ADEQ Arizona Department of Environmental Quality

DRAFT FACT SHEET

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is a groundwater treatment facility and is considered to be a minor facility under the NPDES program. The effluent limitations contained in this permit will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 *et seq*. This permit is proposed to be issued for a period of 5 years.

I. PERMITTEE INFORMATION	
Permittee's Name:	Motorola Solutions, Inc.
Permittee's Mailing Address:	3332 E. Broadway Rd Phoenix, AZ 85040
Facility Name:	North Indian Bend Wash (NIBW) GAC Treatment Facility
Facility Address or Location:	5985 Cattletrack Rd
County:	Maricopa
Contact Person(s): Phone/e-mail address	John Pekala (602) 353-5547/ john.pekala@motorolasolutions.com
AZPDES Permit Number:	AZ0026123
Inventory Number:	511163
LTF Number:	95295

II. STATUS OF PERMIT(s)	
AZPDES permit applied for:	Renewal
Date application received:	07/06/2022
Date application was determined administratively complete:	07/15/2022
Previous permit expiration date:	01/23/2023
208 Consistency: 208 Plan consistency is not required for industrial facilities.	

III. GENERAL FACILITY INFORMATION	
Type of Facility:	Privately owned groundwater treatment system

Facility Location Description:	West side of the Arizona Canal near the intersection of McDonald Drive and Scottsdale Rd in Scottsdale, AZ
Discharge Flow:	Intermittent
Applicable Treatment Processes:	Groundwater containing concentrations of volatile organic compounds is pumped to the NIBW GAC Treatment Facility, where granular activated carbon is used to remove the contaminants.
Nature of facility discharge:	Treated groundwater. Trichloroethene (TCE) is the primary chemical of concern.
Average flow per discharge:	3.2 mgd
Continuous or intermittent discharge:	Intermittent
Discharge pattern summary:	The discharge to the canal is variable because it occurs only when the City of Scottsdale cannot take the treated groundwater at their Chaparral Water Treatment Plant (CWTP) (i.e., based on demand, due to maintenance events, etc.). This occurs approximately 100 times per year.

In 1981, a plume of volatile organic compounds (VOCs), with trichloroethylene (TCE) as the predominant contaminant, was identified in the groundwater. From subsequent investigations, a project area was identified and established as the North Indian Bend Wash (NIBW) Superfund site in 1983. The facility is designed to reduce concentrations of NIBW Chemicals of Concern including 1,1,1-Trichloroethane (1,1,1-TCA); 1,1-Dichloroethene (1,1-DCE); Perchloroethene (PCE); Trichloroethene (TCE), and chloroform from groundwater prior to discharge to the Arizona Canal. Pumping of groundwater from wells at the site is intended to contain plume migration and reduce impacts on other drinking water wells.

IV. RECEIVING WATER

The State of Arizona has adopted water quality standards to protect the designated uses of its surface waters. Streams have been divided into segments and designated uses assigned to these segments. The water quality standards vary by designated use depending on the level of protection required to maintain that use.

Receiving Water (Federal):	The Water of the U.S. Protected Surface Water (WOTUS PSW) for facility/ outfall is Arizona Canal- Phoenix Area Canals: Granite Reef Dam to all municipal WTP intakes
River Basin:	Middle Gila River Basin
Outfall Location(s):	Outfall 001: Township 2N, Range 4E, Section 14 Latitude 33º 31’ 23.8” N, Longitude 111º 54’ 56.9” W
Designated uses for the receiving water listed above:	Agricultural Irrigation (AgI) Agricultural Livestock watering (AgL) Domestic Water Supply (DWS)
Is the receiving water on the 303(d) list?	No, and there are no TMDL issues associated.

Given the uses stated above, the applicable narrative water quality standards are described in A.A.C. R18-11-108, and the applicable numeric water quality standards are listed in A.A.C. R18-11-109 and in Appendix A thereof. There are two standards for the Aquatic and Wildlife uses, acute and chronic. In developing AZPDES permits, the standards for all applicable designated uses are compared and limits that will protect for all applicable designated uses are developed based on the standards.

V. DESCRIPTION OF DISCHARGE

Because the facility is in operation and discharges have occurred, effluent monitoring data are available. The following is the measured effluent quality reported in the application.

Parameters	Units	Maximum Daily Discharge Concentration
Arsenic	µg/L	9.9
Chromium VI	µg/L	24
Chloroform	µg/L	1.6
1,1- DCE	µg/L	<0.50
PCE	µg/L	<0.50
1,1,1- TCA	µg/L	<0.50
TCE	µg/L	0.91
pH	µg/L	9.0

VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT

Date of Most Recent Inspection:	March 11, 2022; no potential violations were noted as a result of this inspection.
DMR Files Reviewed:	02/2018 through 07/2022
Lab Reports Reviewed:	02/2018 through 07/2022
NOVs Issued:	None
NOVs Closed:	N/A
Compliance Orders:	None

VII. PROPOSED PERMIT CHANGES

The following table lists the major changes from the previous permit in this permit.

Parameter	Existing Permit	Proposed permit	Reason for change
Noncompliance Reporting Hotline	(602) 771-2330	Noncompliance resulting in imminent threat to human health or the	Routing emergency calls to the emergency hotline,

		environment must be reported to (602) 771-2330, while all other noncompliance must be reported to (602) 771-1440.	but all other calls to a non-emergency number.
Chromium VI – Mixing Zone	Limit in permit	Assessment Level	No reasonable potential to exceed drinking water standards.

Anti-backsliding considerations — "Anti-backsliding" refers to statutory (Section 402(o) of the Clean Water Act) and regulatory (40 CFR 122.44(l)) requirements that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the previous permit. The rules and statutes do identify exceptions to these circumstances where backsliding is acceptable. This permit has been reviewed and drafted with consideration of anti-backsliding concerns.

Limits are retained in the permit for parameters where reasonable potential (RP) for an exceedance of a standard continues to exist or is indeterminate. In these cases, limits will be recalculated using the most current Arizona Water Quality Standards (WQS). If less stringent limits result due to a change in the WQS then backsliding is allowed in accordance with 303(d)(4) if the new limits are consistent with antidegradation requirements and the receiving water is in attainment of the new standard; see Section XII for information regarding antidegradation requirements.

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS

When determining what parameters need monitoring and/or limits included in the permit, both technology-based and water quality-based criteria were compared and the more stringent criteria applied.

Technology-based Limitations: As outlined in 40 CFR Part 133:

There are no promulgated technology-based limits (TBELs) for a groundwater treatment system such as the NIBW GAC Treatment Facility. TBELs may be established for VOCs for such treatment systems based on best professional judgment (BPJ), however, all pollutants of concern at this facility have water quality-based limits (WQBELs) applied as described below.

Numeric Water Quality Standards: As outlined in A.A.C. R18-11-109 and Appendix A:

Per 40 CFR 122.44(d)(1)(ii), (iii) and (iv), discharge limits must be included in the permit for parameters with "reasonable potential" (RP), that is, those known to be or expected to be present in the effluent at a level that could potentially cause any applicable numeric water quality standard to be exceeded. RP refers to an analysis, based on the statistical calculations using the data submitted or consideration of other factors, to determine whether the discharge may exceed the Water Quality Standards. The procedures used to determine RP are outlined in the *Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001). In most cases, the highest reported value for a parameter is multiplied by a factor (determined from the variability of the data and number of samples) to determine a "highest estimated value". This value is then compared to the lowest applicable Water Quality Standard for the receiving water. If the value is greater than the standard, RP exists and a water quality-based effluent limitation (WQBEL) is required in the permit for that parameter. RP may also be determined from BPJ based on knowledge of the treatment facilities and other factors. The basis for the RP determination for each parameter with a WQBEL is shown in the table below.

The proposed permit limits were established using a methodology developed by EPA. Long Term Averages (LTA) were calculated for each designated use and the lowest LTA was used to calculate the average monthly limit (AML) and

maximum daily limit (MDL) necessary to protect all uses. This methodology takes into account criteria, effluent variability, and the number of observations taken to determine compliance with the limit and is described in Chapter 5 of the TSD. Limits based on A&W criteria were developed using the "two-value steady state wasteload allocation" described on page 99 of the TSD. When the limit is based on human health criteria, the monthly average was set at the level of the applicable standard and a daily maximum limit was determined as specified in Section 5.4.4 of the TSD.

Mixing Zone

The previous permit authorized a mixing zone for arsenic and chromium VI. Pursuant to R18-11-114(G), the Director shall reevaluate a mixing zone upon reissuance of the permit.

A review of the discharge data submitted to ADEQ indicates that on occasion effluent arsenic and chromium VI concentrations have reasonable potential to exceed the applicable standards for the receiving water. The previous permit authorized a mixing zone for arsenic and chromium VI. All conditions have been reevaluated and ADEQ has approved the mixing zone for arsenic and chromium VI for discharges into the Arizona Canal.

Compliance with the arsenic and chromium VI limits will be required in the mixing zone prior to any water deliveries to municipal water treatment plants downstream of the discharge consistent with the mixing zones established for arsenic and chromium VI in the Salt River Project (SRP) Groundwater Wells AZPDES Permit No. AZ0024341.

The following steady-state mass balance formula was used to determine reasonable potential for arsenic and chromium VI in consideration of the applicant's request to reestablish the mixing zone:

$$Q_s C_s + Q_d C_d = Q_r C_r$$

Rearranged to solve for C_r:

$$C_r = \frac{Q_s C_s + Q_d C_d}{Q_r}$$

Where:

Q_s = background in-stream flow above discharge point during critical conditions (lowest one-day average flow event expected to occur once every ten years on average)
C_s = background in-stream arsenic/chromium VI concentration
Q_d = facility design capacity was used for maximum water discharge flow
C_d = critical effluent concentration for arsenic and chromium VI (using the estimated value calculated from effluent data submitted)
Q_r = critical downstream receiving water flow = Q_s + Q_d
C_r = resultant in-stream pollutant concentration

Model Inputs for Arsenic

Q_s = background in-stream flow above discharge point during critical conditions in Arizona Canal with 50% safety factor = **135 MGD**
C_s = maximum observed value of arsenic observed in Arizona Canal from upstream sampling location = **14.3 µg/L**
Q_d = maximum daily flow from NIBW GAC = **4.8 MGD**
C_d = critical effluent concentration for arsenic = **14.23 µg/L**
Q_r = critical downstream receiving water flow = **140 MGD**
C_r = resultant in-stream pollutant concentration = **14.3 µg/L**

Model Inputs for Chromium VI

Q_s = background in-stream flow above discharge point during critical conditions in Arizona Canal with 50% safety factor = **135 MGD**
C_s = maximum observed value of in-stream chromium VI = <5 **µg/L**
Q_d = maximum daily flow from NIBW GAC = **4.8 MGD**
C_d = highest estimated critical effluent concentration for chromium VI = **45.22 µg/L**
Q_r = critical downstream receiving water flow = **140 MGD**
C_r = resultant in-stream pollutant concentration = **5.27 µg/L**

Whole Effluent Toxicity (WET)

ADEQ does not require WET testing if the receiving water has no aquatic and wildlife designated uses. Although the narrative standard prohibiting the discharge of toxic pollutants applies to all discharges, the test species are not appropriate for these receiving waters and no alternative tests are readily available. Therefore, WET testing is not required in this permit, and Part IV for WET testing is shown as "not applicable."

Permit Limitations and Monitoring Requirements

Table 1 summarizes the parameters that are limited in the permit and the rationale for that decision. Also included are the parameters that require monitoring without any limitations or that have not been included in the permit at all and the basis for those decisions. The corresponding monitoring requirements are shown for each parameter. In general, the regulatory basis for monitoring requirements is per 40 CFR §122.44(i) *Monitoring requirements,* and 40 CFR §122.48(b), *Required monitoring*; all of which have been adopted by reference in A.A.C. R18-9-A905, *AZPDES Program Standards*.

Table 1. Permit limitations and monitoring requirements.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
Flow	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be monitored on a continual basis using a flow meter
Arsenic	10 µg/L DWS	9.9 µg/L	20	14.23 µg/L	RP exists (2)	Monitoring required and a mixing zone has been established
Chromium VI	21 µg/L DWS	24 µg/L	20	45.22 µg/L	RP exists (2)	Monitoring required and a mixing zone has been established
Tetrachloroethylene (PCE)	5 µg/L DWS	<0.5 µg/L	59	N/A	N/A	Monitoring required for Discharge Characterization
Trichloroethylene (TCE)	5 µg/L DWS	0.91 µg/L	59	1.5 µg/L	N/A	Monitoring required for Discharge Characterization
Chloroform	80 µg/L DWS	1.6 µg/L	54	3.8 µg/L	N/A	Monitoring required for Discharge Characterization
1,1-dichloroethylene	7 µg/L DWS	<0.5 µg/L	54	N/A	N/A	Monitoring required for Discharge Characterization
1,1,1-trichloroethane	200 µg/L DWS	<0.5 µg/L	54	N/A	N/A	Monitoring required for Discharge Characterization
pH (2)	Minimum: 6.5 Maximum: 9.0 A&Wedw and PBC A.A.C. R18-11-109(B)	9.0 S.U.	1	N/A	N/A	pH is to be monitored using a discrete sample of the effluent and a WQBEL is set. 40 CFR Part 136 specifies that grab samples must be collected for pH.

Footnotes:

1. The monitoring frequencies are as specified in the permit.
2. A mixing zone was applied for arsenic and chromium, VI. See part V.A. of the permit for mixing zone requirements
3. Harmonic mean of 135 MGD was used for the Arizona Canal flow to calculate the mixing zone values. This is half of the actual flow to account for assimilative capacity for other users.

Table 2. Mixing zone qualifications

Parameter	Units	No. of Effluent Samples	Maximum Effluent Concentration	Reasonable Potential Multiplier	Critical Effluent Concentration	Projected Downstream Concentration	Most Stringent Criterion	Criterion Basis	Does RP Exist
Arsenic	µg/L	20	9.9	1.44	14.23	14.3	10	DWS	Yes
Chromium VI	µg/L	20	24	1.88	45.22	6.38	21	DWS	No

VIII. NARRATIVE WATER QUALITY STANDARDS

All narrative limitations in A.A.C. R18-11-108 that are applicable to the receiving water are included in Part I, Section C of the permit.

IX. MONITORING AND REPORTING REQUIREMENTS (Part II of Permit)

Section 308 of the Clean Water Act and 40 CFR Part 122.44(i) require that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Monitoring frequencies for some parameters may be reduced in subsequent permits if all monitoring requirements have been met and the limits or ALs for those parameters have not been exceeded during the first permit term.

Discrete (i.e., grab) samples are specified in the permit for all parameters. The quality of the discharge is not expected to be highly variable.

Monitoring locations are specified in the permit (Part II.A and Part III.A) in order to ensure that representative samples of the influent and effluent are consistently obtained.

The requirements in the permit pertaining to Part II, Monitoring and Reporting, are included to ensure that the monitoring data submitted under this permit is accurate in accordance with 40 CFR 122.41(e). The permittee has the responsibility to determine that all data collected for purposes of this permit meet the requirements specified in this permit and is collected, analyzed, and properly reported to ADEQ.

The permit (Part II.A.3) requires the permittee to keep a Quality Assurance (QA) manual at the facility, describing sample collection and analysis processes; the required elements of the QA manual are outlined.

Reporting requirements for monitoring results are detailed in Part II, Section B of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs) and AZPDES Flow Record forms.

The permittee is responsible for conducting all required monitoring and reporting the results to ADEQ on DMRs or as otherwise specified in the permit.

Electronic reporting

The US EPA has published a final regulation that requires electronic reporting and sharing of Clean Water Act National Pollutant Discharge Elimination System (NPDES) program information instead of the current paper-based reporting (Federal Register, Vol. 80, No. 204, October 22, 2015). Beginning December 21, 2016 (one year after the effective date of the regulation), the Federal rule required permittees to make electronic submittals of any monitoring reports and forms called for in their permits. ADEQ has created an online portal called myDEQ that allows users to submit their discharge monitoring reports and other applicable reports required in the permit.

Requirements for retention of monitoring records are detailed in Part II.C.3 of the permit.

XI. SPECIAL CONDITIONS (Part V in Permit)

Permit Reopener

This permit may be modified based on newly available information; to add conditions or limits to address demonstrated effluent toxicity; to implement any EPA-approved new Arizona water quality standard; or to re-evaluate reasonable potential (RP), if assessment levels in this permit are exceeded [A.A.C. R18-9-B906 and 40 CFR Part 122.62 (a) and (b)].

XII. ANTIDEGRADATION

Antidegradation rules have been established under A.A.C. R18-11-107 to ensure that existing surface water quality is maintained and protected. The discharge from the NIBW GAC Treatment Facility will be to a canal which is subject to Tier 1 antidegradation protection. Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.

XIII. STANDARD CONDITIONS

Conditions applicable to all NPDES permits in accordance with 40 CFR, Part 122 are attached as an appendix to this permit.

XIV. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-A907)

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft AZPDES permit or other significant action with respect to an AZPDES permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-A908)

Rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-A908(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

EPA Review (A.A.C. R18-9-A908(C)

A copy of this permit and any revisions made to this draft as a result of public comments received will be sent to EPA Region 9 for review. If EPA objects to a provision of the draft, ADEQ will not issue the permit until the objection is resolved.

XV. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Surface Water Permits Unit
Attn: Julia A. Rowe
400 W Congress St
Tucson, AZ 85712

Or by contacting Julia A. Rowe at (520) 628-6267 or by e-mail at rowe.julia@azdeq.gov.

XVI. INFORMATION SOURCES

While developing effluent limitations, monitoring requirements, and special conditions for the permit, the following information sources were used:

1. AZPDES Permit Application Form(s) 1 and 2C received July 6, 2022, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. Supplemental information to the application received by ADEQ on August 7, 2022 and August 12, 2022.
3. ADEQ files on NIBW GAC Treatment Facility.
4. Amended Consent Decree, CV-91-1835-PHX-FJM
5. ADEQ Geographic Information System (GIS) Web site
6. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters,* adopted December 31, 2016.
7. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
8. Code of Federal Regulations (CFR) Title 40:

   Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.*

   Part 124, *Procedures for Decision Making*.

   Part 133. *Secondary Treatment Regulation.*
9. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
10. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
11. U.S. EPA NPDES Permit Writers' Manual, September 2010.