

STATE OF COLORADO

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Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

April 23, 2013

Steve Salg
Denver Zoo
2300 Steele Street
Denver, Colorado 80205

RE: Amended User's Notice of Authorization for the Use of Reclaimed Water COE012006

Dear Mr. Salg,

Enclosed please find an amended Notice of Authorization (NOA) for the Use of Reclaimed Water for **Denver Zoo Irrigation**. This document has been amended to include additional irrigation areas in the the "Pachyderm Exhibit". The NOA contains requirements that are found in the Reclaimed Domestic Wastewater Control Regulation, (5 CCR 1002-84). **Denver Zoo** is responsible for compliance with any applicable criteria contained in the NOA. Please review the document carefully.

Please contact me at 303-692-3515 with questions, comments or concerns you may have.

Sincerely,

Elizabeth 2 Lemonds

Elizabeth Lemonds, Environmental Protection Specialist
WATER QUALITY CONTROL DIVISION

cc: John Lochhead, Denver Water
File # **COE012006**

ec: Damian Higham, Denver Water



Colorado Department
of Public Health
and Environment

**NOTICE OF AUTHORIZATION
FOR
THE USE OF RECLAIMED WATER
FOR LANDSCAPE IRRIGATION**

Authorization Number: **COE012006**

Pursuant to the provisions of the Colorado Water Quality Control Act, sections 25-8-202 and 25-8-205, C.R.S. and the Colorado Reclaimed Water Control Regulation (Regulation 84), this is Notice of Authorization for the Use of Reclaimed Water for Landscape Irrigation by **Denver Zoo (the User)**, whose legal contact information is included in Appendix A, to apply Reclaimed Water provided by the **Denver Water (the Treater)**, whose facility and legal contact information is provided in Appendix A, under the Unrestricted Use (Category 3 water) designation to the **site** described below:

Denver Zoo Irrigation; with Authorized Areas of Use as shown in attached Figure 1 and site address as indicated in Appendix A.

Application shall be performed in accordance with the following conditions of the Colorado Reclaimed Water Control Regulation No. 84. The User is responsible for compliance with the following:

- (1) Application rates shall be controlled to strictly minimize ponding and runoff.
- (2) Use of Reclaimed Water shall be confined to the Authorized Areas of Use.
- (3) Precautions shall be taken to ensure that Reclaimed Water will not be sprayed on any facility or area not designated for application such as occupied buildings, domestic drinking water facilities, or facilities where food is being prepared for human consumption.
- (4) Notification shall be provided to inform the public that Reclaimed Water is being used and is not safe for drinking. The notification shall include posting of signs of sufficient size to be clearly read in all use areas, around impoundments, and on tanks, tank trucks and other equipment used for storage or distribution of Reclaimed Water, with appropriate wording in the dominant language(s) expected to be spoken at the site.
- (5) All new, modified, or replaced piping, valves, controllers, outlets, and other appurtenances, including irrigation systems and any equipment used in a commercial or industrial operation or process, shall be marked to differentiate Reclaimed Water from domestic water or other piping systems.
- (6) An approved backflow prevention device or cross connection control method shall be provided at all potable water service connections to Reclaimed Water use areas.
- (7) Operation of the irrigation system, including valves, outlets, couplers, and sprinkler heads, and commercial or industrial facilities and equipment utilizing Reclaimed Water, shall be performed only by personnel authorized by the User and trained in accordance with subsection 84.9 (C)(10) of the regulation.
- (8) Supplementing Reclaimed Water with potable water by the User shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap. Where a backflow prevention device is used it must be tested on an annual basis by a Certified Cross Connection Control

Technician, unless there is a physical separation (e.g., removal of the connecting pipe, etc.) between the potable and reuse distribution systems.

- (9) Supplementing Reclaimed Water with water from irrigation wells or industrial wells shall not be allowed except through an approved reduced pressure principle backflow prevention device or an air gap.
- (10) There shall be no impoundment or irrigation of Reclaimed Water within 100 feet of any well used for domestic supply unless:
 - (a) In the case of an impoundment, the impoundment is lined with a synthetic material with a permeability of 10^{-6} cm/sec or less; or
 - (b) In the case of irrigation, other precautions are implemented and included as a condition of the Notice of Authorization, to prevent contamination of the well.
- (11) Workers shall be informed of the potential health hazards involved with contact or ingestion of Reclaimed Water and shall be educated regarding proper hygienic procedures to protect themselves.
- (12) Reclaimed Water shall not be applied in excess of the agronomic application rates. The agronomic rate means the rate of application of nutrients to plants that is necessary to satisfy the plants' nutritional requirements while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants.
- (13) Application rates shall protect surface and ground water quality and irrigation shall be controlled to minimize ponding.
- (14) Monitoring conducted by the User shall conduct the following monitoring:
 - a. Total volume of reclaimed water applied per year or season,
 - b. The maximum monthly volume applied, and
 - c. The Location(s) and the associated acreage where reclaimed water was applied.
- (15) Records of all monitoring shall be kept onsite for a period of three (3) years and shall be provided to the Division upon request.
- (16) The User shall supply information to the Treater demonstrating the Users compliance with the conditions of land application included in this Notice of Authorization. Information shall be provided in a timely manner so as to allow incorporation into the Treater's annual report to the Division, due January 31st of each year.
- (17) The User shall submit a certification statement with the information referenced in the previous paragraph. The certification statement shall be as follows:

"I certify, under penalty of law, that the information I am providing in this submittal is true, accurate, and correct. This determination has been made under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

- (18) The User shall report any violation of these regulations at their facilities in writing to the Division within 30 days of becoming aware of the violation. Where the Treater finds violations by the User, the 30-day period for reporting is waived, for a period of up to 30 additional days, if the Treater is working with the User to resolve the violation. Discharges to surface waters, cross connections without a backflow prevention device, or irrigation outside of an area approved in the Notice of Authorization shall be reported by the User orally within 24 hours of becoming aware of the violation and shall be followed up by a written report within five working days. The written report shall contain a description of the

noncompliance and its cause; the period of noncompliance, including, to the extent known, the exact dates and times; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

- (19) Right of entry to the application site by an authorized representative of the Colorado Department of Public Health and Environment, Water Quality Control Division, is authorized by the Colorado Water Quality Control Act, Section 25-8-306, C.R.S. (1989 Repl. Vol. 11A) for performance of whatever site inspection, monitoring and sample collection is deemed to be necessary to assure compliance with the criteria contained in the Colorado Reclaimed Water Control Regulation.
- (20) Non-compliance with the conditions of this Notice of Authorization for the Use of Reclaimed Water for Landscape Irrigation may result in initiation of enforcement action by the Colorado Department of Public Health and Environment, Water Quality Control Division pursuant to Part 6 of the Colorado Water Quality Control Act, Section 25-8-601-612, C.R.S (1989 and 1993 Supp). Action may include revocation of this Notice of Authorization For The Use of Reclaimed Water for Landscape Irrigation.
- (21) Terms and Conditions contained in this Notice of Authorization for the Use of Reclaimed Water for Landscape Irrigation are subject to revision, addition, or deletion based on any change in criteria contained in the Colorado Reclaimed Water Control Regulation. Letters of Intent shall be amended to reflect any significant physical or operational changes proposed by the User. These shall include, but not be limited to: addition of landscape area to be irrigated by Adams County Government that is not contiguous to an existing approved area. Authorization by the Colorado Department of Public Health and Environment, Water Quality Control Division, does not relieve the Treater or the User of compliance with applicable regulations of any other state, federal or local agency having jurisdiction.

**NOTICE OF AUTHORIZATION FOR THE USE OF RECLAIMED WATER FOR LANDSCAPE IRRIGATION
ISSUED THIS 22nd DAY OF APRIL 2013**



Nathan Moore,
Unit Manager
Permits Section
Water Quality Control Division

APPENDIX A

SITE INFORMATION

USER SITE COE012071

Type of Use: Landscape Irrigation

Owner: Denver Zoo

Mailing Address: 2300 Steele St
Denver, Colorado

Site Location: Same

Legal Contact: Steve Salg
Telephone: (303)376-4983
E-mail: ssalg@denverzoo.org

Site Contact: Same

TREATER 012000 – Denver Water
Mailing Address: 1600 W 12th Ave Denver, CO 80204
Facility Address: 5650 York St
Commerce City, CO 80022

Legal Contact: John Lochhead, Mgr
Telephone: 303-628-6000

Figure One: Denver Zoo Irrigation

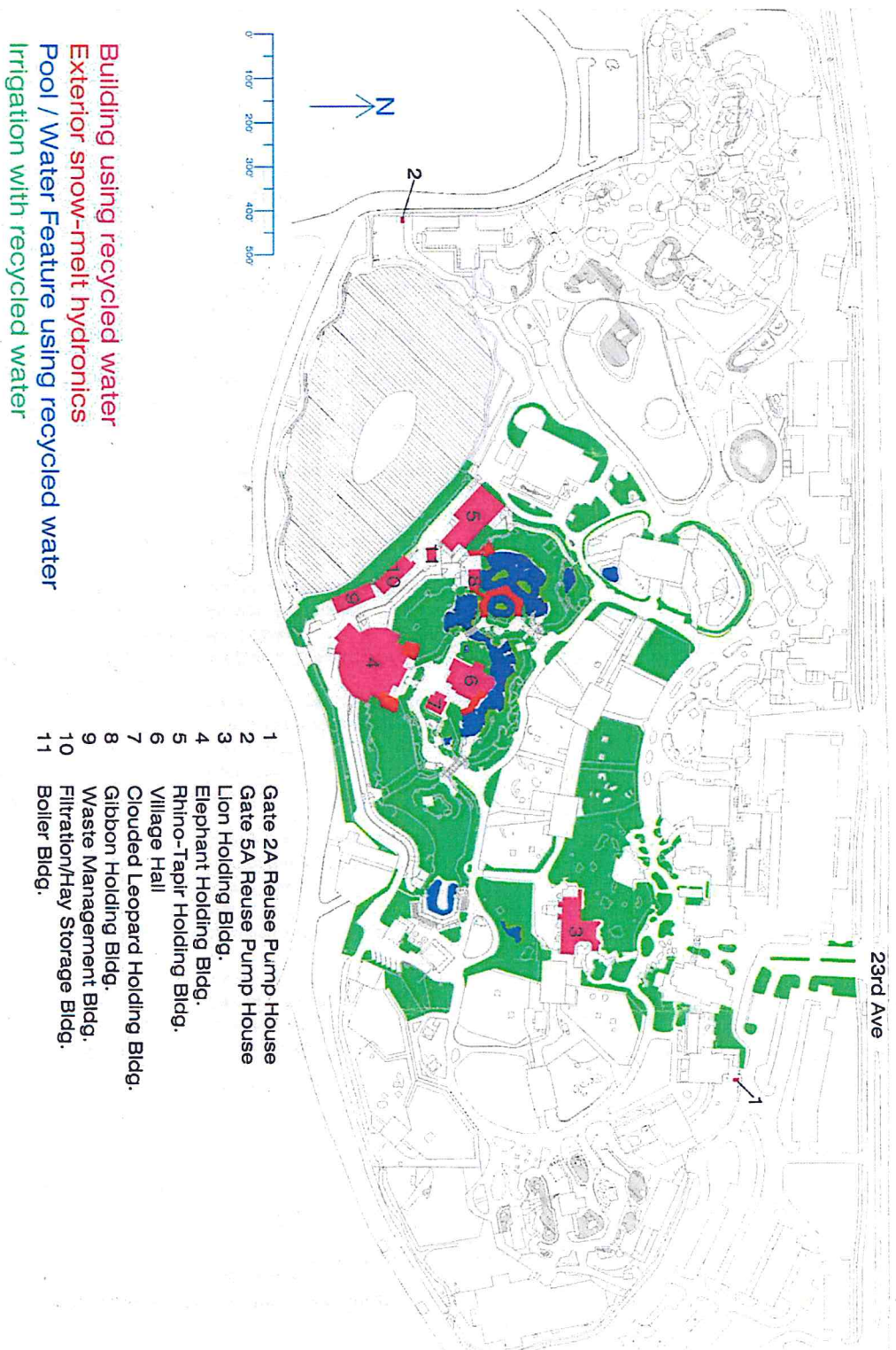


Figure 2-Denver Zoo Map Key

Denver Zoo – Recycled Water Authorized Usage Inside Each Building (May 24, 2012)

- #1 Gate 2A Reuse Pump House (Bldg. #13103)
 - Uses: Hose-down
 - Boosting pressure to the Zoo's internal NPW infrastructure
 - #2 Gate 5A Reuse Pump House (Bldg. #18108)
 - Uses: Hose-down
 - Boosting pressure to the Zoo's internal NPW infrastructure
 - #3 Lion Holding Building (Bldg. #16104)
 - Uses: Hose-down
 - #4 Elephant Holding Building (Bldg. #31101)
 - Uses: Hose-down
 - Animal consumption
 - Closed-loop heating systems
 - #5 Rhino-Tapir Holding Building (Bldg. #31102)
 - Uses: Hose-down
 - Animal pools
 - Animal consumption
 - Closed-loop heating systems
 - #6 Village Hall (Bldg. #31103)
 - Uses: Hose-down
 - Animal pools
 - Animal consumption
 - Closed-loop heating systems
 - #7 Clouded Leopard Holding Building (Bldg. #31104)
 - Uses: Hose-down
 - Animal consumption
 - Closed-loop heating systems
 - #8 Gibbon Holding Building (Bldg. #31105)
 - Uses: Hose-down Gate 2A
 - Animal consumption
 - Closed-loop heating systems
 - #9 Waste Management Building (Bldg. #31108)
 - Uses: Hose-down
 - Closed-loop heating systems
 - #10 Filtration/Hay Storage Building (Bldg. #31109)
 - Uses: Hose-down
 - Recirculation system for outdoor animal pools
 - Closed-loop heating systems
 - #11 Boiler Building (Bldg. #31110)
 - Uses: Hose-down
 - Closed-loop heating systems
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