Official Draft Public Notice Version **March 7, 2014.**
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**STATEMENT OF BASIS AND FACT SHEET**
**ATI TITANIUM**
**PERMIT: DISCHARGE & STORM WATER**
**UPDES PERMIT NUMBER: UT0025755**
**UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT NUMBER: UTR025755**
**MAJOR INDUSTRIAL**

## FACILITY CONTACTS

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|---|---|
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## DESCRIPTION OF FACILITY

ATI Titanium produces titanium sponge for use in airline manufacturing and other industries. The facility uses titanium tetrachloride as a raw material. The titanium tetrachloride reacts with molten magnesium metal which produces titanium and magnesium chloride. The magnesium chloride is transferred to a transportable vessel or holding furnace by argon pressurization to be sent back to US Magnesium. The reduction vessel is allowed to cool before being cut open to remove the titanium. The vessel is then welded back together and returned to service. The titanium sponge is mechanically sized and sorted for offsite shipment.

ATI Titanium is part of a water group that supplies water to both US Magnesium and ATI Titanium. The water is obtained from wells in Skull Valley. The water is treated by Reverse Osmosis and distributed to the facilities. At ATI Titanium the water is used in 4 major areas. These areas are scrubber blow down, equipment wash water, non-contact cooling water and pump seal water/miscellaneous use. Pump seal water/miscellaneous use includes any water to be used onsite for drinking water and sanitation purposes. The blow down from the RO unit is sent to the ATI Titanium wastewater treatment system.

When the facility operates at full production ATI Titanium is anticipating average effluent flows from the titanium metal sponge manufacturing plant at 750,000 gallons per day (gpd) of treated effluent. The wastewater consists of approximately 440,000 gpd of non-contact sources and 290,000 gpd of contact water.

All wastewater, except sanitary wastewater and storm water, is treated in the on-site wastewater treatment system prior to discharge. The equipment for treating ATI Titanium effluent is designed to adjust pH, remove metals, oil, and grease. The treatment facility design, performance standard, and layout are presented in the wastewater treatment system report from Siemens Water Technologies Corp submitted

with the initial permit application. Sanitary wastewater is treated and discharged to an onsite treatment system.

Treatment description: An oil water separator is used to remove trace oils that may be present in wastewater from equipment washing and cleaning. The effluent is transferred to a two stage reaction tank system to adjust pH. By raising the pH, the metallic hydroxide compounds become less soluble and precipitate from solution. Polymer may be added to enhance the clarification process. Clarification is achieved by gravity settling. The metal solids are compressed in a filter press for ease of handling and offsite disposal. The effluent then undergoes a final pH adjustment prior to discharge to the Great Salt Lake.

The Division of Water Quality (Division) evaluates each facility that applies for a permit to determine whether it should be rated as a major or minor UPDES facility. The evaluation process determined that ATI's operation qualifies to be rated as a minor UPDES facility. However, due to the present and ongoing changes in the water quality standards for, and how discharges are being handled to Great Salt Lake, the facility rating was elevated to a major UPDES facility. Elevating the rating to major ensures that the facility will receive greater oversight through inspections and monitoring by the State of Utah. This rating and all other discharge limits will be revaluated at the permit renewal to ensure they are still appropriate for the permit at that time.

The discharge is piped to the legal shoreline of the lake, and then released to Class 5A Gilbert Bay, Great Salt Lake. At current lake levels, the discharge crosses the Class 5E transitional waters prior to reaching the open waters (Utah Administrative Code [UAC] R317-2-6). On April 11, 2012, Division staff conducted a site reconnaissance of the discharge channel in the transitional waters. Habitat development was limited to low vegetation. Seagulls were observed to be feeding on flies in the discharge channel.

**Bases for Effluent Limits.** Technology-based categorical effluent limits do not apply to ATI Titanium's operations. ATI is subject to Utah Secondary Standards UAC R317-1-3.2. The limits for total suspended solids (TSS) and pH are based on these requirements. The Oil and Grease limit is based upon the permitting authority's best professional judgment as to the appropriate level for this permit situation. The chosen limit is a permitting standard that has been applied to many Utah industrial permits.

The Level I Antidegradation review that existing uses, including the designated uses, will be protected was based on the 2008 Ecological Risk Assessment.

Monthly average technology-based effluent limits based on best professional judgment are included for the indicator pollutants of iron, selenium, and titanium. As discussed below, these pollutants do not have "reasonable potential" to cause or contribute to an exceedance of water quality standards (UAC R317-8-4.2(4)(a). These effluent limits are, instead, based on best professional judgement and intended to ensure that the treatment system is operated as designed. The limits are also consistent with the least degrading treatment alternative under a Level II Antidegradation review, were such a review required for this permit renewal. (Antidegradation review is discussed below.) The treatment measures used to control concentrations of these indicator pollutants will also control other metal and metalloid pollutant discharges. The limits were selected after considering the observed performance under current conditions (that is, existing effluent concentrations), treatment technology, and after applying an operational buffer. The operational buffer is to address the potential variability in effluent concentrations due to changes in manufacturing process and increases in production to full permitted capacity. Monthly average limits were selected because the goal of the limits is to ensure proper long-term operation of the treatment system, which is better reflected by monthly averages than short-term daily maximums. Monthly average limits are also more consistent with the goal of protecting assimilative capacity under the antidegradation

policy, were a Level II antidegradation required for this permit renewal. The Division selected monthly limits for iron, selenium, and titanium. Longer term annual limitations were also considered and an annual limit was included for selenium..

Table 1 in the 2008 Ecological Risk Assessment lists the twenty-four pollutants in the effluent that were evaluated for reasonable potential. The water quality-based effluent limits in the previous permit were based on no-effects concentrations presented in Tables 13 and 14 of the 2008 Ecological Risk Assessment. For this permit, these same pollutants were re-evaluated to determine if effluent limits were required in accordance with UAC R317-8-4.2(4)(a)6.

Since the previous permit was issued, a numeric criterion has been established for selenium for Class 5A Gilbert Bay. Numeric criteria for the other pollutants remain unavailable. The no-effects concentrations listed in Table 13 from the 2008 Ecological Risk Assessment were substituted for water quality criteria for all pollutants except selenium (further discussed below).

During the previous permit cycle, pollutant concentrations in the effluent have been monitored to meet the requirements of the permit. This data provides more refined estimates of pollutant concentrations in the effluent than were available for the previous draft of the permit. The Division is required to consider effluent variability in deriving water quality-based effluent limits [UAC R317-8-4.2(4)(a)2.]. ATI's facility is not operating at full permitted capacity and ATI continues to refine its manufacturing process which may affect pollutant concentrations in the effluent. The Division applied an uncertainty factor of 10 (multiplied by 10) to the observed effluent concentrations to account for potential variability in future effluent concentrations.

The monitoring data collected during the previous permit cycle demonstrates that, at current production levels, the effluent concentrations were considerably lower than concentrations that were determined to be protective of the aquatic life uses in the 2008 Ecological Risk Assessment for the transitional waters and Gilbert Bay. The 2008 Ecological Risk Assessment demonstrated that water quality standards will not be violated by pollutants in the effluent. For pollutants that were regularly detected in the effluent, a statistically-based reasonable potential analysis was conducted using USEPA Region 8 recommended procedures. In this process, the maximum expected effluent concentration of a pollutant is compared to the pollutant water quality criterion. If the maximum expected concentration exceeds the water quality criterion, the pollutant is concluded to have reasonable potential.

The maximum expected pollutant concentrations for the effluent were estimated from the concentrations reported in the Discharge Monitoring Reports for the time period February 2010 to December 2012. The results of the reasonable potential analyses were that no pollutants have the reasonable potential to cause or contribute to the exceedance of the no-effects concentrations and the permit is not required to include water quality-based effluent limits for either the transitional waters or Gilbert Bay. Selenium concentrations do not trigger reasonable potential either but selenium was evaluated using a different process described below.

**Selenium.** The source of selenium in the effluent appears to be from the source water because selenium is not known to be part of the manufacturing process. Selenium was evaluated in the 2008 Ecological Risk Assessment up to a maximum concentration of 0.0036 mg/l (freshwater chronic standard). Measured effluent concentrations have exceeded 0.0036 mg/l but were in compliance with the permitted maximum daily concentration of 0.030 mg/l.

There was no numeric criterion for selenium for Gilbert Bay when the last permit was issued. Since then, a selenium criterion of 12.5 mg/kg in bird eggs has been developed for Gilbert Bay. However, the

relationship between water and egg concentrations of selenium, which is called a translator, is poorly defined for Gilbert Bay. Section 2 of Appendix 1 of the FSSOB for the Jordan Valley Conservancy District Southwest Groundwater Treatment Plant UPDES permit summarizes the currently available information regarding a water-to-egg translator for Gilbert Bay (http://www.waterquality.utah.gov/PublicNotices/docs/2013/JordanValley/JordanValleyWCD-FSSOB.pdf). Although a translator is not available, the available data supports that selenium concentrations in ATI's effluent do not have reasonable potential for Gilbert Bay.

The maximum measured concentration of selenium in ATI's effluent over the past permit period was 0.0061 mg/l. Selenium loading to Gilbert Bay from ATI's effluent is limited by this permit to 21 kg/yr (45.625 lbs/yr). This contribution is insignificant compared to the estimated 1,224 kg/yr from Kennecott Utah Copper and the proposed Southwest Groundwater Treatment Plant or the 1,540 kg/yr for all of Gilbert Bay estimated by Naftz et al. (2008). As discussed in the Southwest Groundwater Treatment Plant FSSOB, historical increases of selenium loads to Gilbert Bay have not resulted in predictable increases in selenium concentrations in Gilbert Bay. The average concentrations of selenium in Gilbert Bay remain below 0.001 mg/l. The lack of correlation between increasing loads of selenium and selenium concentrations in the water support the conclusion that assimilative capacity remains for Gilbert Bay.

Additional evidence to support this conclusion is found in the results of several selenium studies for birds at Gilbert Bay. The selenium standard is the geometric mean of at least 5 eggs and no individual bird egg from Gilbert Bay has exceeded 12.5 mg/kg since more frequent sampling began in 2006 (>100 eggs). Not all of these studies were designed to comprehensively evaluate the health of Great Salt Lake's birds. The studies include:

- Cavitt, J. F. and N. Wilson, 2012. *Concentrations of Selenium and Mercury in American Avocet Eggs at Great Salt Lake, Utah 2011 Report* . Avian Ecology Laboratory, Weber State University
- Cavitt, J.F., M. Linford, and N. Wilson. *Selenium Concentration in Shorebird Eggs at Great Salt Lake Utah 2010 Report*, Avian Ecology Laboratory, Weber State University
- DWQ, 2008. *Development of a Selenium Standard for the Open Waters of Great Salt Lake.* Prepared by CH2M Hill. May.
- U.S. Fish and Wildlife Service (USFWS). 2009. *Assessment of Contaminants in the Wetlands and Open Waters of the Great Salt Lake, Utah 1996-2000*
- Vest, J.L., M.R. Conover, C. Perschon, J. Luft, and J.O. Hall. 2009. Trace Element Concentrations in Wintering Waterfowl from Great Salt Lake. *Arch. Environ. Contam. Toxicol.* 56:302-316
- Conover, M.R. and J.L. Vest. 2008. Selenium and Mercury Concentrations in California Gulls Breeding on the Great Salt Lake, Utah, USA. *Environ. Tox. Chem.*

For the transitional waters, a numeric criterion for selenium is unavailable. However, the selenium standard of 12.5 mg/kg in bird eggs for Gilbert Bay was used as a basis for determining reasonable potential.

Concentration is a better predictor of exposures to the birds or other aquatic life in the transitional waters because the water is flowing. Selenium is concluded to not have reasonable potential for the transitional waters because bird eggs previously collected from the southeast portion of Gilbert Bay have not exceeded 12.5 mg/kg when the corresponding selenium concentrations in discharge water for the other industrial facility in that area were 0.030-0.035 mg/l. Therefore, egg concentrations will not exceed 12.5 mg/kg in the transitional waters associated with ATI's effluent because this permit limits selenium concentrations to a substantially lower daily maximum of 0.015 mg/l.

Independent of the ATI permit, the Division continues to monitor the dynamics of selenium in Gilbert

Bay. The outcomes of these studies will continue to be evaluated and the results used to evaluate reasonable potential for ATI and other permittees.

**Bases for Monitoring.** For pollutants without water quality-based effluent limits, the monitoring frequency was kept the same or revised to quarterly. In the previous permit, arsenic, chromium, and nickel were monitored weekly to provide the bases for determining compliance with the monthy effluent limits but the new permit requires only quarterly monitoring because the permit no longer contains limits for these pollutants. The quarterly monitoring requirements remain same as in the previous permit, for aluminum, cadmium, chromium, copper, lead, silver, zinc, cyanide and mercury. The permit has also been revised to require quarterly sampling and analyses for mercury using USEPA Method 1631 or an approved method with equivalent sensitivity. The existing mercury results for the effluent are non-detect and the titanium manufacturing process is not expected to introduce mercury into the effluent. The requirement to use an analytical method with lower reporting limits will be used to confirm that the uses are being protected and additional monitoring requirements are unnecessary.

## CHANGES FROM THE PREVIOUS PERMIT

This permit is different than the previous permit because of:

- facility changes,
- Level II antidegradation review
- revised effluent limits,
- revised effluent monitoring, and
- whole effluent toxicity testing.

**Facility Changes.** During the renewed permit cycle ATI will construct a building to house the retort lid repair activities. Previously this was not done inside a building, but outside under a covered area. The new building will improve the process and work environment and will not result in any new process water discharge.

**Level II Antidegradation Review.** No level II antidegradation review is required by Utah's antidegradation policy (UAC R317-2-3) for the previous permit or this permit. The Division requested that ATI conduct a level II review and the results of the review were that the least degrading reasonable treatment system was being used for the effluent. The level II Antidegradation review is provided as an attachment to the permit.

**Revised Effluent Limits.** Chromium, arsenic, and nickel had effluent limits in the previous permit which were not included in this permit because of the lack of reasonable potential. The limits in the previous permit were unnecessary because the pollutants did not trigger reasonable potential. This permit does include monthly average effluent limits for iron, selenium, and titanium. A numeric criterion for selenium was promulgated and this criterion was included in this permit. The daily maximum for selenium was reduced to 0.015 mg/l in this permit from 0.030 mg/l in the previous permit.

**WET Testing**. This permit requires that ATI attempt to complete chronic whole effluent toxicity (WET) testing. This is a monitoring requirement, as opposed to an effluent limit, because, based on the predicted effluent concentrations of the effluent, the effluent does not have reasonable potential for toxicity [UAC R317-8-4.2(4)(a)2.]. WET testing is one of the tools the Division uses to assess whether WET limits are needed to ensure compliance with the Narrative Standards (UAC R317-2-7.2). Based on the WET test results, the Division may determine that additional WET evaluations or WET limits are needed to ensure that the discharge does not have the potential to cause or contribute to a violation of the Narrative

Standards.

Based upon these facts, the permitting authority's best professional judgment, and the fact that the anticipated discharges are of relatively small volumes of effluent, when compared to the existing water body of Great Salt Lake, WET testing limits were not required but the permit contains a toxicity limitation re-opener provision should additional information indicate the potential presence of toxicity.

The Division is working to develop a better understanding of the potential impact of discharges to Great Salt Lake. As part of these efforts, the Division has included Whole Effluent Toxicity monitoring. Technical challenges are anticipated with WET monitoring because of uncertainties regarding the representativeness of standard test organisms to Great Salt Lake with regards to salt tolerance. The typical standard freshwater test organisms used in WET monitoring in Utah are not appropriate for ATI's effluent due to the high salt content. A standard marine test organism that can tolerate the salt concentrations of ATI's effluent, the sheepshead minnow (cyprinodon variegatus) was selected for monitoring.

## DISCHARGE

### DESCRIPTION OF DISCHARGE

There will be no discharge of sanitary waste through the outfall.

| Outfall | Description of Discharge Point |
|---|---|
| 001 | Located at latitude 40°56'19" and longitude 112°42'12". The discharge is through a 12 inch HDPE pipe to an unnamed ditch to Great Salt Lake. |

### RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge flows into Great Salt Lake. The receiving water the effluent discharges to has been classified as 5E transitional waters and then to 5A (Gilbert Bay, Great Salt Lake) according to *Utah Administrative Code (UAC) R317-2-6.5.a.*

| | |
|---|---|
| Class 5E | Transitional Waters along the Shoreline of the Great Salt Lake Geographical Boundary -- All waters below approximately 4208-foot elevation to the current lake elevation of the open water of the Great Salt Lake receiving their source water from naturally occurring springs and streams, impounded wetlands, or facilities requiring a UPDES permit. The geographical areas of these transitional waters change corresponding to the fluctuation of the open water elevation. Beneficial Uses – Protected for infrequent primary and secondary contact recreation, waterfowl, shorebirds and other water-oriented wildlife including their necessary food chain. |
| Class 5A | Great Salt Lake – Gilbert Bay. Geographical Boundary -- All open waters at, or below, approximately 4,208-foot elevation south of the Union Pacific Causeway, excluding all of the Farmington Bay south of the Antelope Island Causeway and salt evaporation ponds. Beneficial Uses -- Protected for frequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain. |

### BASIS FOR EFFLUENT LIMITATIONS

Limitations on total suspended solids (TSS), and pH are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. Technology-based effluent imitations on Iron, Selenium and Titanium were developed using best professional judgment to ensure that the facility's wastewater treatment systems are

operated properly. The oil and grease limit is based on best professional judgment (BPJ) and common practice within the Division. The permit limitations for Outfall 001 are:

| Parameter | Effluent Limitations | | | |
|---|---|---|---|---|
| | Monthly Average | Weekly Maximum | Min. | Max. |
| Flow, MGD | NA | NA | NA | 1.0 |
| TSS, mg/L | 25 | 35 | NA | NA |
| pH, Standard Units | NA | NA | 6.5 | 9.0 |
| Iron, mg/l | 4.7 | NA | NA | NA |
| Selenium, mg/l | 0.015 | NA | NA | NA |
| Selenium, lbs/yr | NA | NA | NA | 45.6 |
| Titanium, mg/l | 12.1 | NA | NA | NA |
| Oil & Grease, mg/L | NA | NA | NA | 10 |

NA – Not Applicable.

**SELF-MONITORING AND REPORTING REQUIREMENTS**

The following are the self-monitoring requirements for the permit. The permit will require reports to be submitted monthly and quarterly, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Lab sheets for biomonitoring must be attached to the biomonitoring DMR.

| Self-Monitoring & Reporting Requirements *a | | | |
|---|---|---|---|
| Parameter | Frequency | Sample Type | Units |
| Flow *b, *c | Continuous | Instantaneous | MGD |
| TSS, Effluent | Weekly | Grab | mg/L |
| pH, Effluent | | | SU |
| Oil & Grease, Effluent | Monthly | | mg/L |
| WET, Chronic Biomonitoring *Cyprinodon variegatus* (sheepshead minnows) | Quarterly | Grab | Pass/Fail |
| METALS *d | | | |
| Iron, Effluent | Weekly | Composite | mg/L |
| Selenium, Effluent | | | mg/L |
| Titanium, Effluent | | Composite or Grab | mg/L |
| Aluminum, Effluent | Quarterly | Composite | mg/L |
| Arsenic, Effluent | | | mg/L |
| Cadmium, Effluent | | | mg/L |
| Chromium, Effluent | | | mg/L |
| Copper, Effluent | | | mg/L |
| Lead, Effluent | | | mg/L |
| Nickel, Effluent | | | mg/L |
| Silver, Effluent | | | mg/L |
| Zinc, Effluent | | | mg/L |
| Mercury Effluent *e | | Composite or Grab | mg/L |
| Cyanide, Effluent | | Grab | mg/L |

*a See Definitions, *Part VI of the permit*, for definition of terms.

*b Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

*c If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

*d Metals samples should be analyzed using a method that meets MDL requirements. If a test method is not available the permittee must submit documentation to the Director regarding the method that will be used. The sample type (composite or grab) should be performed according to the methods requirements.

*e Sampling and analyses for mercury using USEPA Method 1631 or equivalent is required.

## STORM WATER

### STORM WATER REQUIREMENTS

The storm water requirements in the permit are based on the UPDES Multi-Sector General Permit for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000 (MSGP).

The storm water section in the permit also contains requirements for SWP3 Preparation, Discharge Certification, CWA Section 313, Visual Monitoring and Spill Prevention and Response.

## PRETREATMENT REQUIREMENTS

Any process wastewater that the facility may discharge to the sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in 40 CFR Section 403, the State Pretreatment Requirements found in *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste. In this case, since there are no such discharges to a public sewer or a POTW, the permittee should not be subject to active pretreatment requirements.

## BIOMONITORING REQUIREMENTS

A nationwide effort to control discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the State of Utah's *Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring), February 15, 1991,* which outlines guidance to be used by Utah Division of Water Quality staff and by permittees for implementation through the UPDES discharge permit program. Authority to require effluent biomonitoring is provided in *Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3* and *Water Quality Standards, UAC R317-2-5* and *R317 -2-7.2.*

The appropriateness of Biomonitoring requirements has been evaluated in the development of this permit. The naturally high salt concentrations in the ground water and proposed discharge water, as well as the receiving waters of the Great Salt Lake, may inhibit successful completion of any type of Whole Effluent Toxicity (WET) testing. With salt concentrations, measured as total dissolved solids (TDS), in the

discharge expected to be between 10,000 and 20,000 mg/L and Great Salt Lake TDS concentrations proximal to the discharge around 150,000 mg/L, there is the potential for the salt to cause toxicity if standard freshwater organisms were tested.

Based upon the concentrations of toxic pollutants and that the anticipated discharges are of relatively small volumes of effluent when compared to the existing water body of the Great Salt Lake, the effluent was determined to not have reasonable potential for toxicity and therefore, WET limits are not required. WET monitoring is required for this permit. Chronic quarterly biomonitoring as described in the permit has been agreed to with the use of a salt-tolerant standard test species. Reasonable potential for toxicity will be reevaluated based on the results of the WET testing during the next permit cycle. The WET monitoring will be performed using cyprinodon variegatus (sheepshead minnow) with the possibility to have the TDS in the sample increased to species appropriate levels.

However, the permit will contain a toxicity limitation re-opener provision that allows for modification of the permit to include WET testing requirements and/or alternative test methods should additional information indicate the potential presence of toxicity.

## PERMIT DURATION

It is recommended that this permit be effective for a duration of five (5) years.

Drafted by
Daniel Griffin, Discharge
Chris Bittner, Wasteload
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## ADDENDUM TO STATEMENT OF BASIS AND FACT SHEET

A public notice for the draft permit was published in The Deseret News and Tribune on March ?? 2014. The comment period will end April ??, 2014. Any submitted comments received by that time will be considered and summarized below. During finalization of the Permit certain dates, spelling edits and minor language corrections may be made. Due to the nature of these changes they are not typically considered Major and the permit is not required to be re Public Noticed. If any changes are Major, the permit will be Public Noticed again.

Responsiveness Summary