

STATE OF UTAH  
DIVISION OF WATER QUALITY  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
SALT LAKE CITY, UTAH

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Minor Municipal Permit No. **UT0020907**

In compliance with provisions of the Utah *Water Quality Act, Title 19, Chapter 5, Utah Code Annotated ("UCA") 1953, as amended* (the "Act"),

**RICHMOND CITY**

is hereby authorized to discharge from its facility located approximately one mile west of Richmond City, Utah with the outfall located at latitude 41° 55' 25" N and longitude 111° 49' 45" W, to receiving water named

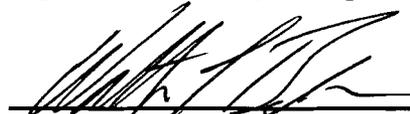
**CUB RIVER**

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

This permit shall become effective on October 1, 2008

This permit expires at midnight on September 30, 2013

Signed this 30th day of September, 2008.



Walter L. Baker, P.E.  
Executive Secretary  
Utah Water Quality Board

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**I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS**

A. Description of Discharge Point. The authorization to discharge wastewater provided under this part is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are violations of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

<u>Outfall Number</u>	<u>Location of Discharge Outfall</u>
001	Discharge is from the northwest side of the final lagoon cell (at approximate latitude 41°55'25" and longitude 111°49'45") to an unnamed irrigation ditch, to the Cub River.

B. Narrative Standard. It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations a/			
	Maximum Monthly Avg	Maximum Weekly Avg	Daily Minimum	Daily Maximum
BOD <sub>5</sub> , mg/L	25	35	NA	NA
BOD <sub>5</sub> Min. % Removal	85	NA	NA	NA
TSS, mg/L	25	35	NA	NA
TSS Min. % Removal	85	NA	NA	NA
E-Coli, No./100mL	126	157	NA	NA
TRC, mg/L	NA	NA	NA	0.419
DO, mg/L	NA	NA	5.5	NA
Oil & Grease, mg/L	NA	NA	NA	Visual/10
pH, Standard Units	NA	NA	6.5	9.0
Total Phosphorous, mg/L	NA	NA	NA	Report

NA – Not Applicable

Self-Monitoring and Reporting Requirements a/			
Parameter	Frequency	Sample Type	Units
Total Flow b/ c/	Continuous	Recorder	MGD
BOD <sub>5</sub> , Influent d/ Effluent	Monthly	Grab	mg/L
	Monthly	Grab	mg/L
TSS, Influent d/ Effluent	Monthly	Grab	mg/L
	Monthly	Grab	mg/L
<i>E. coli</i>	Monthly	Grab	No./100mL
TRC	Daily	Grab	mg/L
DO	Monthly	Grab	mg/L
Oil & Grease e/	Monthly	Visual/Grab	mg/L
PH	Monthly	Grab	SU
Total Phosphorous	Monthly	Grab	mg/L

- a/ See Definitions, *Part VI*, for definition of terms.
- b/ Flow measurements of influent/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/ In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.
- e/ A visual monitoring will be conducted monthly for an oil and grease sheen. If a sheen is observed, then a grab sample shall be taken and shall not exceed 10 mg/L.

D. Reporting of Wastewater Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), post-marked no later than the 28<sup>th</sup> day of the month following the completed reporting period. The first report is due on November 28, 2008. If no discharge occurs during the reporting period, “no discharge” shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part V.G)*, and submitted to the Division of Water Quality at the following address:

Department of Environmental Quality  
Division of Water Quality  
288 North 1460 West  
PO Box 144870  
Salt Lake City, Utah 84114-4870

II. INDUSTRIAL PRETREATMENT PROGRAM

A. Pretreatment Reporting Requirements.

1. Because the design capacity of this municipal wastewater treatment facility is less than 5 MGD, the permittee will not be required to develop a State-approved industrial pretreatment program at this time. However, in order to determine if development of an industrial pretreatment program is warranted, the permittee shall conduct an **industrial waste survey**, as described in *Part II.B.1*, and submit it to the Division of Water Quality within **sixty (60) calendar days** of the effective date of this permit.

B. Industrial Wastes.

1. The "Industrial Waste Survey" as required by *Part II.A.1*, consists of; identifying each significant industrial user (SIU), determination of the qualitative and quantitative characteristics of each discharge, and appropriate production data. A (SIU) is defined as an industrial user discharging to a publicly-owned treatment works (POTW) that satisfies any of the following: (1) has a process wastewater flow of 25,000 gallons or more per average work day; (2) has a flow greater than five percent of the flow carried by the municipal system receiving the waste; (3) is subject to Categorical Pretreatment Standards, or (4) has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.
2. The permittee must notify the Executive Secretary of any new introductions by new or existing SIUs or any substantial change in pollutants from any major industrial source. Such notice must contain the information described in 1. above and be forwarded no later than sixty (60) days following the introduction or change.
3. Pretreatment Standards (*40 CFR 403.5*) developed pursuant to *Section 307 of The Water Quality Act of 1987* require that under no circumstances shall the permittee allow introduction of the following pollutants into the waste treatment system from any source of non-domestic discharge:
  - a. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than 140°F (60°C);
  - b. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;
  - c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;
  - d. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at such volume or strength as to cause interference in the POTW;

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- e. Heat in amounts, which will inhibit biological activity in the POTW, resulting in interference, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104°F (40°C);
  - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  - g. Pollutants which result in the presence of toxic gases, vapor, or fumes within the POTW in a quantity that may cause worker health or safety problems; or,
  - h. Any trucked or hauled pollutants, except at discharge points designated by the POTW.
  - i. Any pollutant that causes pass through or interference at the POTW.
4. In addition to the general and specific limitations expressed above, more specific pretreatment limitations have been and will be promulgated for specific industrial categories under *Section 307 of the Water Quality Act of 1987 as amended (WQA)*. (See 40 CFR, Subchapter N, Parts 400 through 500, for specific information).
5. The permittee shall provide adequate notice to the Executive Secretary and the Division of Water Quality Industrial Pretreatment Coordinator of;
- a. Any new introduction of pollutants into the treatment works from an indirect discharger (i.e., industrial user) which would be subject to *Sections 301 or 306* of the *WQA* if it were directly discharging those pollutants;
  - b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit; and
  - c. For the purposes of this section, adequate notice shall include information on:
    - (1) The quality and quantity of effluent to be introduced into such treatment works; and,
    - (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from such publicly owned treatment works.
6. At such time as a specific pretreatment limitation becomes applicable to an industrial user of the permittee, the Executive Secretary may, as appropriate, do the following:
- a. Amend the permittee's UPDES discharge permit to specify the additional pollutant(s) and corresponding effluent limitation(s) consistent with the applicable national pretreatment limitation;

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- b. Require the permittee to specify, by ordinance, contract, or other enforceable means, the type of pollutant(s) and the maximum amount which may be discharged to the permittee's facility for treatment. Such requirement shall be imposed in a manner consistent with the POTW program development requirements of the *General Pretreatment Regulations* at *40 CFR 403*; and/or,
  - c. Require the permittee to monitor its discharge for any pollutant, which may likely be discharged from the permittee's facility, should the industrial user fail to properly pretreat its waste.
7. The Executive Secretary retains, at all times, the right to take legal action against the industrial user and/or the treatment works, in those cases where a permit violation has occurred because of the failure of an industrial user to discharge at an acceptable level. If the permittee has failed to properly delineate maximum acceptable industrial contributor levels, the Executive Secretary will look primarily to the permittee as the responsible party.

III. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

- A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.
- B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.
- C. Penalties for Tampering. The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.
- D. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.
- E. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10 and 40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.
- F. Records Contents. Records of monitoring information shall include:
1. The date, exact place, and time of sampling or measurements;
  2. The individual(s) who performed the sampling or measurements;
  3. The date(s) and time(s) analyses were performed;
  4. The individual(s) who performed the analyses;
  5. The analytical techniques or methods used; and,
  6. The results of such analyses.
- G. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Executive Secretary at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 538-6146, or 24-hour answering service (801) 536-4123.
2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4123 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:
  - a. Any noncompliance which may endanger health or the environment;
  - b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See *Part IV.G, Bypass of Treatment Facilities.*);
  - c. Any upset which exceeds any effluent limitation in the permit (See *Part IV.H, Upset Conditions.*);
  - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit; or,
  - e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.
3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
  - a. A description of the noncompliance and its cause;
  - b. The period of noncompliance, including exact dates and times;
  - c. The estimated time noncompliance is expected to continue if it has not been corrected;
  - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,
  - e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.
4. The Executive Secretary may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 538-6146.

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5. Reports shall be submitted to the addresses in *Part I.D, Reporting of Monitoring Results*.
- I. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part I.D* are submitted. The reports shall contain the information listed in *Part III.H.3*
- J. Inspection and Entry The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
  1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
  2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;
  4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,
  5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Executive Secretary, or authorized representative, upon the presentation of credentials and other documents as may be required by law, will be permitted to enter without delay for the purposes of performing their responsibilities.

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IV. COMPLIANCE RESPONSIBILITIES

- A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.
- B. Penalties for Violations of Permit Conditions. The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at *Part IV.G, Bypass of Treatment Facilities* and *Part IV.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.
- C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a 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.
- D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.
- E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up 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.
- F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

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G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.
2. Prohibition of Bypass.
  - a. Bypass is prohibited, and the Executive Secretary may take enforcement action against a permittee for bypass, unless:
    - (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;
    - (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and
    - (3) The permittee submitted notices as required under *section IV.G.3.*
  - b. The executive Secretary may approve an anticipated bypass, after considering its adverse effects, if the Executive Secretary determines that it will meet the three conditions listed in *sections IV.G.3.a (1), (2) and (3).*
3. Notice.
  - a. *Anticipated bypass.* Except as provided above in *section IV.G.2* and below in *section IV.G.3.b*, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Executive Secretary:
    - (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages:
    - (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Executive Secretary in advance of any changes to the bypass schedule;

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- (3) Description of specific measures to be taken to minimize environmental and public health impacts;
  - (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;
  - (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and,
  - (6) Any additional information requested by the Executive Secretary.
- b. *Emergency Bypass.* Where ninety days advance notice is not possible, the permittee must notify the Executive Secretary, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Executive Secretary the information in *section VI.G.3.a.(1) through (6)* to the extent practicable.
- c. *Unanticipated bypass.* The permittee shall submit notice of an unanticipated bypass to the Executive Secretary as required under *Part III.H, Twenty Four Hour Reporting*. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. Executive Secretary's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.
2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated;

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- c. The permittee submitted notice of the upset as required under *Part III.H, Twenty-four Hour Notice of Noncompliance Reporting*; and,
  - d. The permittee complied with any remedial measures required under *Part IV.D, Duty to Mitigate*.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

V. GENERAL REQUIREMENTS

- A. Planned Changes. The permittee shall give notice to the Executive Secretary as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of parameters discharged or pollutant sold or given away. This notification applies to pollutants, which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Executive Secretary of any planned changes at least 30 days prior to their implementation.
- B. Anticipated Noncompliance. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.
- C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.
- E. Duty to Provide Information. The permittee shall furnish to the Executive Secretary, within a reasonable time, any information which the Executive Secretary 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 Executive Secretary, upon request, copies of records required to be kept by this permit.
- F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Executive Secretary, it shall promptly submit such facts or information.
- G. Signatory Requirements. All applications, reports or information submitted to the Executive Secretary shall be signed and certified.
  - 1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

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2. All reports required by the permit and other information requested by the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
3. Changes to authorization. If an authorization under *paragraph V.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *paragraph V.G.2* must be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- H. Penalties for Falsification of Reports. The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

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- I. Availability of Reports. Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Executive Secretary. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential.
- J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.
- K. Property Rights. The issuance of this permit does not convey any property rights of any sort, 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.
- L. Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
- M. Transfers. This permit may be automatically transferred to a new permittee if:
1. The current permittee notifies the Executive Secretary at least 20 days in advance of the proposed transfer date;
  2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
  3. The Executive Secretary does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.
- N. State or Federal Laws. 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 regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.
- O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the

**PART V**  
**DISCHARGE PERMIT NO. UT0020907**

appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
  2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
  3. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.
- P. Biosolids – Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state or federal regulations.
- Q. Toxicity Limitation - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include, whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur;
- R. Storm Water-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".

VI. DEFINITIONS

A. Wastewater.

1. The "7-day (and weekly) average", other than for e-coli bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for e-coli bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.
2. The "30-day (and monthly) average," other than for e-coli bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for e-coli bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
3. "Act," means the *Utah Water Quality Act*.
4. "Bypass," means the diversion of waste streams from any portion of a treatment facility.
5. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
  - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
  - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

**PART VI**  
**DISCHARGE PERMIT NO. UT0020907**

- c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every “X” gallons of flow); and,
  - d. Continuous sample volume, with sample collection rate proportional to flow rate.
6. “CWA,” means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
  7. “Daily Maximum” (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
  8. “EPA,” means the United States Environmental Protection Agency.
  9. “Executive Secretary,” means Executive Secretary of the Utah Water Quality Board.
  10. A “grab” sample, for monitoring requirements, is defined as a single “dip and take” sample collected at a representative point in the discharge stream.
  11. An “instantaneous” measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
  12. “Severe Property Damage,” means substantial physical damage to property, damage to the treatment facilities which causes 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.
  13. “Upset,” means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit 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 preventative maintenance, or careless or improper operation.

**FACT SHEET**  
**AND**  
**STATEMENT OF BASIS**

RICHMOND CITY

UTAH POLLUTION DISCHARGE ELIMINATION SYSTEM PERMIT NO. UT0020907

**FACILITY CONTACT:**

Responsible Official: Mike Hall,  
Mayor, City of Richmond  
6 West Main, PO Box 9  
Richmond, Utah 84333  
Phone: (435) 258-1731

Facility Contact: Marlowe C. Adkins  
6 West Main, PO Box 9  
Richmond, Utah 84333  
Phone: (435) 258-2092

**DESCRIPTION OF FACILITY:**

The Richmond City Wastewater Treatment Facility (facility) is located approximately one mile west of Richmond City, just north of highway 142. This facility was originally constructed in 1972 as a total containment lagoon with a hydraulic design capacity of 0.5 MGD and population equivalent of 1350 people. The Facility currently serves approximately 2200 people and has been operating as a discharging facility for the past several years due to exceedences in capacity. The physical treatment facility consists of an influent bar screen, 6" influent Parshall flume, influent and effluent electronic flow meters and recorder, comminutor, 4 facultative lagoon cells, outlet building, Palmer Bowlus effluent flume, and sodium hypochlorite disinfection. The facility is fully contained within a chain-link fence. Richmond City also owns property adjacent to the existing facility that is intended to be used for future expansion.

Calculations of current hydraulic and organic capacities are as follows:

Hydraulic capacity. The State of Utah waste water rules require a detention time of 120 days during the winter and 60 days during the summer for facultative lagoon systems. The maximum volume the Richmond lagoons can hold is approximately 52 million gallons. Therefore, the existing hydraulic capacity is approximately 433,000 gpd in the winter and 866,000 gpd in the summer. Although Richmond has submitted all the required Discharge Monitoring Reports (DMR)s over the past several years, when the facility does not discharge, no flows have been reported. Based on the incomplete information that we have, influent flow averaged approximately 250,000 gpd, demonstrating that the facility has adequate hydraulic capacity.

Organic capacity. The State of Utah waste water rules require that a facultative lagoon's primary treatment cell be limited to loadings of 35 lbs of biochemical oxygen demand (BOD) per surface acre. The first two cells (with an area of 12.4 acres) are being operated in parallel as primary treatment, creating an organic treatment capacity of approximately 434 lbs of BOD per day. Influent BOD values reported values have been highly variable, and extremely high for a lagoon of this type. Since these are grab samples, it is unlikely that they are true representation of the actual loadings. In any case, it appears the facility is organically overloaded. It is unlikely that Richmond City will be able to meet effluent limitations set forth in the renewal permit for BOD without significant facility changes. As a result, the City is in the process of planning for and designing a new Membrane Bioreactor Facility in order to meet the discharge requirements for this facility. This permit will remain in effect until the new facility is built, at which time a new permit will be developed in order to more accurately describe the conditions at the facility.

**DESCRIPTION OF DISCHARGE:**

Discharge is to an unnamed irrigation ditch to the Cub River. Outfall 001 is located at an approximate latitude 41° 55' 25" N and longitude 111° 49' 45" W and has STORET #490372.

There have been significant violations of the previous permit effluent limitations for BOD (as discussed above, *DESCRIPTION OF FACILITY*), total suspended solids (TSS), fecal coliforms (FC) and total coliforms (TC) (see ADDENDUM). Dissolved Oxygen (DO), pH and total residual chlorine (TRC) have not been a problem at this facility.

**RECEIVING WATER CLASSIFICATION:**

The Cub River is classified 2B, 3B, and 4. According to Utah Administrative Code (UAC) R317-2-6 the use designations are as follows:

- |          |   |
|----------|---|
| Class 2B | Protected for secondary contact recreation such as boating, wading, or similar uses.  |
| Class 3B | Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain. |
| Class 4  | Protected for agriculture use including irrigation of crops and stock watering.   |

**EFFLUENT LIMITATIONS, SELF-MONITORING AND REPORTING REQUIREMENTS:**

Permit effluent limitations are summarized below:

Parameter, units	30-day average	7-day average	Daily minimum	Daily maximum
BOD <sub>5</sub> , mg/L	25	35	NA	NA
BOD <sub>5</sub> Minimum % Removal	85 %	NA	NA	NA
TSS, mg/L	25	35	NA	NA
TSS Minimum % Removal	85%	NA	NA	NA
<i>E. coli</i> , #/100ml	126	157	NA	NA
pH, SU	NA	NA	6.5	9.0
TRC, mg/L	NA	NA	NA	0.419
DO, mg/L	NA	NA	5.5	NA
Oil/Grease, mg/L	NA	NA	NA	Visual/10
Total Phosphorous, mg/L	NA	NA	NA	Report

Monitoring and Reporting requirements are summarized below:

Parameter	Sampling Frequency	Sample Type	Units
Influent flow	Continuous	Recorder	MGD
Effluent flow	Continuous	Recorder	MGD
BOD <sub>5</sub> , Influent	Monthly	Grab	mg/L
BOD <sub>5</sub> , Effluent	Monthly	Grab	mg/L
TSS, Influent	Monthly	Grab	mg/L
TSS, Effluent	Monthly	Grab	mg/L
% removal, TSS/BOD	Monthly	Calculated	NA
<i>E. coli</i>	Monthly	Grab	#/100 ml
pH	Monthly	Grab	SU
TRC	Daily	Grab	mg/L
DO	Monthly	Grab	mg/L
Oil/Grease /a	Sheen observed	Grab	mg/L
Total Phosphorous	Monthly	Grab	mg/L

/a A visual monitoring will be conducted monthly for an oil and grease sheen. If a sheen is observed, then a grab sample shall be taken and shall not exceed 10 mg/L.

NA Not applicable

**BASIS FOR EFFLUENT LIMITATIONS:**

Limitations on TSS, BOD, FC, TC, pH and percent removal for TSS and BOD are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*.

TRC and DO are water quality limited and are based on a Wasteload Analysis (see ADDENDUM).

The Wasteload Analysis indicates that seasonal ammonia limits in the range of 52.6 mg/L – 128.3 mg/L should be applied (see ADDENDUM), however, since these limits are substantially higher than what is expected in the discharge, there will be no effluent limitations or monitoring requirements for this parameter.

The above limitations should be sufficiently protective of water quality in order to meet State water quality standards in the receiving waters.

**WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS:**

As part of a nationwide effort to control toxic discharges, biomonitoring requirements are being included in permits for facilities where effluent toxicity is an existing or potential concern. In Utah, this is done in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring)*. 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*.

Based on said Utah guidelines, the permittee is not a major municipal discharger and has not been required to develop an industrial pretreatment program. This facility has no significant industrial or categorical industrial users, and a reasonable potential for toxicity does not exist. In the event of any unforeseen toxicity occurring at the facility the permit does contain a toxicity limitation-reopener provision.

**BIOSOLIDS DISPOSAL REQUIREMENTS:**

As required by the 1987 amendments to the *Federal Clean Water Act*, EPA has established toxic contaminant criteria and other requirements for sewage sludge use and disposal by works treating domestic sewage. These regulations are found in *Title 40 of the Code of Federal Regulations, Part 503*. The biosolids (sludge) management program was delegated to the State of Utah on June 14, 1996. The 503 regulations are implemented by the issuance of permits, as needed and appropriate.

Because the permitted facility is a lagoon, there is no regular biosolids production. Therefore, the requirements of 503 do not apply unless or until sludge is removed from the bottom of the lagoon and used or disposed of in some way. When planning biosolids removal, the permittee should contact the DWQ for guidance.

**PRETREATMENT REQUIREMENTS:**

Although the permittee had a developed State-approved pretreatment program it is no longer designated for pretreatment program development because it does not meet conditions which

necessitate a full program. The flow through the plant is less than five (5) MGD, there are no categorical industries discharging to the treatment facility, industrial discharges comprise less than 1 percent of the flow through the treatment facility, and there is no indication of pass through or interference with the operation of the treatment facility such as upsets or violations of the POTW's UPDES permit limits. If any of these conditions change the permit could be modified to include the requirement of a pretreatment program.

Any wastewater discharges to the sanitary sewer are subject to Federal, State and local 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 403* and the State Pretreatment Requirements found in *UAC R317-8-8*.

It is recommended that the permittee perform an annual evaluation of the need to revise or develop technically based local limits for pollutants of concern, to implement the general and specific prohibitions of *40 CFR, Part 403.5(a)* and *Part 403.5(b)*. This evaluation may indicate that present local limits are sufficiently protective, or that they must be revised or developed. It is recommended that the permittee submit for review any local limits that are developed to the Division of Water Quality for review.

**STORM WATER REQUIREMENTS:**

A treatment facility treating domestic sewage or any other sewage sludge, a wastewater treatment device or system used in the storage, treatment, recycling and reclamation of municipal sewage, and lands dedicated to the disposal of sewage sludge that are located within the confines of the facility is required to submit a Notice of Intent (NOI) specifically for the Utah Pollutant Discharge Elimination System Multi Sector General Permit if the treatment facility holds an approved pretreatment program as described in *40CFR Part 403*, or has a design flow above 1 MGD.

The permittee does not meet either of these criteria required for permit coverage, thus there is no need for a UPDES Storm Water Permit at this time.

**TMDL REQUIREMENTS:**

The Richmond Lagoons discharge to a segment of the Cub River that is on the 303(d) list for Total Phosphorous (TP). A Total Maximum Daily Load for total phosphorous was completed for the Cub River on December 23, 1997. The TMDL indicated that the lagoons were contributing a TP load of approximately 2.3 kg/day and recommended a load reduction to 0.23 kg/day TP. The city is currently constructing a membrane bioreactor wastewater plant to achieve these more stringent phosphorous limits. When construction is complete, the current permit will be reopened to include TP limits.

This facility ultimately discharges to Cutler Reservoir which is listed on Utah's 2006 303(d) list of impaired waterbodies as defined in the Clean Water Act. As required under federal regulations, a total maximum daily load (TMDL) will be developed for all 303(d) listed waters. Specifically, Cutler Reservoir has been identified as impaired for total phosphorous and dissolved oxygen. Currently, a TMDL evaluation is underway for the reservoir. The TMDL process may result in pollutant load reductions and wasteload allocations for either of these constituents. Wasteload allocations would

then be translated to effluent limits in UPDES permits. It is therefore strongly recommended that the facilities' staff participate in the TMDL process. It is also being required that the facility self-monitor TP on a monthly basis in order to better quantify the phosphorus loading to the reservoir. The TMDL staff at the Division of Water Quality will be responsible for scheduling and notifying appropriate facility personnel regarding TMDL meetings. In addition, please contact your UPDES permit writer for information on scheduled TMDL meetings.

Additionally, the Cutler Reservoir and Cub River TMDL's are currently scheduled for revision by 2009.

**SIGNIFICANT PERMIT CHANGES:**

The limit for TRC has been changed based upon new flow data for the Cub River.

**PERMIT DURATION:**

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

**Public Notice:** The initial public notice period began on August 22, 2008 and ended on September 23, 2008. The public notice was run in *The Herald Journal* in Logan, Utah and was also posted on the Utah Division of Water Quality's website. No public comments were received during the public comment period.

Drafted by Lonnie Shull  
Environmental Scientist  
Utah Division of Water Quality  
Drafted July 8, 2008  
Revised August 4, 2008  
Revised September 24, 2008

**Utah Division of Water Quality  
Salt Lake City, Utah**

**WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis  
SUMMARY**

**Discharging Facility: Richmond Lagoons**

UPDES No: UT-0020907  
 Current Flow: 0.36 MGD      Current flow is intermittent. This value represents an average flow over the  
 Design Flow: 0.50 MGD

**Receiving Water: Cub River**

Stream Classification: 2B, 3B, 4  
 Stream Flows [cfs]:  
     32.6 Summer (July-Sept)      20th Percentile value used for all seasons  
     32.6 Fall (Oct-Dec)          20th Percentile  
     32.6 Winter (Jan-Mar)        20th Percentile  
     32.6 Spring (Apr-June)       20th Percentile  
     120.3 Average  
 Stream TDS Values:  
     338.4 Summer (July-Sept)    80th Percentile value used for all seasons  
     338.4 Fall (Oct-Dec)          80th Percentile  
     338.4 Winter (Jan-Mar)       80th Percentile  
     338.4 Spring (Apr-June)      80th Percentile

**Effluent Limits:**

**WQ Standard:**

Flow, MGD:	0.50 MGD	Design Flow
BOD, mg/l:	25.0 Summer	5.0 Indicator
Dissolved Oxygen, mg/l	5.0 Summer	5.5 30 Day Average
TNH3, Chronic, mg/l:	52.6 Summer	Varies Function of pH and Temperature
TDS, mg/l:	37513.1 Summer	1200.0

**Modeling Parameters:**

Acute River Width: 50.0%  
 Chronic River Width: 100.0%

**Antidegradation Review Completed for: TDS**

Antidegradation Level II Review is NOT Required

Date: 4/11/2007

Permit Writer:	<u><i>Jan M. Goetz</i></u>	<u>4-22-08</u>
WLA by:	<u><i>Paul M. Wharmy</i></u>	<u>4-21-08</u>
WQM Sec. Approval:	_____	_____
TMDL Sec. Approval:	_____	_____

Utah Division of Water Quality  
Salt Lake City, Utah

**WASTELOAD ANALYSIS [WLA]**  
**Addendum: Statement of Basis**

11-Apr-07
4:00 PM

**Facilities:** Richmond Lagoons  
**Discharging to:** Cub River

**UPDES No:** UT-0020907

**I. Introduction**

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

**II. Receiving Water and Stream Classification**

Cub River:	2B, 3B, 4
Antidegradation Review:	Antidegradation Level II Review is NOT Required

**III. Numeric Stream Standards for Protection of Aquatic Wildlife**

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.50 mg/l (30 Day Average) 4.00 mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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Salt Lake City, Utah**

**Acute and Chronic Heavy Metals (Dissolved)**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.363 lbs/day	750.00	ug/l	3.127 lbs/day
Arsenic	190.00 ug/l	0.792 lbs/day	340.00	ug/l	1.418 lbs/day
Cadmium	0.61 ug/l	0.003 lbs/day	6.52	ug/l	0.027 lbs/day
Chromium III	211.92 ug/l	0.884 lbs/day	4433.71	ug/l	18.485 lbs/day
ChromiumVI	11.00 ug/l	0.046 lbs/day	16.00	ug/l	0.067 lbs/day
Copper	23.85 ug/l	0.099 lbs/day	39.41	ug/l	0.164 lbs/day
Iron			1000.00	ug/l	4.169 lbs/day
Lead	12.88 ug/l	0.054 lbs/day	330.60	ug/l	1.378 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.010 lbs/day
Nickel	132.13 ug/l	0.551 lbs/day	1188.44	ug/l	4.955 lbs/day
Selenium	4.60 ug/l	0.019 lbs/day	20.00	ug/l	0.083 lbs/day
Silver	N/A ug/l	N/A lbs/day	25.04	ug/l	0.104 lbs/day
Zinc	303.93 ug/l	1.267 lbs/day	303.93	ug/l	1.267 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

Metals Standards Based upon a Hardness of 300 mg/l as CaCO<sub>3</sub>

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.006 lbs/day
Chlordane	0.004 ug/l	0.773 lbs/day	1.200	ug/l	0.005 lbs/day
DDT, DDE	0.001 ug/l	0.180 lbs/day	0.550	ug/l	0.002 lbs/day
Dieldrin	0.002 ug/l	0.342 lbs/day	1.250	ug/l	0.005 lbs/day
Endosulfan	0.056 ug/l	10.073 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.414 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.684 lbs/day	0.260	ug/l	0.001 lbs/day
Lindane	0.080 ug/l	14.391 lbs/day	1.000	ug/l	0.004 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	2.518 lbs/day	2.000	ug/l	0.008 lbs/day
Pentachlorophenol	13.00 ug/l	2338.481 lbs/day	20.000	ug/l	0.083 lbs/day
Toxephene	0.0002 ug/l	0.036 lbs/day	0.7300	ug/l	0.003 lbs/day

**IV. Numeric Stream Standards for Protection of Agriculture**

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.02 lbs/day
Chromium			100.0 ug/l	lbs/day

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Copper	200.0 ug/l	lbs/day
Lead	100.0 ug/l	lbs/day
Selenium	50.0 ug/l	lbs/day
TDS, Summer	1200.0 mg/l	2.50 tons/day

**V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)**

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

**Chlorophenoxy Herbicides**

2,4-D	ug/l	lbs/day
2,4,5-TP	ug/l	lbs/day
Endrin	ug/l	lbs/day
ocyclohexane (Lindane)	ug/l	lbs/day
Methoxychlor	ug/l	lbs/day
Toxaphene	ug/l	lbs/day

**VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]**

**Maximum Conc., ug/l - Acute Standards**

Toxic Organics	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	485.68 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	140.31 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.12 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	12.77 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.79 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	3777.55 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	17.81 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	1.60 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	7.56 lbs/day
1,1,2,2-Tetrachloroetha	ug/l	lbs/day	11.0 ug/l	1.98 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.25 lbs/day

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2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	773.50 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	1.17 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	84.55 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	71.95 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	3058.01 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	467.70 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	467.70 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.01 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.58 lbs/day
1,2-trans-Dichloroethyle	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	142.11 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	7.02 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	305.80 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	413.73 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	1.64 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.10 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	5216.61 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	66.56 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0 ug/l	30580.14 lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	287.81 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	64.76 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	3.96 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	6.12 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	8.99 lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0 ug/l	3058.01 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	107.93 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	341.78 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	2518.36 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	137.61 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	1.46 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	2.88 lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4 ug/l	0.25 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	1.48 lbs/day
Phenol	ug/l	lbs/day	4.6E+06 ug/l	8.27E+05 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	1.06 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	935.39 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	2158.60 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	21585.98 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	5.22E+05 lbs/day

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Benzo(a)anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(b)fluoranthene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(k)fluoranthene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	1978.71 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	1.60 lbs/day
Toluene	ug/l	lbs/day	200000.0 ug/l	35976.63 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	14.57 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	94.44 lbs/day
				lbs/day
				lbs/day
<b>Pesticides</b>				
Aldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.36 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.36 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.36 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.15 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.15 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 1248)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 1254)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 1221)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 1232)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 1248)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 1260)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 1016)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		
<b>Metals</b>				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	773.50 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				

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Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	39574.30 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.03 lbs/day
Nickel			4600.00 ug/l	827.46 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	1.13 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

**VII. Mathematical Modeling of Stream Quality**

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

- (1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).
- (2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.
- (3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8
- (4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

- (1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.
- (2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

**VIII. Modeling Information**

The required information for the model may include the following information for both the

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upstream conditions at low flow and the effluent conditions:

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

**Other Conditions**

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

**Model Inputs**

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

**Current Upstream Information**

	<b>Stream</b>									
	<b>Critical</b>									
	<b>Low Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>		
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>		
Summer (Irrig. Season)	32.6	20.0	8.2	0.10	0.50	6.86	0.00	338.4		
Fall	32.6	12.0	8.1	0.10	0.50	---	0.00	338.4		
Winter	32.6	4.0	8.0	0.10	0.50	---	0.00	338.4		
Spring	32.6	12.0	8.1	0.10	0.50	---	0.00	338.4		
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb		
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*		
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron				
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l				
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0		* 1/2 MDL		

**Projected Discharge Information**

<b>Season</b>	<b>Flow, MGD</b>	<b>Temp.</b>	<b>TDS mg/l</b>	<b>TDS tons/day</b>
Summer	0.50000	17.0	400.00	0.83383
Fall	0.50000	15.0		
Winter	0.50000	12.0		
Spring	0.50000	15.0		

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

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**IX. Effluent Limitations**

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

**Effluent Limitation for Flow based upon Water Quality Standards**

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Summer	0.500 MGD	0.774 cfs
Fall	0.500 MGD	0.774 cfs
Winter	0.500 MGD	0.774 cfs
Spring	0.500 MGD	0.774 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.5 MGD. If the discharger is allowed to have a flow greater than 0.5 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

**Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy**

Effluent Toxicity will not occur in downstream segments if the values below are met.

WET Requirements	LC50 >	15.8% Effluent	[Acute]
	IC25 >	2.3% Effluent	[Chronic]

**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	
Summer	25.0 mg/l as BOD5	104.2 lbs/day
Fall	25.0 mg/l as BOD5	104.2 lbs/day
Winter	25.0 mg/l as BOD5	104.2 lbs/day
Spring	25.0 mg/l as BOD5	104.2 lbs/day

**Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards**

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In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

<b>Season</b>	<b>Concentration</b>
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

**Effluent Limitation for Total Ammonia based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

<b>Season</b>		<b>Concentration</b>	<b>Load</b>
Summer	4 Day Avg. - Chronic	52.6 mg/l as N	219.3 lbs/day
	1 Hour Avg. - Acute	97.8 mg/l as N	407.7 lbs/day
Fall	4 Day Avg. - Chronic	88.5 mg/l as N	368.8 lbs/day
	1 Hour Avg. - Acute	109.6 mg/l as N	457.1 lbs/day
Winter	4 Day Avg. - Chronic	101.7 mg/l as N	423.9 lbs/day
	1 Hour Avg. - Acute	128.3 mg/l as N	534.7 lbs/day
Spring	4 Day Avg. - Chronic	88.5 mg/l as N	0.0 lbs/day
	1 Hour Avg. - Acute	109.6 mg/l as N	0.0 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.0%.

**Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

<b>Season</b>		<b>Concentration</b>	<b>Load</b>
Summer	4 Day Avg. - Chronic	0.475 mg/l	1.98 lbs/day
	1 Hour Avg. - Acute	0.419 mg/l	1.75 lbs/day
Fall	4 Day Avg. - Chronic	0.475 mg/l	1.98 lbs/day
	1 Hour Avg. - Acute	0.419 mg/l	1.75 lbs/day
Winter	4 Day Avg. - Chronic	0.475 mg/l	1.98 lbs/day
	1 Hour Avg. - Acute	0.419 mg/l	1.75 lbs/day
Spring	4 Day Avg. - Chronic	0.475 mg/l	0.00 lbs/day
	1 Hour Avg. - Acute	0.419 mg/l	0.00 lbs/day

**Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards**

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Season	Concentration	Load
Summer	Maximum, Acute 37513.1 mg/l	78.20 tons/day
Fall	Maximum, Acute 37513.1 mg/l	78.20 tons/day
Winter	Maximum, Acute 37513.1 mg/l	78.20 tons/day
Spring	4 Day Avg. - Chronic 37513.1 mg/l	78.20 tons/day
Colorado Salinity Form Limits		Determined by Permitting Section

**Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 300 mg/l):

	4 Day Average Concentration	Load	1 Hour Average Concentration	Load
Aluminum	N/A	N/A	16,504.5 ug/l	68.8 lbs/day
Arsenic	8,164.25 ug/l	22.0 lbs/day	7,488.1 ug/l	31.2 lbs/day
Cadmium	23.00 ug/l	0.1 lbs/day	142.2 ug/l	0.6 lbs/day
Chromium III	9,109.88 ug/l	24.6 lbs/day	97,848.7 ug/l	407.9 lbs/day
Chromium VI	307.08 ug/l	0.8 lbs/day	269.4 ug/l	1.1 lbs/day
Copper	995.63 ug/l	2.7 lbs/day	853.2 ug/l	3.6 lbs/day
Iron	N/A	N/A	22,046.7 ug/l	91.9 lbs/day
Lead	522.35 ug/l	1.4 lbs/day	7,280.6 ug/l	30.4 lbs/day
Mercury	0.52 ug/l	0.0 lbs/day	53.0 ug/l	0.2 lbs/day
Nickel	5,667.45 ug/l	15.3 lbs/day	26,215.7 ug/l	109.3 lbs/day
Selenium	131.46 ug/l	0.4 lbs/day	408.0 ug/l	1.7 lbs/day
Silver	N/A ug/l	N/A lbs/day	552.7 ug/l	2.3 lbs/day
Zinc	##### ug/l	35.3 lbs/day	6,707.1 ug/l	28.0 lbs/day
Cyanide	224.36 ug/l	0.6 lbs/day	485.6 ug/l	2.0 lbs/day

**Effluent Limitations for Heat/Temperature based upon Water Quality Standards**

Summer	64.1 Deg. C.	147.5 Deg. F
Fall	56.1 Deg. C.	133.1 Deg. F
Winter	48.1 Deg. C.	118.7 Deg. F
Spring	56.1 Deg. C.	133.1 Deg. F

**Effluent Limitations for Organics [Pesticides] Based upon Water Quality Standards**

In-stream criteria of downstream segments for Organics [Pesticides] will be met with an effluent limit as follows:

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	<b>4 Day Average</b>		<b>1 Hour Average</b>		
	<b>Concentration</b>	<b>Load</b>	<b>Concentration</b>	<b>Load</b>	
Aldrin			1.5E+00	ug/l	9.67E-03 lbs/day
Chlordane	4.30E-03 ug/l	1.79E-02 lbs/day	1.2E+00	ug/l	7.74E-03 lbs/day
DDT, DDE	1.00E-03 ug/l	4.17E-03 lbs/day	5.5E-01	ug/l	3.55E-03 lbs/day
Dieldrin	1.90E-03 ug/l	7.92E-03 lbs/day	1.3E+00	ug/l	8.06E-03 lbs/day
Endosulfan	5.60E-02 ug/l	2.33E-01 lbs/day	1.1E-01	ug/l	7.09E-04 lbs/day
Endrin	2.30E-03 ug/l	9.59E-03 lbs/day	9.0E-02	ug/l	5.80E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	6.45E-05 lbs/day
Heptachlor	3.80E-03 ug/l	1.58E-02 lbs/day	2.6E-01	ug/l	1.68E-03 lbs/day
Lindane	8.00E-02 ug/l	3.34E-01 lbs/day	1.0E+00	ug/l	6.45E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	1.93E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	6.45E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	2.58E-04 lbs/day
PCB's	1.40E-02 ug/l	5.84E-02 lbs/day	2.0E+00	ug/l	1.29E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	5.42E+01 lbs/day	2.0E+01	ug/l	1.29E-01 lbs/day
Toxephene	2.00E-04 ug/l	8.34E-04 lbs/day	7.3E-01	ug/l	4.71E-03 lbs/day

**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream indicator criteria of downstream segments for Pollution Indicators would be met by achieving the following effluent targets

	<b>1 Hour Average</b>	
	<b>Concentration</b>	<b>Loading</b>
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	20.8 lbs/day
Nitrates as N	4.0 mg/l	16.7 lbs/day
Total Phosphorus as P	0.05 mg/l	0.2 lbs/day
Total Suspended Solids	90.0 mg/l	375.2 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule]  
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

	<b>Maximum Concentration</b>	
	<b>Concentration</b>	<b>Load</b>
<b>Toxic Organics</b>		
Acenaphthene	1.16E+05 ug/l	4.86E+02 lbs/day
Acrolein	3.37E+04 ug/l	1.40E+02 lbs/day
Acrylonitrile	2.85E+01 ug/l	1.19E-01 lbs/day
Benzene	3.06E+03 ug/l	1.28E+01 lbs/day

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	ug/l	lbs/day
Benzidine		
Carbon tetrachloride	1.90E+02	7.91E-01
Chlorobenzene	9.06E+05	3.78E+03
1,2,4-Trichlorobenzene		
Hexachlorobenzene	3.32E-02	1.39E-04
1,2-Dichloroethane	4.27E+03	1.78E+01
1,1,1-Trichloroethane		
Hexachloroethane	3.84E+02	1.60E+00
1,1-Dichloroethane		
1,1,2-Trichloroethane	1.81E+03	7.56E+00
1,1,2,2-Tetrachloroethane	4.75E+02	1.98E+00
Chloroethane		
Bis(2-chloroethyl) ether	6.04E+01	2.52E-01
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	1.86E+05	7.73E+02
2,4,6-Trichlorophenol	2.80E+02	1.17E+00
p-Chloro-m-cresol		
Chloroform (HM)	2.03E+04	8.45E+01
2-Chlorophenol	1.73E+04	7.20E+01
1,2-Dichlorobenzene	7.33E+05	3.06E+03
1,3-Dichlorobenzene	1.12E+05	4.68E+02
1,4-Dichlorobenzene	1.12E+05	4.68E+02
3,3'-Dichlorobenzidine	3.32E+00	1.39E-02
1,1-Dichloroethylene	1.38E+02	5.76E-01
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	3.41E+04	1.42E+02
1,2-Dichloropropane	1.68E+03	7.02E+00
1,3-Dichloropropylene	7.33E+04	3.06E+02
2,4-Dimethylphenol	9.92E+04	4.14E+02
2,4-Dinitrotoluene	3.93E+02	1.64E+00
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	2.33E+01	9.71E-02
Ethylbenzene	1.25E+06	5.22E+03
Fluoranthene	1.60E+04	6.66E+01
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	7.33E+06	3.06E+04
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	6.90E+04	2.88E+02
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	1.55E+04	6.48E+01
Dichlorobromomethane(HM)	9.49E+02	3.96E+00
Chlorodibromomethane (HM)	1.47E+03	6.12E+00
Hexachlorocyclopentadiene	7.33E+05	3.06E+03
Isophorone	2.59E+04	1.08E+02
Naphthalene		
Nitrobenzene	8.20E+04	3.42E+02
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	6.04E+05	2.52E+03

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4,6-Dinitro-o-cresol	3.30E+04 ug/l	1.38E+02 lbs/day
N-Nitrosodimethylamine	3.49E+02 ug/l	1.46E+00 lbs/day
N-Nitrosodiphenylamine	6.90E+02 ug/l	2.88E+00 lbs/day
N-Nitrosodi-n-propylamine	6.04E+01 ug/l	2.52E-01 lbs/day
Pentachlorophenol	3.54E+02 ug/l	1.48E+00 lbs/day
Phenol	1.98E+08 ug/l	8.27E+05 lbs/day
Bis(2-ethylhexyl)phthalate	2.55E+02 ug/l	1.06E+00 lbs/day
Butyl benzyl phthalate	2.24E+05 ug/l	9.35E+02 lbs/day
Di-n-butyl phthalate	5.18E+05 ug/l	2.16E+03 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	5.18E+06 ug/l	2.16E+04 lbs/day
Dimethyl phthlate	1.25E+08 ug/l	5.22E+05 lbs/day
Benzo(a)anthracene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Benzo(a)pyrene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Benzo(b)fluoranthene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Benzo(k)fluoranthene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Chrysene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	1.34E+00 ug/l	5.58E-03 lbs/day
Pyrene (PAH)	4.75E+05 ug/l	1.98E+03 lbs/day
Tetrachloroethylene	3.84E+02 ug/l	1.60E+00 lbs/day
Toluene	8.63E+06 ug/l	3.60E+04 lbs/day
Trichloroethylene	3.49E+03 ug/l	1.46E+01 lbs/day
Vinyl chloride	2.27E+04 ug/l	9.44E+01 lbs/day

**Pesticides**

Aldrin	6.04E-03 ug/l	2.52E-05 lbs/day
Dieldrin	6.04E-03 ug/l	2.52E-05 lbs/day
Chlordane	2.55E-02 ug/l	1.06E-04 lbs/day
4,4'-DDT	2.55E-02 ug/l	1.06E-04 lbs/day
4,4'-DDE	2.55E-02 ug/l	1.06E-04 lbs/day
4,4'-DDD	3.62E-02 ug/l	1.51E-04 lbs/day
alpha-Endosulfan	8.63E+01 ug/l	3.60E-01 lbs/day
beta-Endosulfan	8.63E+01 ug/l	3.60E-01 lbs/day
Endosulfan sulfate	8.63E+01 ug/l	3.60E-01 lbs/day
Endrin	3.49E+01 ug/l	1.46E-01 lbs/day
Endrin aldehyde	3.49E+01 ug/l	1.46E-01 lbs/day
Heptachlor	9.06E-03 ug/l	3.78E-05 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	1.94E-03 ug/l	8.09E-06 lbs/day
PCB-1254 (Arochlor 1254)	1.94E-03 ug/l	8.09E-06 lbs/day
PCB-1221 (Arochlor 1221)	1.94E-03 ug/l	8.09E-06 lbs/day
PCB-1232 (Arochlor 1232)	1.94E-03 ug/l	8.09E-06 lbs/day
PCB-1248 (Arochlor 1248)	1.94E-03 ug/l	8.09E-06 lbs/day
PCB-1260 (Arochlor 1260)	1.94E-03 ug/l	8.09E-06 lbs/day
PCB-1016 (Arochlor 1016)	1.94E-03 ug/l	8.09E-06 lbs/day

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<b>Pesticide</b>		
Toxaphene	3.24E-02 ug/l	1.35E-04 lbs/day
<b>Metals</b>		
Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	ug/l	lbs/day
Cyanide	ug/l	lbs/day
Lead		
Mercury	ug/l	lbs/day
Nickel	ug/l	lbs/day
Selenium		
Silver		
Thallium	ug/l	lbs/day
Zinc		
<b>Dioxin</b>		
Dioxin (2,3,7,8-TCDD)	6.04E-07 ug/l	2.52E-09 lbs/day

**Metals Effluent Limitations for Protection of All Beneficial Uses  
Based upon Water Quality Standards and Toxics Rule**

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		16504.5				16504.5	N/A
Antimony				185528.2		185528.2	
Arsenic	4314.6	7488.1			0.0	4314.6	8164.3
Barium						0.0	
Beryllium						0.0	
Cadmium	428.1	142.2			0.0	142.2	23.0
Chromium (III)		97848.7			0.0	97848.7	9109.9
Chromium (VI)	4281.1	269.4			0.0	269.40	307.08
Copper	8595.7	853.2				853.2	995.6
Cyanide		485.6	9492139.6			485.6	224.4
Iron		22046.7				22046.7	
Lead	4281.1	7280.6			0.0	4281.1	522.3
Mercury		52.98		6.47	0.0	6.47	0.518
Nickel		26215.7		198472.0		26215.7	5667.4
Selenium	2090.3	408.0			0.0	408.0	131.5

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Silver	552.7		0.0	552.7	
Thallium		271.8		271.8	
Zinc	6707.1			6707.1	13110.2
Boron	32359.6			32359.6	

**Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]**

[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	16504.5	N/A	
Antimony	185528.18		
Arsenic	4314.6	8164.3	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	142.2	23.0	
Chromium (III)	97848.7	9110	
Chromium (VI)	269.4	307.1	Acute Controls
Copper	853.2	995.6	Acute Controls
Cyanide	485.6	224.4	
Iron	22046.7		
Lead	4281.1	522.3	
Mercury	6.472	0.518	
Nickel	26215.7	5667	
Selenium	408.0	131.5	
Silver	552.7	N/A	
Thallium	271.8		
Zinc	6707.1	13110.2	Acute Controls
Boron	32359.57		

Other Effluent Limitations are based upon R317-1.

E. coli                      126.0 organisms per 100 ml

**X. Antidegradation Considerations**

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

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An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an **Antidegradation Level II Review is NOT Required**

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value.

**XII. Summary Comments**

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

**XIII. Notice of UPDES Requirement**

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information. Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised.

**XIV. Special Considerations - TMDL**

The Richmond Lagoons discharge to a segment of the Cub River that is 303(d) listed for total phosphorous (TP). A TP Total Maximum Daily Load (TMDL) was completed for the Cub River on December 23, 1997. The TMDL indicated that the lagoons were contributing a TP load of approximately 2.3 kg/d, and recommended a load reduction to .23 kg/d TP. The city is currently constructing a membrane bioreactor wastewater plant to achieve these more stringent phosphorous limits. When construction is completed, the current permit will be reopened to include TP limits. Additionally, the Cutler Reservoir and Cub River TMDLs are currently scheduled for revision by 2009.

Prepared by:  
David Wham  
Utah Division of Water Quality  
801-538-6052  
File Name: Richmond Lagoons\_WLA\_7-17-08

**APPENDIX - Coefficients and Other Model Information**

CBOD	CBOD	CBOD	REAER.	REAER.	REAER.	NBOD	NBOD
Coeff.							

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(Kd)20 1/day 2.000	FORCED (Kd)/day 0.000	(Ka)T 1/day 2.000	(Ka)20 (Ka)/day 13.890	FORCED 1/day 0.000	(Ka)T 1/day 13.890	(Kn)20 1/day 0.400	(Kn)T 1/day 0.400
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.000	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 32.000
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.000						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Level I Antidegradation Review for: Richmond Lagoons**  
Richmond Lagoons\_WLA\_7-17-08

<b>Major Parameter of concern:</b>	<b>TDS</b>	
<b>WQ Standard</b>	<b>1200.0</b>	<b>mg/l</b>
<b>Current Stream Conditions Above Discharge</b>		
Flow, Average	120.3	cfs
Concentration	263.7	mg/l
Loading	31204.3	tons/year
Flow, 7Q10 (20th Percentile)	32.6	cfs
Concentration (80th Percentile)	338.4	mg/l
Loading	10851.7	
<b>Remaining Assimilative Conc. Capacity @ 7Q10</b>		
Concentration	936.3	mg/l
Loading	30025.3	tons/year
Percentage	78.0%	
<b>Current Discharge Conditions</b>		
Flow	0.4	MGD
Concentration	400.0	mg/l
Loading	219.1	tons/year
<b>Projected Discharge Conditions</b>		
Flow	0.5	MGD
Concentration	400.0	mg/l
Loading	304.3	tons/year
<b>Current Stream Conditions Below Discharge</b>		
Flow @ 7Q10	33.2	cfs



## Division of Water Quality Wasteload Analysis Request Form

Permit Writer:	<b>Lonnie Shull</b>	Date of Initiating WLA Request	<b>5/29/2008</b>
		Desired WLA Completion Date	<b>6/20/2008</b>
WLA by:		Date of Receiving WLA Request	
		Date of Completing WLA	
WQM Manager:		Approval Date:	
TMDL Manager:		Approval Date:	
Permit Writer:		Date of Receiving WLA Results	

New Permit   
  Permit Renewal   
  Permit Modification   
 Permit Expiration Date: 9/30/2008

Facility Name: Richmond City Lagoons    UPDES #: UT0020907  
 Contact Person: Marlowe Atkins    Telephone #: 435-258-2092  
 Initial Elevation (ft.): 4700    Receiving Water: Cub River

Does the facility discharge to a waterbody with an approved TMDL?: Yes

If yes, what are the parameters of concern (e.g., TDS, Total Phosphorous, Metals, etc.):

**Phos,**

Does the facility discharge in the Colorado River Basin?: No

Does the facility have a State approved pre-treatment program?: Yes

Does the facility have any industrial contributors?: Yes

Latitude: 41o55'25"    Longitude: 111o49'45"

Other Location Information: \_\_\_\_\_

Attach a map showing facility and discharge locations   
 Quad sheet map name: \_\_\_\_\_

Discharge Information	Temp.	BOD	Ammonia	TRC	Actual Flow	Parameters of Concern	
	(°C)	(mg/L)	(mg/L)	(mg/L)	(MGD)		
Summer (Jul-Sept)	17				0.23		
Fall (Oct-Dec)	12				0.23		
Winter (Jan-Mar)	4				0.23		
Spring (Apr-Jun)	12				0.23		

(30-day averages in mg/L from DMR if available/applicable. If not applicable put NA in each box.)

Design Flow (MGD): \_\_\_\_\_

Flow Projection	Population	Flow (MGD)
5 Years ago		
Current		
% increase in past 5 years		
5 year projection		
Safety of Factor	1.2	1.2
Projected Growth/Flow		

Permit writers have the option of choosing either the design flow or the projected flow for permit value calculations. Using the projected flow requires authorization by the respective UPDES section manager

Special Considerations:

Signature

Date

**The City is in the planning process for building a new MBR plant to replace the lagoons.**