aerojet's facility with discharge directly to the Nolichucky River. The division has seen improvements in water quality since then based on Aerojet's instream surveys.

Due to the need for additional controls for stream water quality discussed above, the renewed permit will retain limits for Nitrogen compounds along with annual total Phosphorus reporting. Total Phosphorus limits aren't needed due to the facility using an evaporator system as a zero-discharge control for two additional waste streams.

With consideration for antibacksliding (as discussed in Section VII and receiving stream water quality protection), the renewed permit provides for increased discharges (via Tiers 2, 3, 4 and 5) pursuant to applicable technology-based allocations to accommodate the Army's continuing requirements. The permittee has indicated that, due to the presence of residual radioactive components, it has no reasonably feasible non-discharging alternatives (e.g., land application, discharge to municipal sewer) for its expanded discharge pursuant to its increased production due to the U.S. Army requirements.

TMDLs have been developed and approved for this waterbody segment on the following parameters and dates:

<u>Parameter</u>	<u>TMDL Approval Date</u>
E. Coli	2019
Low dissolved Oxygen, nutrients	2009
Siltation, habitat alteration	2008

The proposed terms and conditions of this permit comply with the wasteload allocations of these TMDLs.

X. ELECTRONIC REPORTING

Starting on December 21, 2016, all Individual NPDES Permit holders will be required to submit Discharge Monitoring Reports (DMRs) electronically through NetDMR. Prior to 21 December 2016, the permittee may elect to electronically submit DMRs instead of mailing paper DMRs.

EPA published the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, which will modernize Clean Water Act reporting for municipalities, industries and other facilities. The rule was published in the Federal Register on October 22, 2015 and became effective on December 22, 2015. The rule replaces most paper-based NPDES reporting requirements with electronic reporting.

More information is available at <http://www.tn.gov/environment/topic/wr-netdmr-and-electronic-reporting>:

- Getting Started on NetDMR,
- Electronic reporting schedule,
- Training Opportunities,
- NetDMR User Guide and other supporting information

XI. PERMIT DURATION

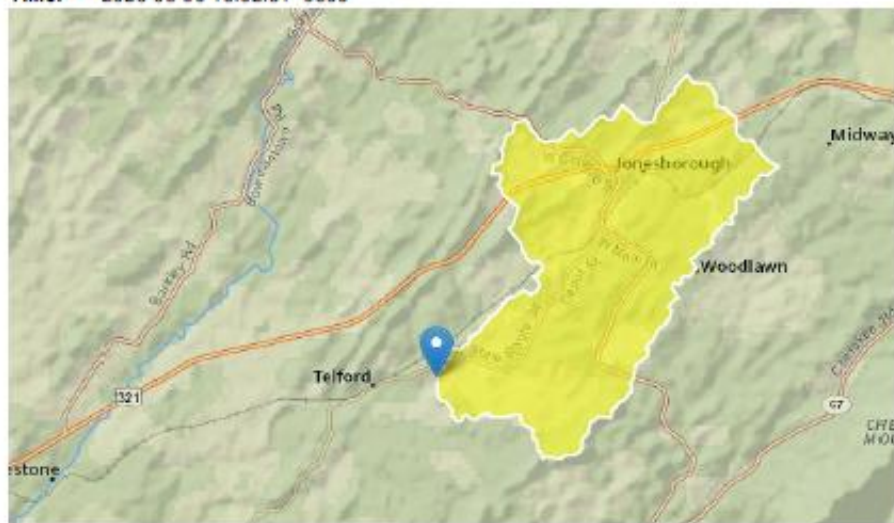
The proposed limitations meet the requirements of Section 301(b)(2)(A), (C), (D), (E), and (F) of the Clean Water Act as amended. It is the intent of the division to organize the future issuance and expiration of this permit such that other permits located in the same watershed and group within the State of Tennessee will be set for issuance and expiration at the same time. This permit is being reissued for 5 years in order to coordinate its reissuance with other permits located within the Nolichucky River Watershed and is set to expire in 2025.

APPENDIX 1

FACILITY DISCHARGES AND RECEIVING WATERS

StreamStats Report

Region ID: TN
 Workspace ID: TN20200806200233059000
 Clicked Point (Latitude, Longitude): 36.24983, -82.52812
 Time: 2020-08-06 15:02:51 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	13.85	square miles
RECESS	Number of days required for streamflow to recede one order of magnitude when hydrograph is plotted on logarithmic scale	120	days per log cycle
CLIMFAC2YR	Two-year climate factor from Lichy and Karlinger (1990)	2.16	dimensionless
SOILPERM	Average Soil Permeability	1.32	inches per hour

Parameter Code	Parameter Description	Value	Unit
PERMGTE2IN	Percent of area underlain by soils with permeability greater than or equal to 2 inches per hour	96.005	percent

Low-Flow Statistics Parameters

Low Flow Central and East Regions 2009 5159

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.85	square miles	1.3	14441
RECESS	Recession Index	120	days per log cycle	32	175
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.16	dimensionless	2.056	2.46
SOILPERM	Average Soil Permeability	1.32	inches per hour	0.45	9.72
PERMGTE2IN	Percent permeability gte 2 in per hr	96.005	percent	2	100

Low-Flow Statistics Flow Report

Low Flow Central and East Regions 2009 5159

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
7 Day 10 Year Low Flow	2.83	ft ³ /s	89
30 Day 5 Year Low Flow	3.53	ft ³ /s	70.2

Low-Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E., 2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 001	
LONGITUDE	LATITUDE
-82.52828	36.249859

FLOW (GPD)	DISCHARGE SOURCE
50	Heat Treatment Quench Tank
300	Floor Wash
10	Acid Pickling Spent Baths
20	Surface Treatment Pickling Rinse
10	Air Pollution Control Scrubber Blowdown
500	Laundry
145	Drumwash Wastewater
145	Sawing/Grinding Spent Emulsion
265	Misc. Wastewater (Tungsten Forming)
60	Lab Wastewater
200	Stormwater Runoff
5	Demil Acid Soak & Rinse Wastewaters
1,710	PER BATCH - DISCHARGE (GPD) **
6,840	Total Discharge of combined 4 batches (GPD)

RECEIVING STREAM DISCHARGE ROUTE			
Little Limestone Creek at mile 8.7			
STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
	2.83		3.53
(MGD)	1.83		2.28

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
FISH	RECREATION	IRRIGATION	LW&W	DOMESTIC
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: Individual streams are mixed together before the lime addition, flocculation and precipitation.
Solids are removed by settling and filtration before sampling.

* Reference: Law, G.S., Tasker, G.D., and Ladd, D.E., 2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

** Discharge from each of the operations listed in 3.1 are intermittent. A batch treatment process is provided. Daily waste flows are accumulated until sufficient volume is obtained for treatment. Expected frequency of discharge at Outfall 001 is approximately once per week but will vary with production. Frequency has averaged less than 1 per week over last several years.

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 002		RECEIVING STREAM DISCHARGE ROUTE			
LONGITUDE	LATITUDE	Little Limestone Creek at mile 8.8			
-82.52609	36.250551	STREAM LOW	7Q10	1Q10	30Q5
FLOW (MGD)	DISCHARGE SOURCE	FLOW (CFS) *	2.83		3.53
0.00326	Non Contact Cooling Water & Cooling Tower Blowdown	(MGD)	1.83		2.28
		STREAM USE CLASSIFICATIONS (WATER QUALITY)			
		FISH	RECREATION	IRRIGATION	LW&W
		X	X	X	X
		INDUSTRIAL	NAVIGATION		
0.00326	TOTAL DISCHARGE				

Treatment: None

*

Reference: Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 003		RECEIVING STREAM DISCHARGE ROUTE			
LONGITUDE	LATITUDE	Little Limestone Creek at mile 8.8			
-82.52575	36.250828	STREAM LOW	7Q10	1Q10	30Q5
FLOW (MGD)	DISCHARGE SOURCE	FLOW (CFS) *	2.83		3.53
0.0017	Sanitary Wastewater	(MGD)	1.83		2.28
0.0008	Shower	STREAM USE CLASSIFICATIONS (WATER QUALITY)			
		FISH	RECREATION	IRRIGATION	LW&W
		X	X	X	X
		INDUSTRIAL	NAVIGATION		
0.0025	TOTAL DISCHARGE				

Treatment: Extended aeration process decomposes sewage with bacteria in the presence of oxygen.

Chlorine is added to the effluent before discharge.

*

Reference: Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

APPENDIX 2

NEW PERMIT LIMITS AND MONITORING REQUIREMENTS

OUTFALL 001 - TIER 1 PERMIT LIMITATIONS AND MONITORING REQUIREMENTS (Tier 1 per 40 CFR Part 471 Subpart G Monthly Average Production \leq 2,500 to 3,750 off-lb/day)

TREATED PROCESS WASTEWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC. (mg/l)	AVG. AMNT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMNT. (lb/day)		
Flow (MGD)	Report (a)		Report (a)		1/Discharge	Estimate
pH (s.u.) (b)	--	--	7.5 - 9.0		1/Discharge	Grab
Total Suspended Solids	--	0.3343	--	0.7001	1/Discharge	Grab
Settleable Solids	--	--	0.5 ml/l		1/Discharge	Grab
Oil & Grease	--	0.21	--	0.34	1/Discharge	Grab
Total Nitrogen	--	--	Report	--	1/Quarter	Grab
Ammonia - Nitrogen (as N)	7.0	--	14.0	--	1/Discharge	Grab
Nitrite + Nitrate (as N)	Report	--	Report	--	1/Quarter	Grab
Total Phosphorus (as P)	--	--	Report	--	Semi-annual	Grab
Fluoride	--	0.1412	--	0.3185	Semi-annual	Grab
Cadmium	--	0.0004	--	0.001	Semi-annual	Grab
Total Chromium	--	0.0008	--	0.0019	Semi-annual	Grab
Copper	--	0.0035	--	0.0069	Semi-annual	Grab
Lead	--	0.0007	--	0.0014	Semi-annual	Grab
Molybdenum	--	0.0119	--	0.0269	Semi-annual	Grab
Nickel	--	0.002	--	0.003	Semi-annual	Grab
Total Uranium (ICP-OES) (c)	Report	--	3.6	--	1/Discharge	Grab
Total Uranium (ICP-MS) (c)	Report	--	4.0	--	1/Quarter	Grab
48-HR LC ₅₀ (d)	> 1.6 % Effluent				Semi-annual	Grab

Note: The permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Parameters subject to ELGs shown shaded.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) pH analyses shall be performed within fifteen (15) minutes of sample collection.
- (c) Pursuant to requirements shown in Part III J.
- (d) Pursuant to requirements shown in Part III F.

OUTFALL 001 - TIER 2 PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

(Tier 2 per 40 CFR Part 471 Subpart G Monthly Average Production 3,751 to 5,000 off-lb/day)

TREATED PROCESS WASTEWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC.	AVG. AMNT.	MAX. CONC.	MAX. AMNT.		
	(mg/l)	(lb/day)	(mg/l)	(lb/day)		
Flow (MGD)	Report (a)		Report (a)		1/Discharge	Estimate
pH (s.u.) (b)	--	--	7.5 - 9.0		1/Discharge	Grab
Total Suspended Solids	--	0.634	--	1.216	1/Discharge	Grab
Settleable Solids	--	--	0.5 ml/l		1/Discharge	Grab
Oil & Grease	--	0.4203	--	0.6241	1/Discharge	Grab
Total Nitrogen	--	--	Report	--	1/Quarter	Grab
Ammonia - Nitrogen (as N)	7.0	--	14.0	--	1/Discharge	Grab
Nitrite + Nitrate (as N)	Report	--	Report	--	1/Quarterly	Grab
Total Phosphorus (as P)	--	--	Report	--	Semi-annual	Grab
Fluoride	--	0.5041	--	1.1534	Semi-annual	Grab
Cadmium	--	0.0006	--	0.0015	Semi-annual	Grab
Total Chromium	--	0.0011	--	0.0028	Semi-annual	Grab
Copper	--	0.0119	--	0.0245	Semi-annual	Grab
Lead	--	0.0010	--	0.0021	Semi-annual	Grab
Molybdenum	--	0.0425	--	0.0960	Semi-annual	Grab
Nickel	--	0.0071	--	0.0105	Semi-annual	Grab
Total Uranium (ICP-OES) (d)	Report	--	3.6		1/Discharge	Grab
Total Uranium (ICP-MS) (d)	Report	--	4.0		1/Quarter	Grab
48-HR LC ₅₀ (e)	> 1.6% Effluent				Semi-annual	Grab

Note: The permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Parameters subject to ELGs shown shaded.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) pH analyses shall be performed within fifteen (15) minutes of sample collection.
- (c) Pursuant to requirements shown in Part III J.
- (d) Pursuant to requirements shown in Part III F.

OUTFALL 001 - TIER 3 PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

(Tier 3 per 40 CFR Part 471 Subpart G Monthly Average Production 5,001 to 6,250 off-lb/day)

TREATED PROCESS WASTEWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC.	AVG. AMNT.	MAX. CONC.	MAX. AMNT.	MSRMNT. FRQNCY.	SAMPLE TYPE
	(mg/l)	(lb/day)	(mg/l)	(lb/day)		
Flow (MGD)	Report (a)		Report (a)		1/Discharge	Estimate
pH (s.u.) (b)	--	--	7.5 - 9.0		1/Discharge	Grab
Total Suspended Solids	--	0.8453	--	1.6213	1/Discharge	Grab
Settleable Solids	--	--	0.5 ml/l		1/Discharge	Grab
Oil & Grease	--	0.5604	--	0.8322	1/Discharge	Grab
Total Nitrogen	--	--	Report	--	1/Quarter	Grab
Ammonia - Nitrogen (as N)	7.0	--	14.0	--	1/Discharge	Grab
Nitrite + Nitrate (as N)	Report	--	Report	--	1/Quarter	Grab
Total Phosphorus (as P)	--	--	Report	--	Semi-annual	Grab
Fluoride	--	0.6721	--	1.5138	Semi-annual	Grab
Cadmium	--	0.0008	--	0.0020	Semi-annual	Grab
Total Chromium	--	0.0015	--	0.0037	Semi-annual	Grab
Copper	--	0.0159	--	0.0327	Semi-annual	Grab
Lead	--	0.0013	--	0.0028	Semi-annual	Grab
Molybdenum	--	0.0567	--	0.1280	Semi-annual	Grab
Nickel	--	0.0094	--	0.0140	Semi-annual	Grab
Total Uranium (ICP-OES) (d)	Report	--	3.6		1/Discharge	Grab
Total Uranium (ICP-MS) (d)	Report	--	4.0		1/Quarter	Grab
48-HR LC ₅₀ (e)	> 1.6 % Effluent				Semi-annual	Grab

Note: The permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Parameters subject to ELGs shown shaded.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) pH analyses shall be performed within fifteen (15) minutes of sample collection.
- (c) Pursuant to requirements shown in Part III J.
- (d) Pursuant to requirements shown in Part III F.

OUTFALL 001 - TIER 4 PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

(Tier 4 per 40 CFR Part 471 Subpart G Monthly Average Production 6,251 to 7,500 off-lb/day)

TREATED PROCESS WASTEWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC.	AVG. AMNT.	MAX. CONC.	MAX. AMNT.		
	(mg/l)	(lb/day)	(mg/l)	(lb/day)		
Flow (MGD)	Report (a)		Report (a)		1/Discharge	Estimate
pH (s.u.) (b)	--	--	7.5 - 9.0		1/Discharge	Grab
Total Suspended Solids	--	1.0567	--	2.0267	1/Discharge	Grab
Settleable Solids	--	--	0.5 ml/l		1/Discharge	Grab
Oil & Grease	--	0.7005	--	1.0402	1/Discharge	Grab
Total Nitrogen	--	--	Report	--	1/Quarter	Grab
Ammonia - Nitrogen (as N)	--	--	14.0	--	1/Discharge	Grab
Nitrite + Nitrate (as N)	Report	--	Report	--	1/Quarter	Grab
Total Phosphorus (as P)	--	--	Report	--	Semi-annual	Grab
Fluoride	--	0.8401	--	1.8922	Semi-annual	Grab
Cadmium	--	0.0010	--	0.0025	Semi-annual	Grab
Total Chromium	--	0.0019	--	0.0047	Semi-annual	Grab
Copper	--	0.0199	--	0.0408	Semi-annual	Grab
Lead	--	0.0017	--	0.0036	Semi-annual	Grab
Molybdenum	--	0.0709	--	0.1601	Semi-annual	Grab
Nickel	--	0.0118	--	0.0175	Semi-annual	Grab
Total Uranium (ICP-OES) (d)	Report	--	3.6	--	1/Discharge	Grab
Total Uranium (ICP-MS) (d)	Report	--	4.0	--	1/Quarter	Grab
48-HR LC ₅₀ (e)	> 1.6 % Effluent				Semi-annual	Grab

Note: The permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Parameters subject to ELGs shown shaded.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) pH analyses shall be performed within fifteen (15) minutes of sample collection.
- (c) Pursuant to requirements shown in Part III J.
- (d) Pursuant to requirements shown in Part III F.

OUTFALL 001 - TIER 5 PERMIT LIMITATIONS AND MONITORING REQUIREMENTS
(Tier 5 per 40 CFR Part 471 Subpart G Monthly Average Production 7,501 to = 12,000 off-lb/day)

TREATED PROCESS WASTEWATER

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY		MSRMNT. FRQNCY.	SAMPLE TYPE
	AVG. CONC. (mg/l)	AVG. AMNT. (lb/day)	MAX. CONC. (mg/l)	MAX. AMNT. (lb/day)		
Flow (MGD)	Report (a)		Report (a)		1/Discharge	Estimate
pH (s.u.) (b)	--	--	7.5 - 9.0		1/Discharge	Grab
Total Suspended Solids	--	1.2680	--	2.4320	1/Discharge	Grab
Settleable Solids	--	--	0.5 ml/l		1/Discharge	Grab
Oil & Grease	--	0.8406	--	1.2483	1/Discharge	Grab
Total Nitrogen	--	--	Report	--	1/Quarter	Grab
Ammonia - Nitrogen (as N)	7.0	--	14.00	--	1/Discharge	Grab
Nitrite + Nitrate (as N)	Report	--	Report	--	1/Quarter	Grab
Total Phosphorus (as P)	--	--	Report	--	Semi-annual	Grab
Fluoride	--	1.0081	--	2.2707	Semi-annual	Grab
Cadmium	--	0.0012	--	0.0030	Semi-annual	Grab
Total Chromium	--	0.0023	--	0.0056	Semi-annual	Grab
Copper	--	0.0238	--	0.0490	Semi-annual	Grab
Lead	--	0.0020	--	0.0043	Semi-annual	Grab
Molybdenum	--	0.0850	--	0.1921	Semi-annual	Grab
Nickel	--	0.0141	--	0.0210	Semi-annual	Grab
Total Uranium (ICP-OES) (d)	Report	--	3.6		1/Discharge	Grab
Total Uranium (ICP-MS) (d)	Report	--	4.0		1/Quarter	Grab
48-HR LC₅₀ (e)	> 1.6 % Effluent				Semi-annual	Grab

Note: The permittee shall submit with the DMR the level of production that actually occurred during each month and the limitations, standards, or prohibitions applicable to that level of production. Parameters subject to ELGs shown shaded.

- (a) Flow shall be reported in Million Gallons per Day (MGD). Monthly average flow to be reported as total volume discharged divided by the number of days that permittee discharged.
- (b) pH analyses shall be performed within fifteen (15) minutes of sample collection.
- (c) Pursuant to requirements shown in Part III J.
- (d) Pursuant to requirements shown in Part III F.

OUTFALL 002 - PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

Cooling Water and Cooling Tower Blowdown

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING	
	MONTHLY		DAILY		REQUIREMENTS	
	AVG. CONC.	AVG. AMNT.	MAX. CONC.	MAX. AMNT.	MSRMNT.	SAMPLE
	(mg/l)	(lb/day)	(mg/l)	(lb/day)	FRQNCY.	TYPE
Flow (MGD)	Report		Report		2/Month	Estimate
pH (s.u.) (a)	Range 6.0 - 9.0				2/Month	Grab
Effluent Temperature	--		Report (° C)		2/Month	Grab
Conductivity (umhos/cm)	--	--	Report	--	2/Month	Grab

- (a) pH analyses shall be performed within fifteen (15) minutes of sample collection.
- (b) Tributyltin monitoring only required for the first 6 months, starting with the permit's effective date.
- (c) Tributyltin discharge limits applicable after the permit's first 6 months, starting with the permit's effective date.
- (d) Pursuant to requirements shown in Part III F.

OUTFALL 003 - PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

Treated Sanitary Wastewater and Shower Water

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
	MONTHLY		DAILY			
	AVG. CONC.	AVG. AMNT.	MAX. CONC.	MAX. AMNT.	MSRMNT. FRQNCY.	SAMPLE TYPE
	(mg/l)	(lb/day)	(mg/l)	(lb/day)		
Flow (MGD)	Report		Report		Continuous	Recorder
pH (s.u) (a)	Range 6.0 - 9.0				2/Week	Grab
BOD ₅	30	--	45	--	2/Month	Grab
Total Suspended Solids (TSS)	30	--	45	--	2/Month	Grab
Solids, Settleable (m/L)	--	--	0.5	--	2/Week	Grab
Chlorine, Total Residual (TRC) (a)	--	--	2.0	--	4/Week	Grab
Dissolved Oxygen (D.O.)	--	--	1.0 minimum	--	2/Week	Grab
Ammonia Nitrogen (as N)	5.0	--	7.5	--	2/Month	Grab
E. coli (cfu/100 ml)	126	--	941	--	2/Month	Grab

- (a) pH and TRC analyses shall be performed within fifteen (15) minutes of sample collection.
- (b) Total Residual Chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added.
The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/L unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

APPENDIX 3

TECHNOLOGY-BASED LIMITS/ EFFLUENT LIMITATION GUIDELINES

40 CFR PART 471 EFFLUENT LIMITATION GUIDELINES NONFERROUS METALS FORMING AND METAL POWDERS POINT SOURCE CATEGORY								
Subpart G - Uranium Forming Subcategory								
Production	(c) Heat Treatment Contact Cooling Water		(e) Surface Treatment Spent Baths		(f) Surface Treatment Rinse		(g) Wet Air Pollution Control Scrubber Blowdown	
	4,000 off-lb/day		3,000 off-lb/day		3,000 off-lb/day		3,000 off-lb/day	
	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily
CHARACTERISTIC	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]
\$471.71 - BPT								
CADMIUM	0.285	0.646	0.004	0.010	0.050	0.115	0.0006	0.001
CHROMIUM	0.342	0.836	0.005	0.012	0.061	0.149	0.0007	0.002
COPPER	1.90	3.61	0.027	0.052	0.337	0.641	0.004	0.007
LEAD	0.380	0.798	0.006	0.012	0.068	0.142	0.0007	0.002
NICKEL	2.42	3.65	0.035	0.052	0.428	0.647	0.005	0.007
FLUORIDE	50.2	113	0.718	1.62	8.90	20.1	0.092	0.208
MOLYBDENUM	6.5	12.6	0.093	0.180	1.16	2.23	0.012	0.023
OIL & GREASE	22.8	38	0.327	0.544	4.05	6.74	0.042	0.070
TSS	37.1	77.9	0.531	1.12	6.57	13.8	0.068	0.143
pH (s.u.)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
\$471.72 - BAT								
CADMIUM	0.003	0.006	0.002	0.006	0.027	0.068	0.0003	0.0007
CHROMIUM	0.005	0.012	0.004	0.010	0.051	0.125	0.0005	0.001
COPPER	0.019	0.040	0.017	0.035	0.260	0.432	0.002	0.005
LEAD	0.004	0.009	0.004	0.008	0.044	0.095	0.0005	0.001
NICKEL	0.012	0.017	0.010	0.015	0.125	0.186	0.001	0.002
FLUORIDE	0.827	1.86	0.718	1.62	8.90	20.1	0.092	0.208
MOLYBDENUM	0.070	0.158	0.061	0.137	0.752	1.70	0.008	0.018
Production	(h) Sawing or Grinding Spent Emulsions		(k) Area Cleaning Rinse		(l) Drum Washwater		(m) Laundry Washwater	
	2,500 off-lb/day		3,000 off-lb/day		3,000 off-lb/day		50 employees	
	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily
CHARACTERISTIC	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[mg/emp-day]	[mg/emp-day]
\$471.71 - BPT								
CADMIUM	0.0009	0.002	0.007	0.015	0.007	0.015	7.86	17.8
CHROMIUM	0.001	0.003	0.008	0.019	0.008	0.020	9.43	23.1
COPPER	0.006	0.011	0.043	0.082	0.045	0.084	52.4	99.6
LEAD	0.001	0.003	0.009	0.018	0.009	0.019	10.5	22.0
NICKEL	0.007	0.011	0.055	0.083	0.057	0.085	66.6	101
FLUORIDE	0.150	0.338	1.14	2.56	1.17	2.64	1390	3120
MOLYBDENUM	0.020	0.038	0.147	0.284	0.152	0.293	179	347
OIL & GREASE	0.068	0.114	0.515	0.858	0.532	0.886	629	1050
TSS	0.111	0.233	0.837	1.76	0.864	1.82	1020	2150
pH (s.u.)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
\$471.72 - BAT								
CADMIUM	0.0005	0.001	0.004	0.009	0.004	0.009	2.10	5.24
CHROMIUM	0.0009	0.002	0.007	0.016	0.007	0.017	3.93	9.70
COPPER	0.004	0.007	0.026	0.055	0.027	0.057	16.0	33.6
LEAD	0.001	0.002	0.006	0.012	0.006	0.013	3.41	7.34
NICKEL	0.002	0.003	0.016	0.024	0.017	0.025	9.70	14.4
FLUORIDE	0.150	0.338	1.14	2.56	1.17	2.64	692	1560
MOLYBDENUM	0.013	0.029	0.096	0.216	0.099	0.223	58.4	132

(a) Within the range 7.5 to 10.0 at all times.

Subpart G - Mass Loading Allocations for Outfall 001						
EFFLUENT CHARACTERISTIC	For Subcategories (c), (e), (f), (g), (h), (k) & (l)		For Subcategory (m)		Total for Subcategories (c), (e), (f), (g), (h), (k), (l), & (m)	
	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily
	[lb/day]	[lb/day]	[lb/day]	[lb/day]	[lb/day]	[lb/day]
CADMIUM (b)	0.000125	0.000305	0.000231	0.000577	0.000356	0.000882
CHROMIUM (b)	0.000231	0.000560	0.000433	0.001068	0.000664	0.001628
COPPER (b)	0.001082	0.001930	0.001762	0.003700	0.002844	0.005630
LEAD (b)	0.000200	0.000428	0.000376	0.000808	0.000576	0.001236
NICKEL (b)	0.000560	0.000832	0.001068	0.001586	0.001628	0.002417
FLUORIDE (b)	0.039743	0.089669	0.076211	0.171806	0.115954	0.261475
MOLYBDENUM (b)	0.003361	0.007587	0.006432	0.014537	0.009792	0.022124
OIL & GREASE (c)	0.107768	0.179579	0.069273	0.115639	0.177041	0.295218
TSS (c)	0.175288	0.368112	0.112335	0.236784	0.287622	0.604896
pH (s.u.) (c)	(d)	(d)	(d)	(d)	(d)	(d)

(b) Based on BAT allocations

(c) Based on BPT allocations

(d) Within the range 7.5 to 10.0 at all times.

APPENDIX 3

40 CFR PART 471 EFFLUENT LIMITATION GUIDELINES NONFERROUS METALS FORMING AND METAL POWDERS POINT SOURCE CATEGORY

Subpart E - Refractory Forming Subcategory - Tungsten (BPT)

EFFLUENT CHARACTERISTIC	(o) Alkaline Cleaning Rinse		(s) Sawing or Grinding Spent Emulsions		(w) Miscellaneous Waterwater Sources		(x) Dye Penetrant Testing Wastewater	
	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily
	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]
§471.51 - BPT								
COPPER	816	1,550	0.297	0.565	0.345	0.656	0.078	0.150
NICKEL	1,040	1,570	0.377	0.570	0.438	0.663	0.099	0.150
FLUORIDE	21,600	48,600	7.84	17.7	9.11	20.6	2.00	4.60
MOLYBDENUM	2,790	5,400	1.02	1.97	1.18	2.28	0.266	0.513
OIL & GREASE	9,790	16,300	3.57	5.94	4.14	6.9	0.930	1.60
TSS	15,900	33,500	5.79	12.2	6.73	14.2	1.50	3.20
pH (s.u.)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

(a) Within the range 7.5 to 10.0 at all times.

New Source Performance Standards (NSPS)

Subpart E - Refractory Forming Subcategory - Tungsten (BAT)

EFFLUENT CHARACTERISTIC	(o) Alkaline Cleaning Rinse		(s) Sawing or Grinding Spent Emulsions		(w) Miscellaneous Waterwater Sources		(x) Dye Penetrant Testing Wastewater	
	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily	Maximum for Monthly Avg.	Maximum Daily
	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]	[lb/million off-lb]
§471.52 - BAT								
COPPER	4.98	10.5	0.181	0.380	0.211	0.442	0.048	0.100
NICKEL	3.02	4.49	0.110	0.164	0.128	0.190	0.029	0.043
FLUORIDE	216	486	7.84	17.7	9.11	20.6	2.05	4.62
MOLYBDENUM	18.2	41.1	0.663	1.50	0.770	1.74	0.173	0.391
OIL & GREASE	81.6	81.6	2.970	2.97	3.450	3.45	0.776	0.776
TSS	97.9	123	3.570	4.46	4.140	5.18	0.931	1.170

Subpart E - BAT Mass Loading Allocations for (o), (s), (w), & (x).

	NSPS for 750 off-lb/day Production								Maximum for Monthly Avg. [lb/day]	Maximum Daily [lb/day]
	[lb/day]	[lb/day]	[lb/day]	[lb/day]	[lb/day]	[lb/day]	[lb/day]	[lb/day]		
COPPER	0.003735	0.007875	0.000136	0.000285	0.000158	0.000332	0.000036	0.000075	0.004065	0.008567
NICKEL	0.002265	0.003368	0.000083	0.000123	0.000096	0.000143	0.000022	0.000032	0.002465	0.003665
FLUORIDE	0.162000	0.364500	0.005880	0.013275	0.006833	0.015450	0.001538	0.003465	0.176250	0.396690
MOLYBDENUM	0.013650	0.030825	0.000497	0.001125	0.000578	0.001305	0.000130	0.000293	0.014855	0.033548
OIL & GREASE	0.061200	0.061200	0.002228	0.002228	0.002588	0.002588	0.000582	0.000582	0.066597	0.066597
TSS	0.073425	0.092250	0.002678	0.003345	0.003105	0.003885	0.000698	0.000878	0.079906	0.100358

NSPS = 750 off-lb/day production

APPENDIX 3

ELG + BPJ DISCHARGE ALLOCATIONS DUE TO 40 CFR PART 471 (SUBPARTS E AND G)

	Permit Tier (s)	Nominal	Production Range	ELG Discharge Parameters																	
				Oil & Grease		TSS		Lead		Copper		Nickel		Fluoride		Molybdenum		Cadmium		Chromium	
				Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)	Monthly Avg. (lb/day)	Daily Max. (lb/day)
Subpart E (b)																					
	1 (c)	750	<750 to 938	0.002588	0.002588	0.003105	0.003885	--	--	0.000158	0.000332	0.000096	0.000143	0.006833	0.015450	0.000578	0.001305	--	--	--	--
	1 (d)	750	<750 to 938	0.066600	0.066600	0.079910	0.100036	--	--	0.004065	0.008567	0.002465	0.003665	0.176250	0.396690	0.014855	0.033548	--	--	--	--
	2	1,125	939 to 1,406	0.099900	0.099900	0.119865	0.150054	--	--	0.006098	0.012851	0.003698	0.005498	0.264375	0.596035	0.022283	0.050322	--	--	--	--
	3	1,500	1,407 to 1,875	0.133200	0.133200	0.159820	0.200072	--	--	0.008130	0.017134	0.004930	0.007330	0.352500	0.793380	0.029710	0.067096	--	--	--	--
	4	1,875	1,876 to 2,344	0.166500	0.166500	0.199775	0.250089	--	--	0.010163	0.021418	0.006163	0.009163	0.440625	0.991725	0.037138	0.083870	--	--	--	--
	5	2,250	2,345 to 2,700	0.199800	0.199800	0.239730	0.300107	--	--	0.012195	0.025701	0.007395	0.010995	0.528750	1.190070	0.044565	0.100644	--	--	--	--
Subpart G (d)																					
	1	-- (d)	<1.00 to 1.25	0.177041	0.295218	0.287622	0.604896	0.000576	0.001236	0.002844	0.005630	0.001628	0.002417	0.115954	0.261475	0.009792	0.022124	0.000356	0.000882	0.000664	0.001628
	2	1.5 X	1.26 to 1.88	0.265562	0.442627	0.431433	0.907344	0.000864	0.001654	0.004286	0.008445	0.002442	0.003626	0.173931	0.382213	0.014688	0.033186	0.000534	0.001323	0.000996	0.002442
	3	2X	1.88 to 2.50	0.354082	0.590436	0.575244	1.200792	0.001152	0.002472	0.005688	0.011260	0.003256	0.004834	0.231908	0.522950	0.019584	0.044248	0.000712	0.001764	0.001328	0.003256
	4	2.5X	2.56 to 3.12	0.442603	0.738045	0.719055	1.512240	0.001440	0.003090	0.007110	0.014075	0.004070	0.006043	0.289885	0.653688	0.024480	0.055310	0.000890	0.002205	0.001660	0.004070
	5	3X	3.13 to 3.75	0.531123	0.885654	0.862866	1.814688	0.001728	0.003708	0.008532	0.016890	0.004884	0.007251	0.347862	0.784425	0.029376	0.066372	0.001068	0.002646	0.001992	0.004884
Total (e)																					
	1	1		0.206573	0.342476	0.334336	0.700098	0.000662	0.001421	0.003453	0.006856	0.001983	0.002943	0.141204	0.318464	0.011925	0.026843	0.000409	0.001014	0.000764	0.001872
	2	1.5		0.420281	0.624136	0.633993	1.216007	0.000994	0.002132	0.011918	0.024490	0.007060	0.010491	0.504052	1.135335	0.042516	0.096034	0.000614	0.001521	0.001145	0.002808
	3	2		0.560374	0.832181	0.845324	1.621343	0.001325	0.002843	0.015891	0.032653	0.009414	0.013989	0.672089	1.513780	0.056688	0.128046	0.000819	0.002029	0.001527	0.003744
	4	2.5		0.700468	1.040227	1.056655	2.026579	0.001656	0.003554	0.019853	0.040816	0.011767	0.017486	0.840367	1.892224	0.070860	0.160057	0.001024	0.002536	0.001909	0.004681
	5	3		0.840561	1.248272	1.267985	2.432015	0.001987	0.004264	0.023836	0.048980	0.014121	0.020983	1.008104	2.270689	0.085032	0.192068	0.001228	0.003043	0.002291	0.005617

Note:

- (a) Five tiered permit developed due to U.S. Army requirement for AOT to be able to triple its annual production.
(b) 750 lb/day NSPS for 40 CFR Part 471 EGL Subpart E - Refractory Forming Subcategory - Tungsten (BAT)
(c) 40 CFR Part 471 EGL Subpart E - allocation with sawing/grinding spent emulsion, alkaline cleaning rinse and dye penetrant testing wastewater to evaporator for Tier 1 only.
(d) Tier 1 assuming 3 wastestream referenced in footnote (c) do not flow to evaporator - this used for Tiers 2, 3, 4, and 5 discharge allocations.
(e) Total includes 1.15 increase for discharge allocation due to non-ELG streams per BPJ.

Note: There was an error in previous permit calculations. Nickel Daily Max was listed as .000332, instead of the correct .000143. I have corrected this. Total e has changed to .002943 instead of .003161

APPENDIX 4

METALS AND TOXICS CONSIDERATIONS

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

- a. The most recent background conditions of the receiving stream segment are compiled. This information includes:
 - * 7Q10 of receiving stream (1.85MGD, Streamstats)
 - * Calcium hardness (231.1 mg/L)
 - * Total suspended solids (12.12 mg/L)
 - * Background metals concentrations (½ water quality criteria)
 - * Other dischargers impacting this segment (several upstream)
 - * Downstream water supplies, if applicable
- b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.
- c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.
- d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.
- e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

to protect water quality:

$$C_w \leq \frac{(S_A) [C_m (Q_s + Q_w) - Q_s C_s]}{Q_w}$$

where (S_A) is the percent "Stream Allocation".

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

Fish and Aquatic Life Protection

7Q10 - Low flow under natural conditions

1Q10 - Regulated low flow conditions

Other than Fish and Aquatic Life Protection

30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.
3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.
4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (C_w). Under these circumstances, and in the event the "stream allocation" is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic "In-stream Allowable" water quality criteria. These guidelines should be strictly followed where the

industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{m_C [\ln (\text{stream hardness})] + b_C\}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{m_A [\ln (\text{stream hardness})] + b_A\}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance for Calculating A Total*

Recoverable Permit Limit from a Dissolved Criterion (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{\text{diss}}}{C_{\text{total}}} = \frac{1}{1 + \{[K_{\text{po}}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/L]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

- Column 5:** The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.
- Column 6:** The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.
- Column 7:** The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.
- Column 8:** The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.
- Column 9:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).
- Column 10:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both "Recreation" and "Domestic Water Supply."
- Column 11:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.
- Column 12:** The Calculated Effluent Concentration associated with Organism Consumption.
- Column 13:** The Calculated Effluent Concentration associated with Water and Organism Consumption.
- Column 14:** The Calculated Effluent Concentration associated with Domestic Water Supply.

The calculated chronic water quality effluent concentrations from Column 7 should be compared, individually, to the values calculated in Columns 12, 13, and 14 in order to determine the most stringent chronic permit limitations. The calculated acute water quality effluent concentrations from Column 8 should then be compared, individually, to values equal to two (2) times the values presented in Columns 12, 13, and 14 in order to determine the most stringent acute permit limitations. These water quality based limits should then be compared to any technology based (CFR or Tennessee "Rules") effluent limitations, and/or any previous permit limitations, for final determination of the permit limits.

Ammonia as Nitrogen Calculations				
The State utilizes the Water Quality Criteria and the EPA document, EPA Ambient Water Quality Criteria for Ammonia (https://www.epa.gov/wqc/aquatic-life-criteria-ammonia). A mass balance with plant and stream flows and this allowable value determines the monthly average permit limit. Seasonal limits may also be allowed due to ambient temperature variations between the summer and winter seasons.				
East TN- 25°C, 15°C Middle TN- 27°C, 17°C West TN- 30°C, 20°C		A pH value of 8 (instead of historically used 7.5) was chosen for two reasons: 1.) ambient monitoring in west TN showed that a pH often exceeds 7.5, and is up to 8 sometimes 2.) this assumption is more conservative.		
	Winter		Summer	
Temp (°C)=	15	Temp (°C)=	25	
pH=	8	pH=	8	
MAX Expression	15.0000	MAX Expression	25.0000	
$CCC = 0.8876 \times \left(\frac{0.0278}{1 + 10^{7.688 - pH}} + \frac{1.1994}{1 + 10^{pH - 7.688}} \right) \times (2.126 \times 10^{0.028 \times (20 - MAX(T, 7))})$				
Winter CCC=	1.07	Summer CCC=	0.56	
CCC - Continuous Chronic Criterion Allowable instream NH3 concentration [mg/l]				
$CCC = \frac{(\text{Critical Low Flow [MGD]} \times \text{Background Ammonia [mg/L]} + (\text{Design Flow [MGD]} \times \text{Effluent Concentration [mg/L]})}{(\text{Critical Low Flow [MGD]} + (\text{Design Flow [MGD]})}$				
where:	1.83	Critical Low Flow [MGD] (7Q10 value)		
	0.1	Background Ammonia Concentration [mg/L]		
	0.0093	WWTP Design Flow or long-term average flow [MGD]		
Therefore, the Allowable Effluent Concentrations and corresponding Amounts in winter and summer are:				
	Winter		Summer	
	192.46	Concentration [mg/L]	91.655	Concentration [mg/L]
	14.9	Amount [lb/day]	7.1	Amount [lb/day]
Outfall 003 allocation @ discharge limit = 5.0 mg/L monthly avg. This would result in a NH3-N loading = 5.0*8.34*0.0025= 0.10 lb/day				
Resulting Outfall 001 NH3-N = 7.1-0.10 = 7.00 lb/day translating to 7.00/(8.34*0.0093) = 89.74 mg/L NH3-N monthly avg limit. The corresponding daily maximum limit = 89.74 mg/L * 2 = 178.49mg/L NH3-N				

<div> <div>WATER QUALITY CALCULATIONS FOR METALS AND OTHER TOXIC SUBSTANCES</div> <div>WATER QUALITY BASED EFFLUENT CALCULATIONS</div> <div>OUTFALL 001</div> </div> <div> FACILITY: AEROJET ORDNANCE PERMIT #: TN0057983 DATE: 8/12/2020 CALC BY: SDM </div>														
non-regulated stream worksheet (7Q10)														
Stream (7Q10)	Stream (3005)	Waste Flow (MGD)	Ttl Susp Solids (mg/l)	Hardness (as CaCO3) (mg/l)	Margin of Safety (%)									
1.85	2.28	0.0093	12.12	231.1	90									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stream	Fish/Aqua. Life (F & AL) WQC	Lab. Conditions		F & AL - Instream allowable		Calc. Effluent Concentration		Human Health Water Quality Criteria *						effluent limited case
Backamd.	Conc.	Chronic	Acute	Fraction Dissolved	Chronic	Acute	Chronic	Acute	In-Stream Criteria			Calc. Effluent Concentration **		
PARAMETER	(ug/l)	(ug/l)	(ug/l)	(Fraction)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS
Copper (a,b)	0.746	18.322	29.590	0.337	54.447	87.933	9663.25	15688.34	N/A	N/A	N/A	N/A	N/A	N/A
Chromium III	0.692	147.182	1131.480	0.200	735.493	5654.180	132214.97	1017245.50	N/A	N/A	N/A	N/A	N/A	N/A
Chromium VI	0.692	11.000	16.000	1.000	11.000	16.000	1855.36	2755.03	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Total	0.692	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100.0	N/A	N/A	22001.83
Nickel (a,b)	3.804	105.641	951.129	0.412	256.259	2307.201	45428.19	414458.91	4600.0	610.0	100.0	1018268.41	134303.21	21315.16
Cadmium (a,b)	0.219	1.347	3.941	0.257	5.237	15.319	903.02	2717.14	N/A	N/A	5.0	N/A	N/A	1059.40
Lead (a,b)	0.536	6.182	158.648	0.178	34.693	890.282	6146.43	160094.58	N/A	N/A	5.0	N/A	N/A	989.46
Mercury (T) (c)	0.012	0.770	1.400	1.000	0.770	1.400	136.40	249.76	0.051	0.05	2.0	8.65	8.43	440.44
Silver (a,b,e)	6.794	N/A	13.588	1.000	N/A	13.588	N/A	1228.57	N/A	N/A	N/A	N/A	N/A	N/A
Zinc (a,b)	5.630	240.238	238.288	0.276	868.997	861.946	155352.62	154083.97	26000.0	7400.0	N/A	5756931.96	1638191.96	N/A
Cyanide (d)	4.500	5.200	22.000	1.000	5.200	22.000	130.00	3152.86	140.0	140.0	200.0	39023.42	30023.42	43316.13
Toluene	0.000								15000.0	1300.0	1000.0	3323177.42	289008.71	#####
Benzene	0.000								510.0	22.0	5.0	112988.03	4873.99	1107.73
1,1,1 Trichloroethane	0.000								N/A	N/A	200.0	N/A	N/A	44309.03
Ethylbenzene	0.000								2100.0	530.0	700.0	465244.84	117418.94	#####
Carbon Tetrachloride	0.000								16.0	2.3	5.0	3544.72	509.55	1107.73
Chloroform	0.000								4700.0	57.0	N/A	1041262.26	12628.07	N/A
Tetrachloroethylene	0.000								33.0	6.9	5.0	7310.99	1528.66	1107.73
Trichloroethylene	0.000								300.0	25.0	5.0	66463.55	5538.63	1107.73
1,2 trans Dichloroethylene	0.000								10000.0	140.0	100.0	N/A	31016.32	22154.52
Methylene Chloride	0.000								5900.0	46.0	5.0	1307116.45	10191.08	N/A
Total Phenols	0.000								860000.0	10000.0	N/A	190528838.71	2215451.61	N/A
Naphthalene	0.000								N/A	N/A	N/A	N/A	N/A	N/A
Total Phthalates	0.000								N/A	N/A	N/A	N/A	N/A	N/A
Chlorine (T. Res.)	0.000	11.000	19.000	1.000	11.000	19.000	2199.17	3798.57	N/A	N/A	N/A	N/A	N/A	N/A

a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.
b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.
c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather than toxicity.
d The criteria for this parameter is in the total form.
e Silver limit is daily max if column 8 is most stringent.
f When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.
g When columns 12, 13 or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.

* Domestic supply included in river use so pick from columns 7,8,12,13,14,15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.
** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 3005 flow.

48-hour LC50 Acute Biomonitoring Considerations (Outfall 001 and 002 Discharges)

Since the division considers the permittee's Outfall 001 and 002 discharges to contain pollutants whose combined effects may have a reasonable potential to be detrimental to fish and aquatic life, the new permit includes acute biomonitoring requirements. The Tennessee Water Quality Criteria stipulate that *"The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions..."*. Based on the permittee's manufacturing activities and DMR 48-hour LC50 results and rationale presented in this section, the permit includes discharge limits for Outfalls 001 and 002.

For its current production level (i.e., Tier 1 permit requirements), the permittee has an intermittent Outfall 001 discharge, which may cause acute toxicity impacts in the receiving stream. Likewise, the Outfall 002 discharge may include chemicals used for cooling tower water treatment which may result in adverse acute toxicity impact within the receiving stream. The following calculations were used to determine discharge LC₅₀ limits for the combined Outfall 001 and 002.

$$DF = \frac{Q_s + Q_w}{Q_w} = \text{Dilution Factor}$$

Where:

$$Q_{w001} = \text{Outfall 001 discharge} = 0.0096 \text{ MGD}$$

Q_{w002} = Outfall 002 discharge = 0.00326 MGD
 Q_s = receiving stream low-flow 7Q10 = 1.76 MGD
 Therefore,

$$DF = \frac{(1.76 + 0.0096 + 0.00326)}{0.01286} = 137.8$$

Since the calculated dilution factor is less than 500:1, and assuming immediate and complete-mixing, the receiving stream biota acute protection requires:

$$LC_{50} \text{ of the wastewater must be } > \frac{100\%}{DF \times 0.3} > \text{Lethal concentration}$$

For Outfall 001:

$$LC_{50} \text{ of the wastewater must be } > \frac{100\%}{137.8 \times 0.3} > 2.4 \%$$

Since the permittee uses batch treatment with intermittent discharge (each over a 24 hr period), the same Outfall 001 acute LC_{50} limit are applicable for the new permit's five-tiers.

If the LC_{50} toxicity result is at or less than the above permitted LC_{50} values, the division will deem that elevated effluent toxicity exists, which constitutes a permit violation.

<div>WATER QUALITY BASED EFFLUENT CALCULATIONS OUTFALL 003</div> <div>FACILITY: <u>Aerojet Ordnance Tennessee</u> PERMIT #: <u>TN0057983</u></div>																												
<table><tr><td>Stream (7Q10)</td><td>Stream (30Q5)</td><td>Waste Flow</td><td>Ttl. Susp. Solids</td><td>Hardness (a) (as CaCO3)</td><td colspan="2">Stream Allocation</td></tr><tr><td>[MGD]</td><td>[MGD]</td><td>[MGD]</td><td>[mg/l]</td><td>[mg/l]</td><td colspan="2">[%]</td></tr><tr><td>1.85</td><td>2.28</td><td>0.0025</td><td>18</td><td>210</td><td colspan="2">90</td></tr></table>								Stream (7Q10)	Stream (30Q5)	Waste Flow	Ttl. Susp. Solids	Hardness (a) (as CaCO3)	Stream Allocation		[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]		1.85	2.28	0.0025	18	210	90	
Stream (7Q10)	Stream (30Q5)	Waste Flow	Ttl. Susp. Solids	Hardness (a) (as CaCO3)	Stream Allocation																							
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]																							
1.85	2.28	0.0025	18	210	90																							
EFFLUENT CHARACTERISTIC	1	2	3	4	5	6	7	8																				
	Stream Bckgmd.	Fish/Aqua. Life Water Quality Criteria		Effluent Fraction	Fish & Aquatic Life Water Quality Criteria (7Q10)																							
	Conc.	Chronic	Acute	Dissolved	In-Stream Allowable		Calc. Effluent Concentration																					
	[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]																				
Chlorine (T. Res.)	0.000	11.000	19.000	1.000	11.000	19.000	8,151	14,079																				
EFFLUENT CHARACTERISTIC	9	10	11	12	13	14																						
	Human Health Water Quality Criteria (30Q5)																											
	In-Stream Criteria			Calculated Effluent Concentration																								
	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS																						
	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]																						
Chlorine (T. Res.)	NA	NA	NA	NA	NA	NA																						

Technology-based daily maximum TRC discharge limit = 2.0 mg/L

To evaluate aquatic toxicity from Outfall 002 during use of municipal water for cooling, the waste flow of 0.003 MGD is compared and found to be approximately equal to the flow from Outfall

003 of 0.002 MGD. The calculations shown above indicate an effluent TRC limit of approximately 7 mg/l for chronic conditions and 13 mg/l would be warranted. Given that municipal drinking water concentrations are prohibited above 4 mg/l by TDEC rules, the discharge of cooling water with these levels is unlikely. Accordingly, a TRC limit is not required for Outfall 002.

APPENDIX 5

DMR SUMMARY Outfall 001

Row Labels	Average of DMR Value	Max of DMR Value	Min of DMR Value
BOD, 5-day, 20 deg. C	1.902430556	24	0.2
mg/L	1.902430556	24	0.2
DAILY MX	2.151388889	24	0.2
MO AVG	1.653472222	13.1	0.2
Cadmium, total [as Cd]	3.28571E-06	0.00001	0.000001
lb/d	3.28571E-06	0.00001	0.000001
DAILY MX	2.71429E-06	0.000004	0.000001
MO AVG	3.85714E-06	0.00001	0.000001
Chlorine, total residual			
mg/L			
DAILY MX			
Chromium, total [as Cr]	4.86667E-05	0.0001	0.000003
lb/d	4.86667E-05	0.0001	0.000003
DAILY MX	4.58333E-05	0.0001	0.000003
MO AVG	0.0000515	0.0001	0.000005
Conductivity	482.3809524	965	150
umho/cm	482.3809524	965	150
DAILY MX	482.3809524	965	150
Copper, total [as Cu]	0.000265571	0.0005	0.000084
lb/d	0.000265571	0.0005	0.000084
DAILY MX	0.000222143	0.0004	0.000084
MO AVG	0.000309	0.0005	0.0001
E. coli, MTEC-MF	48.13104762	89	3
CFU/100mL	48.13104762	89	3
DAILY MX	53.72357143	89	3
MOAV GEO	42.53852381	76	3
Flow, in conduit or thru treatment plant	0.004344716	0.0096	0.00021
MGD	0.004344716	0.0096	0.00021
DAILY MX	0.004615912	0.0096	0.00022
MO AVG	0.00407352	0.0096	0.00021
Fluoride, total [as F]	0.067031286	0.3714	0.0052
lb/d	0.067031286	0.3714	0.0052
DAILY MX	0.047625143	0.1694	0.0052
MO AVG	0.086437429	0.3714	0.0081
LC50 Static 48Hr Acute Ceriodaphnia	8.446	9.6	3.51
%	8.446	9.6	3.51
MINIMUM	8.446	9.6	3.51
LC50 Static 48Hr Acute Pimephales	9.6	9.6	9.6
%	9.6	9.6	9.6
MINIMUM	9.6	9.6	9.6
Lead, total dry weight [as Pb]	0.00003725	0.0002	0.000003
lb/d	0.00003725	0.0002	0.000003
DAILY MX	0.00001825	0.00005	0.000003
MO AVG	0.00005625	0.0002	0.000006
Molybdenum, total [as Mo]	0.000635214	0.001616	0.000197
lb/d	0.000635214	0.001616	0.000197
DAILY MX	0.000492714	0.000994	0.000197
MO AVG	0.000777714	0.001616	0.00022
Nickel, total [as Ni]	2.51429E-05	0.00006	0.00001
lb/d	2.51429E-05	0.00006	0.00001
DAILY MX	2.01429E-05	0.00003	0.00001
MO AVG	3.01429E-05	0.00006	0.00001
Nitrite + Nitrate total [as N]	23.52141138	270	0.0135
lb/d	2.46307561	16.0712	0.0135
DAILY MX	2.46307561	16.0712	0.0135
mg/L	34.05957927	270	0.18
DAILY MX	35.30317073	270	0.18
MO AVG	32.7979878	270	0.18
Nitrogen, ammonia total [as N]	0.821275676	6.7	0
mg/L	0.821275676	6.7	0
DAILY MX	0.856575676	6.7	0
MO AVG	0.785975676	6.645	0
Nitrogen, total [as N]	36.46230769	230	6.2
mg/L	36.46230769	230	6.2
DAILY MX	36.46230769	230	6.2
ug/L			
DAILY MX			
Oil & Grease	0.014881379	0.0827	0.0016
lb/d	0.014881379	0.0827	0.0016
DAILY MX	0.014011242	0.0666	0.0016
MO AVG	0.015751515	0.0827	0.0035
Oxygen, dissolved [DO]	4.133333333	6	2.7
mg/L	4.133333333	6	2.7
MINIMUM	4.133333333	6	2.7
pH	7.6868	8.7	6.7
SU	7.6868	8.7	6.7
MAXIMUM	7.8328	8.7	7
MINIMUM	7.5408	8.6	6.7
Phosphorus, total [as P]	0.187166667	0.3	0.118
mg/L	0.187166667	0.3	0.118
DAILY MX	0.187166667	0.3	0.118
Solids, settleable	0.133035714	0.3	0.1
mL/L	0.133035714	0.3	0.1
DAILY MX	0.133035714	0.3	0.1
Solids, total suspended	6.501737921	65	0.0005
lb/d	0.028875238	0.1574	0.0005
DAILY MX	0.025860475	0.1257	0.0005
MO AVG	0.03189	0.1574	0.0014
mg/L	12.66636905	65	6
DAILY MX	13.77142857	65	7
MO AVG	11.56130952	42.3	6
Temperature, water deg. centigrade	18.02857143	27	7.4
deg C	18.02857143	27	7.4
DAILY MX	18.02857143	27	7.4
Uranium, total	1.553640244	4	0.1225
mg/L	1.553640244	4	0.1225
DAILY MX	1.631060976	4	0.1225
MO AVG	1.476219512	3.82	0.1225
Grand Total	20.75284684	965	0

TN0057983- Aerojet Ordnance Tennessee

	Chlorine, total residual, Effluent Gross	Conductivity, Effluent Gross	Flow, in conduit or thru treatment plant, Effluent Gross		LC50 Static 48Hr Acute Ceriodaphnia , Effluent Gross	LC50 Static 48Hr Acute Pimephales, Effluent Gross	pH, Effluent Gross		Temperature, water deg. centigrade, Effluent Gross	Tributyltin, Effluent Gross	
	Daily max. (mg/L)	Daily max. (umho/cm)	Monthly or total (MGD)	Weekly or daily (MGD)	Monthly average or min. (%)	Monthly average or min. (%)	Monthly average or min. (SU)	Daily max. (SU)	Daily max. (deg C)	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)
06/30/2020		480	0.0006	0.0006			7.1	7.3	20		
05/31/2020		166	0.0045	0.005			7	7.2	19.5		
04/30/2020		438	0.0011	0.0018			7.4	7.6	14		
03/31/2020		444	0.0006	0.001			7.7	8	16		
02/29/2020		537	0.0017	0.0033			7.9	8	17		
01/31/2020		465	0.00063	0.001			6.7	7.6	12		
12/31/2019		569	0.0005	0.0007	9.6	> 9.6	7	7	14		
11/30/2019		965	0.0036	0.0055			8	8	20		
10/31/2019		636.5	0.0028	0.0052			7.4	8	22.2		
09/30/2019		622	0.001	0.001			8	8	22.2		
08/31/2019		667	0.0006	0.0006			7.1	7.6	21.6		
07/31/2019		629	0.00044	0.0005			8	8	22.6		
06/30/2019		537	0.00024	0.0003			7.3	7.4	24		
05/31/2019		494	0.0011	0.0018			7.6	7.7	17.6		
04/30/2019		403	0.0005	0.0006			7.6	8	15		
03/31/2019		417	0.00052	0.0006			8	8	8.4		
02/28/2019		450	0.0008	0.0009			7.7	8	11.2		
01/31/2019		313	0.00027	0.00034			7.6	7.9	15		
12/31/2018		721	0.0023	0.0045	> 9.6	> 9.6	7.8	8	17.8		
11/30/2018		512	0.00058	0.00091			7.4	8.1	13.4		
10/31/2018		421	0.0015	0.0028			7.6	7.7	20.6		
09/30/2018		166	0.0044	0.0045			7.3	7.7	26.1		
08/31/2018		150	0.0045	0.0046			7.5	7.6	27		
07/31/2018		179	0.0049	0.0053			7.6	7.6	26.2		
06/30/2018		153	0.00392	0.00393			7.4	7.6	25.6		
05/31/2018		295	0.00131	0.00148			7.5	7.6	17.6		
04/30/2018		451	0.00064	0.00086			7.8	8	10.8		
03/31/2018		524	0.00045	0.00058			7.5	7.9	12.4		
02/28/2018		543	0.000547	0.00079			7.9	8.1	16.4		
01/31/2018		665	0.0015	0.00245			8.4	8.5	7.4		
12/31/2017		457	0.00021	0.00022	> 9.6	> 9.6	8.4	8.5	12.8		
11/30/2017		400	0.000295	0.000389			8	8.4	14.8		
10/31/2017		418	0.0033	0.0047			7.7	7.9	23.4		
09/30/2017		387.5	0.0021	0.0034			7.6	7.8	21.2		
08/31/2017		599	0.00217	0.00233			7	7.8	26.4		
07/31/2017		686	0.00091	0.0015			7.6	8	25.2		
06/30/2017		581	0.0004	0.0004			7.8	7.9	20.4		
05/31/2017		553	0.0021	0.0039			7.9	8.1	20.2		
04/30/2017		549	0.000864	0.00109			7.9	8	16.8		
03/31/2017		564	0.00145	0.00211			7.5	8.2	17		
02/28/2017		530.5	0.0023	0.0041			7.4	8.3	14		
01/31/2017		522.5	0.0014	0.0014			8.1	8.3	11.4		
12/31/2016	1.3	375	0.00399	0.0072	> 9.6	> 9.6	7.6	7.8	17	0.0022	0.0022
11/30/2016		420	0.00064	0.00086			8.2	8.4	14.1		
10/31/2016		602.5	0.0028	0.0033			7.6	8.3	24.2		
09/30/2016	NODI 9	758	0.0035	0.011	> 9.6	> 9.6	7.7	8.2	24.6	0.0083	0.0083
08/31/2016		586	0.00141	0.00148			7.9	7.9	23.6		
07/31/2016		644.5	0.0018	0.0025			8	8.1	24.4		
06/30/2016	NODI 9	379.5	0.0005328	0.0008784	> 9.6	> 9.6	7.3	7.5	21.6	0.00039	0.00039
05/31/2016		132.9	0.00334	0.00338			6.9	7.1	20		
04/30/2016		428	0.00055	0.00066			7.5	8	18		
03/31/2016	NODI 9	449	0.0012	0.00212	> 9.6	> 9.6	7.9	8.35	11	0.0003	0.0003
02/29/2016		241	0.0027	0.0034			7.2	7.3	20		
01/31/2016		134.5	0.00247	0.00249			7.2	7.3	18		
12/31/2015	NODI 9	219.7	0.00583	0.007	> 9.6	> 9.6	6.9	7.2	20	0.0052	0.0052
11/30/2015		535	0.00266	0.00462			6.9	7.2	21.4		
10/31/2015		690.5	0.00166	0.00196			7.8	8.1	8		
09/30/2015	0.1	464.5	0.00052	0.00056	NODI 9	NODI 9	7.8	7.8	22.2	NODI 9	NODI 9
08/31/2015		580	0.00023	0.00032			8	8.1	23.1		
Std. dev.											
Min:											
Max:											
Count:											
Average:											
Permit limit:											
Ratio of long term											

Outfall 003

TN0057983- Aerojet Ordnance Tennessee

Outfall 003

	BOD, 5-day, 20 deg. C, Effluent Gross		Chlorine, total residual, Effluent Gross	E. coli, MTEC-MF, Effluent Gross		Flow, in conduit or thru treatment plant, Effluent Gross		Nitrogen, ammonia total [as N], Effluent Gross		Oxygen, dissolved [DO], Effluent Gross	pH, Effluent Gross		Solids, settleable, Effluent Gross	Solids, total suspended, Effluent Gross		
	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)	Daily max. (mg/L)	Weekly average or geo. mean (CFU/100mL)	Daily max. (CFU/100mL)	Monthly Avg. (MGD)	Daily max. (MGD)	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)	Monthly average or min. (mg/L)	Monthly average or min. (SU)	Daily max. (SU)	Daily max. (mL/L)	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)	Percent exceedance
06/30/2020	0.2	0.2		55	57	0.0038	0.0052	0.1	0.1	4.4	6.9	7.2	0.2	7	7	
05/31/2020	0.2	0.2		40.3	55.6	0.0035	0.0044	0.1	0.1	4.5	7	7.3	0.2	14.5	15	
04/30/2020	0.2	0.2		11	32	0.003	0.004	0.1	0.1	5.4	7.1	7.4	0.3	11.7	12.8	
03/31/2020	0.2	0.2		33	60	0.003	0.005	0.03	0.03	5	7.2	7.4	0.1	9	9	
02/29/2020	0.2	0.2		3	3	0.003	0.005	0.03	0.03	5.3	7.2	7.6	0.1	14	16.2	
01/31/2020	4.6	6		59	66.3	0.0023	0.0031	0.03	0.03	5.8	7	8	0.2	20	24.4	
12/31/2019	0.2	0.2		61	75	0.0023	0.0036	0.03	0.03	5	7	8	0.1	12.4	13.3	
11/30/2019	0.2	0.2		75	77	0.0024	0.0029	0.03	0.03	4	7	8	0.2	15	18	
10/31/2019	0.2	0.2		52	62	0.0031	0.0038	0.03	0.03	4	7	8	0.1	12	13	
09/30/2019	0.2	0.2		11	37	0.0035	0.004	0.03	0.03	4	7	7	0.1	8	9	
08/31/2019	0.2	0.2		7	8	0.0039	0.0046	0.03	0.03	3	7	7	0.2	10	11	
07/31/2019	0.2	0.2		9	14	0.003	0.005	0.0317	0.0317	4	7	7	0.1	10	11	
06/30/2019	0.2	0.2		4	8.6	0.0029	0.0039	0.03	0.03	3.9	7.1	7.4	0.1	8	9	
05/31/2019	2	3		3	10	0.0022	0.003	0.0317	0.0317	4	7	7	0.1	7	7	
04/30/2019	0.2	0.2		75	76	0.002	0.003	0.0317	0.0317	4.7	6.9	7.3	0.2	6	12	
03/31/2019	0.2	0.2		27	53	0.0018	0.0023	0	0	6	7	8	0.1	9.75	9.75	
02/28/2019	0.6	1		76	89	0.002	0.003	0.03	0.03	5.1	7	7.6	0.2	10	10	
01/31/2019	1	1		53	70	0.0021	0.0033	0.03	0.03	5.4	7	8	0.15	15	17	
12/31/2018	1	1		63	68	0.0017	0.0026	0.03	0.04	5.2	7.4	8	0.1	11	12	
11/30/2018	1	1		64	71	0.0021	0.0041	0.03	0.03	3.9	7.3	7.7	0.1	10	12	
10/31/2018	1	1		64	68	0.0023	0.003	0.03	0.03	3	7	8	0.1	11	11	
09/30/2018	1	1		67	78	0.0032	0.0041	0.03	0.03	3	7	7	0.3	7	9	
08/31/2018	1	1		63.78	81.2	0.003	0.0036	0.03	0.03	3	7	7.4	0.15	8.8	10.2	
07/31/2018				10.949	17.5	0.00226	0.00323			3	6.8	7.6	0.15	8.3	9.4	
06/30/2018	2	2		25.4132	44.54	0.00232	0.00314	0.069	0.088	3.1	6.9	7.4	0.15	7.7	8.8	
05/31/2018	2	2		20.641	25.9	0.00223	0.00285	0.1007	0.127	3.2	7	7.4	0.15	7.6	7.6	
04/30/2018	2.55	3.1		43.16	71.1	0.00178	0.00219	0.09715	0.12	4.2	6.8	7.5		9.05	11.7	
03/31/2018	2.4	2.8		62.014	70.5	0.00189	0.00259			4.3	6.7	7.6		7.65	10.3	
02/28/2018				19.6771	62.45	0.0019	0.0024	0.0771	0.08	4.8	7.1	8.1		7.375	8.35	
01/31/2018	3.825	5.65		31.8607	67.9	0.00037	0.00059	0.647	1.17	5.7	8	8.7		23.35	37.4	
12/31/2017	13.1	24		65.178	66.9	0.001424	0.00301			4.4	7.7	8.1		42.3	65	44
11/30/2017	2.6	2.6		63.286	65.55	0.00175	0.0022			4.2	7.4	7.9		14.7	16.4	
10/31/2017				50.034	51.3	0.0022	0.003	0.1637	0.253	3.2	7.6	7.8	0.1	11.2	11.6	
09/30/2017				15.26	44.8	0.0011	0.0015			3.4	7.4	7.6	0.2	10.4	12	
08/31/2017				11.174	16.65	0.00122	0.00176			2.8	7.2	7.6	0.15	9.2	9.2	
07/31/2017	2.1	2.2		59.05	59.8	0.00114	0.0016	0.1012	0.128	2.7	7.2	7.7	0.2	16.4	19.2	
06/30/2017	2.85	2.9		46.238	54.4	0.0013	0.0029	0.11215	0.15	3	7.1	7.4	0.3	21.7	26.4	
05/31/2017				62.2978	64.9	0.00105	0.00197			3.3	7.1	7.4	0.15	10.3	11.4	
04/30/2017	2.85	3.3		57.853	61.3	0.00094	0.00131			3.3	7.3	7.5		8.4	8.8	
03/31/2017	2.4	2.4		64.347	70	0.00087	0.0015			4.6	7.2	7.9		7.5	8.8	
02/28/2017	2.8	3.2		59.8556	61.4	0.0009	0.00117	0.0982	0.122	4	7.5	8.1		7.8	8.4	
01/31/2017	2.25	2.5		42.2496	59.8	0.0009	0.0017	0.6372	1.2	4.8	7.6	8.4		7.5	9	
12/31/2016	2.3	2.6		29.402	38.25	0.00078	0.0016			4.9	7.6	8.4		5.5	5.8	
11/30/2016	2.25	2.5		44.3966	54.6	0.0011	0.0015	0.0912	0.108	4.3	7.6	8.1	0.1	7.2	8.4	
10/31/2016	2.35	2.7		39.1989	39.5	0.00139	0.0021			3.1	7.5	7.9	0.25	8.9	11.6	
09/30/2016	2.2	2.4		51.412	56.6	0.00143	0.00259	0.115	0.156	2.9	7.4	7.7	0.2	9.2	11.2	
08/31/2016				19.2173	23.3	0.00142	0.00191			2.3	7.3	7.6	0.15	9.3	9.6	
07/31/2016				23.0452	74.8	0.00155	0.003			2.6	7.2	7.9	0.2	22.3	29	
06/30/2016	2.1	2.2		39.41979	51.2	0.001227	0.001613	0.09365	0.113	3	7.3	7.6	0.2	11.6	14	
05/31/2016				13.0576	34.1	0.000953	0.00158			3	7.1	7.6	0.15	5.3	5.6	
04/30/2016				3.30151	10.9	0.001245	0.001584			4.2	7	7.6		5.1	5.2	
03/31/2016				23.382	77	0.00121	0.00154	0.1235	0.126	3.7	7	7.8	0.2	7.8	10.2	
02/29/2016	2.1	2.2		48.756	71.6	0.00127	0.002	0.102	0.103	4.7	7.1	7.7	0.15	9.4	9.8	
01/31/2016	6.25	6.9		33.976	78	0.000826	0.00168	0.1155	1.44	3.1	7.5	8.6	0.15	23.75	32	
12/31/2015	3.5	4		14.869	20.1	0.000452	0.00158			4	7.7	8.3	0.17	28.6	36	
11/30/2015	2.7	3.4		39.143	45.6	0.00076	0.00229			2.3	7	8.2		16.4	20.8	
10/31/2015	2	2		70.44	73.3	0.00193	0.0023			3.4	6.9	7.4		13	14.4	
09/30/2015				33.758	38.5	0.0019	0.0025	0.05895	0.101	2.9	7.3	7.7	0.2	13.7	15.4	
08/31/2015				4.349	6.1	0.019	0.0024			3.1	7.2	7.7		11.4	11.6	
Std. dev.																
Min:																
Max:																
Count:																
Average:																
Permit limit:																
Ratio of long term																

NODI9 = Monitoring Not Required NODI B = Below Detection
Bolded values were reported as less than