

F I N A L

Appendix J to S
Volume 3, Book 2

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C O Y O T E S P R I N G S
I N V E S T M E N T

P L A N N E D D E V E L O P M E N T P R O J E C T

Coyote Springs Investment Planned Development Project

Appendix J to S July 2008

Prepared EIS for:

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COYOTE SPRINGS INVESTMENT PLANNED DEVELOPMENT PROJECT

Appendix J to S



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**Mitigation Plan,
The Coyote Springs Development Project
Lincoln County, Nevada**

Mitigation Plan
The Coyote Springs Development Project
Lincoln County, Nevada

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This report should be cited as: The Huffman-Broadway Group, Inc. 2007. *Mitigation Plan, The Coyote Springs Development Project, Lincoln County, Nevada*. Prepared for Coyote Springs Investment, LLC. October 9, 2007. San Rafael, California. 61 pp. plus attachments.

EXECUTIVE SUMMARY

This document presents the detailed Mitigation Plan for the Coyote Springs Development Project (Project) in Lincoln County, Nevada (Figures 1 and 2). The goal of this Mitigation Plan is to replace aquatic resource functions unavoidably lost or adversely affected by the Project. To accomplish this goal, this Mitigation Plan has been designed to compensate for project impacts to waters of the United States (WOUS) by providing compensatory mitigation through the implementation of the Mitigation Plan presented herein.

The plan has been prepared in accordance with the U.S. Army Corps of Engineers (Corps) December 2002 Regulatory Guidance Letter No. 02-2, *Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899* (December 24, 2002) and the San Francisco and Sacramento Districts Corps' *Mitigation and Monitoring Proposal Guidelines* (December 30, 2004).

This Mitigation Plan includes the following plans:

- Mitigation Implementation Plan for preserving and restoring desert dry wash habitat and habitat for preserved desert dry wash habitat. Topics covered include habitat mitigation construction, construction monitoring by a qualified monitor under the direction of a wetland scientist and construction worker training by the wetland scientist to ensure that the Mitigation Plan is followed and adjacent sensitive habitats and species are protected.
- A 5-year Management Plan that includes periodic management inspections and, if necessary, maintenance actions to ensure Mitigation Plan success.
- A 5-year Mitigation Monitoring Plan for collecting and analyzing data to determine if success criteria have been met.
- Contingency plans in the event that remediation is necessary to attain mitigation success performance criteria.
- Long-Term Protection Plan, which includes a Perpetual Conservation Easement Grant to ensure that the onsite mitigation areas function as preserved desert dry wash habitat in perpetuity.
- Long-Term Protection Plan, which includes a Drainage and Maintenance Easement to ensure that onsite mitigation areas function as restored desert dry wash habitat in perpetuity.
-

Summary of Mitigation Activities

Mitigation activities onsite will result in the following:

Avoidance/Minimization

The Coyote Springs Development Project will avoid 30.5 acres of direct impacts to WOUS consisting of dry desert wash habitat within the Project Development Area (23.6 acres), and lease lands (6.9 acres).¹ No wetlands or other type of USEPA special aquatic habitat occurs within the

¹ All references in this Executive Summary and throughout the Mitigation Plan to "lease Land" or "leased lands" means the lands that will be subject to the BLM lease upon completion of the fee/lease reconfiguration in Lincoln County. These lands will be reconfigured by the BLM and managed in accordance with the CSI MSHCP."

Project Development Area. The project has been designed to avoid and minimize direct impacts where practicable.

Compensation

Implementation of this Mitigation Plan will result in the restoration of 66.6 acres of desert dry wash habitat within the Development Area (63.0 acres) and lease lands (3.6 acres) as compensation for 28.2 acres of impacted of WOUS within the Development Area (21.1 acres) and BLM Utility Corridor (5.1 acres). This will be accomplished by:

- Restoring desert dry wash habitat so as to provide a net increase in fully functional, self-sustaining desert dry wash habitat having habitat functions and associated values similar to those present onsite prior to the onset of project construction;
- Providing for contingency measures in case desert dry wash habitat restoration efforts fail to meet success criteria;
- Providing financial guarantees for the five-year monitoring period, the five-year short-term maintenance program, and erosion control measures during implementation.

Acquisition and Preservation

A total of 63.0 acres of desert dry wash habitat (WOUS) will be preserved within the Development Area as a result of Mitigation Plan implementation. A total of 10.5 acres will be preserved within the Lease Lands. The following is a summary of the lands preserved:

- Preservation of 63.0 acres of restored desert dry wash habitat within the Development Area.
- Preservation of 23.6 acres of existing desert dry wash habitat within the Development Area.
- Preservation of 3.6 acres of restored desert dry wash habitat within Leased Lands.
- Preservation of 6.9 acres of existing desert dry wash habitat within Leased lands.
- Total WOUS preserved within the Development Area and Leased Lands are 97.1 acres.

Other Protections

The Mitigation Plan provides the following additional protections:

- Creation of 334.1 acres of protective upland buffer habitat adjacent to preserved desert dry wash habitat. The upland buffers will be 100 feet wide on each side of the Pahranaagat Wash Incised Channel², and a minimum of 30 feet on each side of all other preserved drainages. Buffer locations will be established from the edge of the top of bank of preserved and restored desert dry wash habitat and extend outward toward adjacent developed areas within the Coyote Springs Project Development Area.
- The Long-Term Protection Plan, which includes “in perpetuity” management to include periodic (annual) maintenance inspections and maintenance, if necessary.

² Desert dry washes are active ephemeral drainages with identifiable bed, bank, and ordinary high water mark characteristics. The bed and bank form the channel of these drainages. The Pahranaagat Wash is also an ephemeral drainage; vegetation is scarce within the active channel of the wash except along the tops of the channel banks. The Pahranaagat Wash ephemeral channel is a predominantly dry incised wash that runs within the historic flood plain of the landform area know as the Pahranaagat Wash and bisects the CSI lands as it runs from northwest to southeast. For the purpose of this mitigation plan the preserved Pahranaagat Wash ephemeral channel will be referred to as the “Pahranaagat Wash Incised Channel.” Upland buffers established to protect preserved and restored desert dry washes will begin at the top of bank along these drainages.

- A Perpetual Conservation Easement Grant will be placed by the land owner/Corps Permittee on preserved desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat. This area will be called the Coyote Springs Preserve. The Conservation Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Grantee of the Conservation Easement. The Grantee will be responsible as the Conservation Easement Manager for assuring long-term protection of the site in accordance with the Conservation Easement agreement. It is anticipated that The Conservation Fund (TCF) will function as the Conservation Easement Manager; alternatively, another third party grantee acceptable to both the Corps and CSI would fulfill this function. The Grantee will be funded by an endowment provided by the Corps Permittee.
- A Drainage and Maintenance Easement will be placed by the land owner/Corps Permittee on restored desert dry wash habitat and protective upland buffer. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. Once mitigation success criteria have been met, the management responsibility for the site will be transferred to the Coyote Springs Charter Community Association Inc (CSCCA) , a Nevada non-profit corporation), and funding for in-perpetuity management and maintenance will be provided by a General Improvement District (GID) and/or Homeowner's Association(s). The CSI Restored Habitat Manager will be the point of contact regarding management of the restored WOUS in accordance with Corps permit conditions. The CSCCA Restored Habitat Manager will be the point of contact once mitigation has been determined successful by the Corps.

Disclaimer

On June 5, 2007, the United States Army Corps of Engineers and United States Environmental Protection Agency issued guidance to their field offices on how to implement the decisions of the Supreme Court in *Rapanos v. United States* and *Carabell v. United States*. This guidance is intended to reflect and consolidate the differing non-majority views of the Court regarding the reach and extent of the Clean Water Act, particularly over non-navigable tributaries and their adjacent and non-adjacent wetlands. Neither the Court nor the recently-issued guidance draw a bright line with regard to the geographic reach of jurisdiction, particularly in drainages where flows are ephemeral, such as all of the drainage features found on the Coyote Springs property. The Huffman Broadway Group, Inc., and Coyote Springs Investment LLC have made a good-faith effort herein to thoroughly describe and document the presence of potential factors that the Corps may consider to constitute a "significant nexus" to traditionally-navigable waters in asserting jurisdiction pursuant to Section 404 of the Clean Water Act.

Nevertheless, the project sponsor, Coyote Springs Investments, reserves the right to challenge or seek revision to any areas over which the Corps may assert such jurisdiction, as the implementation of the Rapanos and Carabell guidance is further clarified or altered through formal guidance, assertions or disclaimers of jurisdiction over other properties, court decisions, or other relevant actions. In particular, the threshold of what may or may not constitute a "significant nexus" to a traditionally-navigable water is, at present, undefined and unquantified.

Should an actual threshold be established with some reasonable degree of quantification, areas on the Coyote Springs property over which the Corps may now seek to assert jurisdiction should not remain jurisdictional if they do not exceed that minimum threshold in the future. Should the Corps, now or in the future, find that the reach and extent of jurisdictional waters at the Coyote Springs property are reduced, the project sponsor has a clear expectation that project requirements for compensatory mitigation, pursuant to the 404(b)(1) Guidelines [see 40 CFR 230.10(d)] would also be reduced accordingly.

1.0 PROJECT DESCRIPTION (Site of Impacts)

This Mitigation Plan has been prepared for Coyote Springs Investment LLC (CSI) by The Huffman-Broadway Group, Inc. (HBG), to address impacts to waters of the United States (WOUS) from the Coyote Springs Development Project (the Project) in Lincoln County, Nevada. This section identifies the Project location (Section 1.1), ownership (Section 1.2), zoning (Section 1.3), past, present and proposed future land use (Section 1.4), the parties responsible for implementing the Mitigation Plan (Section 1.5), Project description (Section 1.6), U.S. Army Corps of Engineers jurisdiction (Section 1.7), EPA special aquatic sites (Section 1.8), terrestrial and aquatic resources (Section 1.9) and aquatic habitat functions and values (Section 1.10).

1.1 Location of Project

The project site is located approximately 50 miles northeast of Las Vegas in Lincoln County within in portions of Townships 11 and 12 South and Range 63 East within the Mount Diablo Base and Meridian (Figures 1 and 2).

1.2 Ownership Status

The Project Development Area, including mitigation sites, is owned by CSI.

1.3 Zoning

Title 15 of the Lincoln County Code established on July 1, 2005 the Coyote Springs Planned Unit Development Code for the regulation and maintenance of planning and zoning within the Coyote Springs Planning Area. One of the code purposes is the establishment of a Planned Village Development District (PVD). The PVD subsequently established the land use zone “CS-REC, Open Space Zone” within the development area “to prevent irreversible environmental damage to sensitive areas, and to provide recreational opportunities including qualified parks”. The preserved and restored desert dry wash habitat and upland buffer habitats for preserved desert dry wash habitats being used to compensate for impacts to WOUS will be located within areas that are zoned as CS-REC, Open Space Zone.

1.4 Past, Present, and Proposed Future Land Use

The proposed Project will result in the conversion of certain lands within the Project Development Area from unoccupied desert to a town that will include residential housing, golf courses, public facilities, and associated commercial development. Build-out of the project will include primary and secondary housing; mixed-use urban villages; commercial, industrial, retail, and recreational facilities; public facilities; and preserved lands for habitat conservation purposes.

Avoidance/Minimization

The Coyote Springs Development Project will avoid 30.5 acres of impacts to WOUS consisting of dry desert wash habitat within the Development Area (23.6 acres) and Lease Lands (6.9 acres). No wetlands or other type of USEPA special aquatic habitat occurs within the Project Development Area. The project has been designed to avoid and minimize direct impacts where practicable.

Compensation

Implementation of this Mitigation Plan will result in the restoration of 66.6 acres of WOUS within the Development Area (63.0 acres) and leased lands (3.6 acres) consisting of desert dry wash habitat as compensation for impacted WOUS. This will be accomplished by:

- Restoring desert dry wash habitat so as to provide a net increase in fully functional, self-sustaining desert dry wash habitat having habitat functions and associated values similar to those present onsite prior to the onset of project construction;
- Providing for contingency measures in case desert dry wash habitat restoration efforts fail to meet success criteria;
- Providing financial guarantees for the five-year monitoring period, the five-year short-term maintenance program, and erosion control measures during implementation.

Acquisition and Preservation

A total of 63.0 acres of desert dry wash habitat (WOUS) will be preserved within the Development Area as a result of Mitigation Plan implementation. A total of 10.5 acres will be preserved within the Lease Lands. The following is a summary of the lands preserved:

- Preservation of 63.0 acres of restored desert dry wash habitat within the Development Area.
- Preservation of 23.6 acres of existing desert dry wash habitat within the Development Area.
- Preservation of 3.6 acres of restored desert dry wash habitat within Leased Lands.
- Preservation of 6.9 acres of existing desert dry wash habitat within Leased lands.
- Total WOUS preserved within the Development Area and Leased Lands are 97.1 acres.

Other Protections

The Mitigation Plan provides the following additional protections:

- Creation of 334.1 acres of protective upland buffer habitat adjacent to preserved desert dry wash habitat. The upland buffers will be 100 feet wide on each side of the Pahranaagat Wash Incised Channel³, and a minimum of 30 feet on each side of all preserved desert dry wash habitat (drainages). Buffer locations will be established from the edge of the top of bank of preserved desert dry wash habitat and extend outward toward adjacent developed areas within the Coyote Springs Project Development Area.
- The Long-Term Protection Plan, which includes “in perpetuity” management to include periodic (annual) maintenance inspections and maintenance, if necessary.
- A Perpetual Conservation Easement Grant will be placed by the land owner/Corps Permittee on preserved desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat. The Conservation Easement will include environmental

³ Desert dry washes are active ephemeral drainages with identifiable bed, bank, and ordinary high water mark characteristics. The bed and bank form the channel of these drainages. The Pahranaagat Wash is also an ephemeral drainage; vegetation is scarce within the active channel of the wash except along the tops of the channel banks. The Pahranaagat Wash ephemeral channel is a predominantly dry incised wash that runs within the historic flood plain of the landform area know as the Pahranaagat Wash and bisects the CSI lands as it runs from northwest to southeast. For the purpose of this mitigation plan the preserved Pahranaagat Wash ephemeral channel will be referred to as the “Pahranaagat Wash Incised Channel.” Upland buffers established to protect preserved and restored desert dry washes will begin at the top of bank along these drainages.

1.0 Project Description (Site of Impacts)

restrictions related to activities authorized by the Corps within the mitigation area. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Grantee of the Conservation Easement. The Grantee will be responsible as the Conservation Easement Manager for assuring long-term protection of the site in accordance with the Conservation Easement agreement. It is anticipated that The Conservation Fund (TCF) will function as the Conservation Easement Manager; alternatively, another third party grantee acceptable to both the Corps and CSI would fulfill this function. The Grantee will be funded by an endowment provided by the Corps Permittee.

- A Drainage and Maintenance Easement will be placed by the land owner/Corps Permittee on restored desert dry wash habitat and protective upland buffer. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. Once mitigation success criteria have been met, the management responsibility for the site will be transferred to the Coyote Springs Charter Community Association, Inc (CSCCA), a Nevada non-profit corporation), and funding for in-perpetuity management and maintenance will be provided by a General Improvement District (GID) and/or the CSCCA. The CSI Restored Habitat Manager will be the point of contact regarding management of the restored WOUS in accordance with Corps permit conditions. The CSCCA Restored Habitat Manager will be the point of contact once mitigation has been determined successful by the Corps.

1.5 Responsible Parties

Successful implementation of this Mitigation Plan is the responsibility of the following:

Applicant / Owner:

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CSI is the owner of the Coyote Springs Development Project Area. Mitigation for project impacts will occur onsite. CSI, a Nevada limited liability company, or any successors in interest to CSI, including heirs and assigns, who hold title to all or any portion of the property, is also a party having financial responsibility for the attainment of the success criteria required by this

1.0 Project Description (Site of Impacts)

Mitigation Plan and will fund an endowment for the long-term management and periodic (annual) maintenance of the onsite mitigation site.

1.6 Brief Description of Overall Project

The proposed Project will result in the conversion of certain lands within the Project Development Area from unoccupied desert to a town that will include residential housing, golf courses, public facilities, and associated commercial development. Build-out of the project will include primary and secondary housing; mixed-use urban villages; commercial, industrial, retail, and recreational facilities; public facilities; and preserved lands for habitat conservation purposes.

The project will impact 28.2 acres of WOUS within the Development Area and 5.1 acres of within the BLM Utility corridor consisting of desert dry wash habitat with the discharge of dredged and fill material to construct the development in order to meet local flood control standards. Desert dry washes are active ephemeral drainages with identifiable bed, bank, and ordinary high water mark characteristics. Mitigation measures for impacts to WOUS include (1) long-term protection of preserved natural desert dry wash habitats, protective upland buffer habitat for preserved desert dry wash habitat thru conservation easements, and (2) restoration of desert dry wash habitat, protective buffer habitat and recorded Drainage and Maintenance Easement.

The community will be phased over 35 to 40 years (see Table 1, below). A tabular summary of impacts by project phase is presented in Table 1.

1.7 Jurisdictional Areas to Be Impacted

HBG conducted an investigation of the potential geographic extent of wetlands and other waters of the United States subject to Corps of Engineers jurisdiction within the Coyote Springs Project Development Area. No wetlands were found and, therefore, no wetlands will be impacted as a result of the Project. However, 63.8 acres of desert dry washes subject to infrequent surface flows were identified and delineated as waters of the United States (WOUS) within the Project Development Area (51.8 acres), including the BLM right of way west of Highway 93 (5.1 acres) and the Leased Lands (6.9 acres) located east of the Pahranaagat Wash.. Of the delineated acreage, 33.3 acres will be directly impacted by the Project within the Project Development Area (28.2 acres) and BLM Utility Corridor (5.1 acres).

In their existing condition, these dry washes do not have the capacity to convey floodwaters through the Project Development Area in compliance with Lincoln County flood control requirements. To comply with Lincoln County flood control regulations, the dry washes will need to be relocated, enlarged, and somewhat expanded during the mitigation process to meet acceptable flood conditions. Without relocation into new County-regulated drainage ways, the existing WOUS would be inadequate to convey potential flood flows and could endanger the health, safety, and welfare of the residents within the Project Development Area during a flood event.

Table 1 summarizes the project impacts to WOUS by development phase and Table 2 summarizes impacts by development activity.

1.0 Project Description (Site of Impacts)

Table 1. Project Impacts to Waters of the United States by Project Phase

Phase	Type of Impact	Approximate Acreage of Development	Impacts to WOUS when grading occurs (acres)	Estimated Implementation Time Frame (Yrs)
1	Fill	6,000	12.43	2 – 9
2	Fill	6,000	4.20	10 – 18
3	Fill	6,000	5.5	19 – 27
4	Fill	3,500	6.1	27 – 40
Total		21,500	28.2	40

Table 2. Impacts to Waters of the United States Resulting from the Coyote Springs Development Project

Development Activity	Direct Fill Impacts to WOUS (acres)	
Fill Drainages (Desert Dry Wash Habitat)	Fill	16.43
Construct 3 Detention Basins West of State Highway 93	Fill	5.1
Replace Existing Culverts with Open Bottoms on 3 Preserved Desert Dry Washes	Fill	0.5
Replace Existing Culverts with Larger Culverts along State Highway 93	Fill	0.75
Restore Desert Dry Wash Habitat	Fill	2.7
Widen Approximately 60,000 Linear Feet of Existing Drainages (Desert Dry Wash Habitat)	Fill	1.5
Construct Retention Basins to Attenuate Flows Before They Enter Pahrnagat Wash	Fill	1.22
Total		28.2

1.8 Special Aquatic Sites

The U.S. Environmental Protection Agency (EPA) identifies six categories of special aquatic sites in its Section 404 b (1) guidelines (*Federal Register* 1980):

- Sanctuaries and refuges
- Wetlands
- Mudflats
- Vegetated shallows
- Coral reefs
- Riffle and pool complexes.

1.0 Project Description (Site of Impacts)

No special aquatic sites as defined by EPA are currently present onsite.

1.9 Aquatic Habitat Functions and Values in the Project Development Area

1.9.1 Methodology

Aquatic habitat / wetland assessment procedures began appearing in the 1970s and a number of proposed methodologies have been developed since that time. Currently, over 70 such methodologies are in varying states of development and use.⁴ The early methodologies were designed for use on large controversial planning projects or wetland inventories. The earliest of these to gain some measure of acceptance was the Wetland Evaluation Technique (WET), developed by Adamus, *et al.*⁵ However, WET and its subsequent version (WET II) proved far too cumbersome for routine use, a criticism also directed at more recent attempts at a universal assessment technique, i.e., the Hydrogeomorphic Methodology (HGM).⁶

Partly in response to the perceived methodological shortcomings of the large-scale techniques, recent efforts have been directed at the assessment of functions in routine permit applications. Three such methodologies are the:

- Minnesota Routine Assessment Method (MNRAM)
- Wisconsin Rapid Assessment Methodology (WI RAM)
- Corps of Engineers Descriptive Approach (Corps Descriptive Approach or CDA).

We selected the CDA for this study because it examines many of the aquatic habitat functions outlined in Corps regulations. These functions are generally accepted by the scientific and regulatory communities, and form the basis on which aquatic habitats are regulated in many state and local jurisdictions. In addition, the CDA was designed to cover a broader geographic area than MNRAM or WI RAM.⁷

1.9.2 The Corps Descriptive Approach (CDA)

There is some confusion in the literature over what constitutes an aquatic habitat function versus what constitutes an aquatic habitat value. For purposes of the CDA, a function is defined as a self-sustaining property of an aquatic habitat that exists in the absence of society. For example, a drainage or wetland that has slowly moving water performs the function of retaining sediments and toxicants. Aquatic habitat values, on the other hand, are based on human judgment of the worth, merit, quality or importance derived from one or more functions and/or their underlying physical characteristics. For example, the visual quality/aesthetics of a drainage or wetland (an aquatic habitat value) may be due to its function as wildlife habitat and the underlying physical characteristic (e.g., abundant vegetation) that provides that habitat. The CDA identifies and addresses eight aquatic habitat functions and five aquatic habitat values, as follows:

⁴ Bartoldus, C. 1999. *A Comprehensive Review of Wetland Assessment Procedures: A Guide for Wetland Practitioners*. Environmental Concern, Inc., St. Michaels, MD. 196 pp.

⁵ Adamus, P.R., E.J. Clairain, R.D. Smith, and R.E. Young. 1987. *Wetland Evaluation Technique (WET), Volume II: Methodology*. Department of the Army, Waterways Experiment Station. Vicksburg, MS. NTIS No. ADA 189968.

⁶ Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi. Wetlands Research Program Technical Report WRP-DE-4. 79 pp. + appen.

⁷ The Corps Descriptive Approach was developed by the New England Division of the U.S. Army Corps of Engineers in the *Highway Methodology Workbook Supplement, Wetland Functions and Values, A Descriptive Approach*, November 1995.

1.0 Project Description (Site of Impacts)

Aquatic Habitat Functions

- Groundwater recharge/discharge
- Flood flow alteration
- Fish and shellfish habitat
- Sediment, toxicant and/or pathogen retention
- Nutrient removal, retention and/or transformation
- Production export
- Sediment/shoreline stabilization
- Wildlife habitat

Aquatic Habitat Values

- Recreation
- Educational/scientific
- Uniqueness/heritage
- Visual quality/aesthetics
- Threatened or endangered species habitat

These functions/values are virtually identical to those evaluated by the WET methodology. The CDA, however, is less formalistic and calculation-intensive than the WET methodology and many other aquatic habitat assessment approaches, some of which can produce results that are difficult to understand without backtracking through the underlying calculations. In utilizing the Best Professional Judgment of qualified wetlands professionals, and requiring a rationale for their conclusions, the CDA is more readily accessible to a wider audience.

Basically, the CDA follows a three-step process:

- Complete a brief description of the physical characteristics of the aquatic habitat(s)
- List the functions/values exhibited
- Provide a rationale for the conclusions.

Using the CDA, functions and values are determined as existent or non-existent, based on a list of potential rationales (referred to as “considerations/qualifiers”) associated with each function or value. The data sheets include:

- Whether a particular function or value was present
- The rationale for making that determination
- The principal functions/values we believe the aquatic habitat to be performing
- Any comments about the aquatic habitat in question that may have a bearing on our conclusions.

1.9.3 Aquatic Habitat Functions and Values in the Project Development Area

Aquatic Habitat Functions

Table 3 describes aquatic habitat functions and identifies which functions are performed by the desert dry wash habitat in the Project Development Area. On the basis of our analysis, seven aquatic habitat functions are performed. The principal functions were determined to be flood flow alteration, sediment/shoreline stabilization, and wildlife habitat.

1.0 Project Description (Site of Impacts)

Table 3. Aquatic Habitat Functions¹ within WOUS² in the Project Development Area

Function	Description	Function Present?
Groundwater Recharge/Discharge	Habitat serves as a groundwater recharge and/or discharge area. Recharge relates to the potential for the habitat to contribute water to an aquifer. Discharge relates to the potential for the habitat to serve as an area where groundwater can be discharged to the surface.	Present
Floodflow Alteration (Storage & Desynchronization)	Habitat aids in the reduction of flood damage by attenuating floodwaters for prolonged periods following precipitation events.	Present
Fish and Shellfish Habitat	WOUS provides seasonal or permanent habitat for fish and/or shellfish.	Not Present
Sediment/Toxicant/Pathogen Retention	Habitat aids in the prevention of the degradation of water quality by trapping sediments, toxicants or pathogens.	Present
Nutrient Removal/Retention/Transformation	Habitat aids in the prevention of adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.	Present
Production Export (Nutrient)	Habitat produces food or usable products for human or other living organisms.	Present
Sediment/Shoreline Stabilization	Habitat aids in the stabilization of stream banks and shorelines against erosion.	Present
Wildlife Habitat	WOUS provides habitat for various types and populations of animals. Both resident and/or migrating species are considered.	Present

¹ Adapted from: U.S. Army Corps of Engineers, New England Division. 1995. *The Highway Methodology Workbook, Supplement - Wetland Functions and Values: A Descriptive Approach*. November. 32 pp.

² "WOUS" = Waters of the United States = Desert Dry Wash Habitat;

Aquatic Habitat Values

Table 4 describes aquatic habitat values and identifies whether these values are performed by the desert dry wash habitat at the Project Site. On the basis of our analysis, all of the values described below are present.

Table 4. Aquatic Habitat Values¹ within WOUS² in the Project Development Area

Value	Description ¹	Value Present?
Recreation	Effectiveness of the habitat to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the habitat, whereas non-consumptive opportunities do not.	Present
Education/Scientific	Related to the effectiveness of the habitat as a site for an "outdoor classroom" or as a location for scientific study or research.	Present

1.0 Project Description (Site of Impacts)

Table 4. Aquatic Habitat Values¹ within WOUS² in the Project Development Area

Value	Description¹	Value Present?
Uniqueness/Heritage	Relates to the effectiveness of the habitat to produce certain special values. Special values may include such things as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals or geologic features.	Present
Visual Quality/ Aesthetics	Related to the visual and aesthetic qualities of the habitat.	Present
Threatened or Endangered Species Habitat	Relates to the effectiveness of the habitat to support threatened or endangered species.	Present

¹ Adapted from: U.S. Army Corps of Engineers, New England Division. 1995. *The Highway Methodology Workbook, Supplement - Wetland Functions and Values: A Descriptive Approach*. November. 32 pp.

² "WOUS" = Waters of the United States = Desert Dry Wash Habitat;

2.0 GOAL AND OBJECTIVES OF MITIGATION

The goal of this Mitigation Plan is to replace aquatic resource functions unavoidably lost or adversely affected by the Project. To accomplish this goal, this Mitigation Plan has been designed to compensate for Project impacts to waters of the United States (WOUS) by accomplishing the following objectives:

1. Preserve existing unimpacted desert dry wash habitat
2. Through restoration efforts, provide a net increase in fully functional, self-sustaining desert dry wash habitat having habitat functions and associated values similar to those present onsite prior to the onset of Project construction
3. Provide for contingency measures in case desert dry wash habitat restoration efforts fail to meet mitigation success criteria (see Section 5.0)
4. Provide financial guarantees for the 5-year monitoring periods and the 5-year maintenance programs during their implementation.
5. A Perpetual Conservation Easement Grant will be placed by the land owner/Corps Permittee on preserved desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat. The Conservation Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Grantee of the Conservation Easement. The Grantee will be responsible as the Conservation Easement Manager for assuring long-term protection of the site in accordance with the Conservation Easement agreement. It is anticipated that The Conservation Fund (TCF) will function as the Conservation Easement Manager; alternatively, another third party grantee acceptable to both the Corps and CSI would fulfill this function. The Grantee will be funded by an endowment provided by the Corps Permittee.
6. A Drainage and Maintenance Easement will be placed by the land owner/Corps Permittee on restored desert dry wash habitat and protective upland buffer. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Coyote Springs Charter Community Association, Inc (CSCCA) (Once you define the association you do not need to spell it out each time) and funding for in-perpetuity management and maintenance will be provided by a General Improvement District (GID) and/or the CSCCA. The CSI Restored Habitat Manager will be the point of contact regarding management of the restored WOUS in accordance with Corps permit conditions. The CSCCA Restored Habitat Manager will be the point of contact once mitigation has been determined successful by the Corps.

2.1 Habitat to Be Restored

Direct fill impacts to desert dry washes resulting from the Coyote Springs Development Project total 33.3 acres. These impacts will be mitigated by preserving and restoring desert dry wash

2.0 Goal and Objectives of Mitigation

habitat onsite. Table 5 is a summary of this mitigation.

Table 5. Aquatic Habitat Mitigation

Impacted Habitat ¹	Project Impact (acres)	Onsite WOUS Preservation (acres)	Onsite WOUS Restoration (acres)
Desert Dry Wash (WOUS)	33.3	30.5	66.6

¹ “WOUS” = Waters of the United States = Desert Dry Wash Habitat

2.2 Resulting Functions and Values

Existing aquatic habitat functions and values in the Project Development Area are detailed in Tables 3 and 4, respectively, in Section 1.0. Project construction activities that will fill existing desert dry washes will cause aquatic habitat functions and values currently present in those washes to be lost. Restoration of desert dry washes (see Table 5) as described in this Mitigation Plan will at a minimum replace the functions and associated values lost as well as increase the geographic extent of these habitats. Table 6 identifies aquatic habitat functions expected to result from implementation of the habitat restoration component of this Mitigation Plan. Similarly, Table 7 presents expected resulting values as the mitigation project becomes successful.

Table 6. Aquatic Habitat¹ (WOUS) Functions to Result from Implementing the Habitat Restoration Component of the Mitigation Plan

WOUS Function	Preserved Desert Dry Wash Habitat	Restored Desert Dry Wash Habitat
Groundwater Recharge/Discharge	<i>Present</i>	<i>Present</i>
Flood Flow Alteration	<i>Present</i>	<i>Present</i>
Fish and Shellfish Habitat	<i>Not Present</i>	<i>Not Present</i>
Sediment, Toxicant, and/or Pathogen Retention	<i>Present</i>	<i>Present</i>
Nutrient Removal, Retention, and/or Transformation	<i>Present</i>	<i>Present</i>
Production Export	<i>Present</i>	<i>Present</i>
Sediment/Shoreline Stabilization	<i>Present</i>	<i>Present</i>
Wildlife Habitat	<i>Present</i>	<i>Present</i>

¹ “WOUS” = Waters of the United States = Desert Dry Wash Habitat;

Table 7. Aquatic Habitat¹ (WOUS) Values to Result from Implementing the Habitat Restoration Component of the Mitigation Plan

WOUS Function	Preserved Desert Dry Wash Habitat	Restored Desert Dry Wash Habitat
Recreation	<i>Present</i>	<i>Present</i>
Educational/Scientific	<i>Present</i>	<i>Present</i>
Uniqueness/Heritage	<i>Present</i>	<i>Present</i>
Visual Quality/Aesthetics	<i>Present</i>	<i>Present</i>
Threatened or Endangered Species Habitat	<i>Present</i>	<i>Present</i>

¹ “WOUS” = Waters of the United States = Desert Dry Wash Habitat;

2.3 Site Selection

The factors considered during the mitigation site selection process and plan formulation included watershed considerations, practicability, air traffic, and the ability to provide long-term protection.

2.3.1 Watershed Considerations

The proposed desert dry wash habitat mitigation sites are in a watershed that has historically supported surface water flows sufficient to support desert dry wash habitat. .

2.3.2 Practicability

The mitigation sites within the Coyote Springs Project Development Area have been selected because they allow for:

1. Preservation of existing well-developed desert dry wash habitat.
2. Restoration of former desert dry wash habitat consisting of:
 - a. Drainage channels that were abandoned, blocked or rerouted when U.S. Highway 93 was constructed in the 1960s, and
 - b. Drainage channels that were abandoned when filled with alluvium through normal geologic processes.

The restoration of these types of areas will result in drainages having natural configurations that will provide desert dry wash habitat of a size that meets County standards for conveying stormwater. These drainages would be reinforced with erosion control measures using native materials (where feasible), where needed.

3. Preservation and restoration of upland desert habitat consisting of lands vegetated with southwestern desert vegetation forming the portion of the watershed immediately adjacent to desert dry wash habitat.

The likelihood of mitigation success is high; onsite conditions that assure practicability include:

1. The terrain allows for construction using standard construction methods with a minimum of logistical constraints.
2. Construction, revegetation and long-term management costs are within a reasonable cost range.

2.3.3 Air Traffic

No threat to aircraft is deemed apparent as the area is a restricted military operations area.

2.3.4 Site Protection

Physical and legal protections are important to prevent land uses changes and activities that would cause the preserved and restored desert dry wash and upland buffer habitat for preserved desert dry wash habitat to fail.

Physical Protections

The preserved/restored habitats with their surrounding upland buffer areas will be blocked at roadway access points with earth berms, bollards, gates, or v-ditches to prevent unauthorized off-road vehicle access in these areas. Access will be from developed pedestrian trails. Signs will be installed along the trails and at potentially accessible points along the perimeter stating the status of the property as a protected habitat area. An example sign is shown in Section 3.0.

Legal Protections

To ensure that the preserved and restored habitats and upland buffer habitat for preserved desert dry wash habitat within the Coyote Springs Project Development Area remain in perpetuity, the Long-Term Protection Plan (Section 8.0) includes:

1. Placing preserved habitats and upland buffer habitat for preserved desert dry wash habitat within the Coyote Springs Project Development Area under a perpetual conservation easement in accordance with Nevada Revised Statutes (NRS) 111.390 through 111.440. This area will be called the Coyote Springs Preserve. CSI will be the Grantor. The Grantee will be The Conservation Fund (www.conservationfund.org), a 501.3(c) corporation. The easement will cover mitigation lands containing:
 - a. Preserved desert dry wash habitat, and
 - b. Upland buffer habitat for preserved desert dry wash habitat.

The Conservation Easement must be signed by all parties and recorded prior to the start of any construction activities within waters of the United States. When initially recorded, the Conservation Easement will include an Exhibit or Exhibits showing the general location of the washes to be preserved. The Conservation Easement will be amended from time to time to amend the Exhibits, either in whole or in part, to provide the legal description for preserved desert dry wash and upland buffer habitat for preserved desert dry wash habitat as determined and surveyed during each phase of construction.

2.0 Goal and Objectives of Mitigation

Legal protections afforded by the Conservation Easement are important to prevent land use changes and activities that would cause the preserved habitats to fail. The Conservation Easement will contain environmental restrictions to include those listed in Table 8a below. An example draft Conservation Easement is presented in Appendix 1.

2. Placing restored desert dry wash habitat and upland buffer habitat within the Coyote Springs Project Development Area under a Drainage and Maintenance Easement which protect the functions of the restored desert dry wash habitat. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. The Drainage and Maintenance Easement will be placed by the land owner/Corps Permittee on restored desert dry wash habitat and protective upland buffer. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Coyote Springs Charter Community Association, Inc (CSCCA) and funding for in-perpetuity management and maintenance will be provided by a General Improvement District (GID) and/or the CSCCA. The CSI Restored Habitat Manager will be the point of contact regarding management of the restored WOUS in accordance with Corps permit conditions. The CSCCA Restored Habitat Manager will be the point of contact once mitigation has been determined successful by the Corps.

The easement will cover mitigation lands containing:

- a. Restored desert dry wash habitat, and
- b. Upland buffer habitat for restored desert dry wash habitat.

The land use restrictions must be recorded by the property owner/Corps Permittee prior to the start of any construction activities within waters of the United States. When initially recorded, the land use restrictions will include an Exhibit or Exhibits showing the general location of the washes to be restored and the location of the upland buffer area. The land use restrictions will be amended from time to time to amend the Exhibits, either in whole or in part, to provide the legal description for preserved and restored desert dry wash and upland buffer habitat for preserved desert dry wash habitat as determined and mapped and/or surveyed during each phase of construction.

The restrictions and protections afforded by the recorded Drainage and Maintenance Easement restrictions are important to prevent land use changes and activities that would cause the restored WOUS habitat to fail. The deed restrictions will contain environmental land use restrictions to include those listed in Table 8b below. No person shall engage in any of the restricted activities in the restored desert dry wash or adjacent upland buffer habitat areas unless that activity is in the future approved by the land owner, CSI/Corps Permittee.

Table 8a
Coyote Springs Preserve Area Perpetual Conservation Easement Restrictions
Concerning the Preserved Desert Dry Wash Habitat and Adjacent Upland Buffer Habitat
Located Within the Coyote Springs Development Area,
Lincoln County, Nevada

- a. Planting, landscaping, plowing, grading with native top soil replacement, or cultivating within the Coyote Springs Preserve (preserved washes and their upland buffers) or any portion of such area shall not be done or permitted except for the purpose of enhancing the Preserve. Planting can be accomplished in preserved desert dry wash and upland buffer habitat for preserved desert dry wash habitat using native plant species obtained within the Coyote Springs area (e.g., at the Desert National Wildlife Refuge or in the Coyote Springs Project Development Area) as described in the Plan. Planting non-native vegetation along trails and roadways for landscaping purposes is also allowable as long as the plants are not invasive or noxious species. The irrigation of these plantings can be done in a manner that does not adversely affect the hydrology of either preserved desert dry wash habitat or upland buffer habitat for preserved desert dry wash habitat within the Preserve;
- b. Planting, introducing, or dispersing non-native invasive or noxious plant species or animal species is prohibited;
- c. Materials or debris shall not be stored or placed (whether temporarily or permanently) within the Preserve or any portion of such area, except during authorized construction activities;
- d. Discharge of any dredged or fill material shall not be done or permitted within the waters of the United States within the Preserve or any portion of such area except as consistent with the terms and conditions of the Corps permit for the Coyote Springs Development Project;
- e. Discharge, dumping, disposal, storage, or placement of any soil, ashes, trash, refuse, rubbish, grass clippings, cuttings, biosolids, or other waste materials shall not be done or permitted within the Preserve or any portion of such area;
- f. Excavating, dredging, or removing loam, gravel, soil, rock, sand, or other material is prohibited except as described in the Mitigation Plan or with prior written approval by the Corps;
- g. Leveling or grading or otherwise altering the general topography of the Preserve or any portion of such area is prohibited except as described in the Mitigation Plan;
- h. Pesticides, herbicides, rodenticides, or other chemicals shall not be used within the Preserve except as described in the Mitigation Plan or with prior written approval by the Corps.
- i. Destruction or removal of any native vegetation that exists on the Preserve shall not be done or permitted except as provided in the Mitigation Plan or with prior written approval by the Corps.
- j. No motorized vehicles shall be ridden, brought, used or permitted on any portion of the Preserve, except as provided for in the Mitigation Plan or with prior written approval by the Corps.
- k. Roads, equipment storage, buildings, billboards, signs, or other structures or activities within the preserve shall not be permitted except for pedestrian/bicycle trails, roadway and bridge crossings and scour protections, nature trails, benches, educational facilities such as informational signs and kiosks, and utility lines;
- l. Granting use of the land to any third party for off-road vehicle use is prohibited;
- m. Notwithstanding the initial recording of the conservation easement that depicts the general location of the preserved washes and adjacent upland buffer habitat; the actual easement locations will be defined and created from time to time by the mapping process during the various development phases. The fee title holder of the property and all segments thereof will be a single entity.
- n. Paving or otherwise covering of the Preserve with concrete, asphalt, or any other impervious paving material is prohibited except for roadways, trails and bridge crossings and scour protections.
- o. Granting surface entry for the exploration or extraction of minerals without approval by the Corps is prohibited;
- p. Any and all other uses that may adversely affect the purposes of the Conservation Values of the Coyote Springs Conservation Area is prohibited;
- q. No change in the hydrology of the site shall be permitted except as described in the Mitigation Plan to satisfy success criteria or without prior written approval by the Corps.

Table 8b
Drainage and Maintenance Easement Restrictions Concerning the Restored Desert Dry Wash Habitat and Adjacent Upland Buffer Habitat Located within the Coyote Springs Development Area, Lincoln County, Nevada

- a. Planting, landscaping, plowing, grading with native top soil replacement, or cultivating within the restored desert dry wash or adjacent upland buffer habitat areas (restored desert dry wash habitat and adjacent upland buffer habitat) or any portion of such area shall not be done or permitted except for the purpose of enhancing the restored WOUS. Landscape planting can be accomplished within the upland buffer habitat for restored desert dry wash habitat for recreational activities such as golf course or landscaped open space areas using native plant species obtained within the Coyote Springs area (e.g., at the Desert National Wildlife Refuge or in the Coyote Springs Project Development Area) as described in the Plan. Planting non-native vegetation for landscaping purposes is also allowable as long as the plants are not invasive or noxious species. The irrigation of these plantings can be done in a manner that does not adversely affect the hydrology of the restored desert dry wash habitat;
- b. Planting, introducing, or dispersing non-native invasive or noxious plant species or animal species within the restored desert dry wash or adjacent upland buffer habitat areas is prohibited.
- c. Debris shall not be stored or placed (whether temporarily or permanently) within the restored desert dry wash or adjacent upland buffer habitat areas any portion of such area, except for authorized construction activities;
- d. Discharge of any dredged or fill material shall not be done or permitted within the waters of the United States within the restored desert dry wash or adjacent upland buffer habitat areas or any portion of such area except as consistent with the terms and conditions of the Corps permit for the Coyote Springs Development Project;
- e. Discharge, dumping, disposal, storage, or placement of any soil, ashes, trash, refuse, rubbish, grass clippings, cuttings, biosolids, or other waste materials shall not be done or permitted within the restored desert dry wash or adjacent upland buffer habitat areas or any portion of such area except as consistent with the terms and conditions of the Corps permit for the Coyote Springs Development Project;
- f. Excavating, dredging, or removing loam, gravel, soil, rock, sand, or other material is prohibited within the restored desert dry wash or adjacent upland buffer habitat areas without prior written approval by the Corps except as described in the Mitigation Plan or for recreational activities within the adjacent upland buffer areas such as golf course or landscaped open space lands ;
- g. Leveling or grading or otherwise altering the general topography of the restored WOUS within the restored desert dry wash or adjacent upland buffer habitat areas or any portion of such area is prohibited without prior written approval by the Corps except as described in the Mitigation Plan or for clearing debris or repair of hardened stream bed and bank structures, or roadway crossing structures,.
- h. Pesticides, herbicides, rodenticides, or other chemicals shall not be used within the restored desert dry wash or adjacent upland buffer habitat areas without prior written approval by the Corps except as described in the Mitigation Plan, CHAMP for Golf Course facilities within the upland buffer, or.
- i. Destruction or removal of any native vegetation that exists on the restored desert dry wash or adjacent upland buffer habitat areas restored WOUS shall not be done or permitted except as provided in the Mitigation Plan or with prior written approval by the Corps.
- j. No motorized vehicles shall be ridden, brought, used or permitted on any portion of the restored WOUS portion of the restored desert dry wash or adjacent upland buffer habitat areas without prior written approval by the Corps, except as provided for in the Mitigation Plan, or clearing debris or repair of hardened stream bed and bank structures, or roadway crossing structures.
- k. Roads, equipment storage, buildings, billboards, signs, or other structures or activities within the restored desert dry wash or adjacent upland buffer habitat areas shall not be permitted except for pedestrian/bicycle trails, roadway and bridge crossings and scour protections, nature trails, benches, educational facilities such as informational signs and kiosks, and utility lines;
- l. Granting use of the land to any third party for off-road vehicle use is prohibited;
- m. Notwithstanding the initial recording of the Drainage and Maintenance Easement restrictions that depicts the general location of the restored washes and adjacent upland buffer habitat, the actual locations of the restored desert dry wash and adjacent upland buffer habitat areas will be defined and created from time to

2.0 Goal and Objectives of Mitigation

- time by the mapping process during the various development phases at the time construction of the restored WOUS is completed.
- n. Paving or otherwise covering of restored desert dry wash or adjacent upland buffer habitat areas with concrete, asphalt, or any other impervious paving material is prohibited except for roadways, trails and bridge crossings and scour protections.
 - o. Granting surface entry for the exploration or extraction of minerals without approval by the Corps is prohibited;
 - p. Any and all other uses that may adversely affect the purposes of the Conservation Values of restored desert dry wash or adjacent upland buffer habitat areas is prohibited;
 - q. No change in the hydrology of the site shall be permitted except as described in the Mitigation Plan to satisfy success criteria or without prior written approval by the Corps.

3.0 MITIGATION IMPLEMENTATION PLAN

This section presents the Mitigation Implementation Plan for preserving and restoring desert dry wash habitat and upland buffer habitat. This Implementation Plan will be overseen by a qualified biologist under the direction of the Project Wetland Scientist and the CSI Restored Habitat Manager, at least one of whom, or a qualified replacement, shall be onsite during construction activities. The CSI Restored Habitat Manager will have stop-work authority.

Figures 3 and 4 show areas where preservation and restoration are proposed to occur under the Preferred Project Alternative and Alternative 1. Section 3.1 describes the timing sequence for habitat restoration activities; Section 3.2 presents the rationale for expecting implementation success and Section 3.3 identifies state and federal regulatory agency authorizations that are needed before implementation of the Mitigation Plan can proceed. Subsequent sections address desert dry wash restoration methods (3.4), planting (3.5), irrigation (3.6), funding (3.7), responsible parties (3.8), and schedule (3.9).

3.1 Implementation Timing

Implementation of the Mitigation Plan will commence upon initiation of Coyote Springs Development Project activities within waters of the United States. Given that the Coyote Springs Development Project is to be constructed in four phases over more than 20 years, mitigation will be also be implemented in phases (see Table 1). Mitigation implementation for Phase 1 (mixed use residential, commercial and public facilities) and Phase 4 (utility infrastructure) will begin in Year 2 of development; mitigation implementation for the mixed use residential, commercial and public facilities to be constructed in Phases 2a, 2b, and 3 will commence in Years 8, 14, and 16 respectively. Habitat restoration will be initiated and completed within one (1) year of fill impacts to WOUS within each phase of development.

3.2 Rationale for Expecting Implementation Success

Implementation of this Plan is designed to result in the restoration of soil, hydrology, and vegetation conditions similar to those that previously existed in the desert dry wash habitat to be filled. We believe the technical likelihood that these habitats can be restored is high, as detailed in the following sections.

3.2.1 Landscape Position

Soil will be excavated to restore desert dry wash habitat. The restored habitats will be in areas where these habitats historically occurred before sediment from natural fluvial processes filled them in. The resulting restored desert dry wash habitats will have depressional depths and side slopes similar to those of the desert dry wash habitats to be filled by the Coyote Springs Development Project.

3.2.2 Soils

Removing the natural sediment that has accumulated over time in the areas where desert dry wash habitats will be restored will re-expose the original soil materials.

3.2.3 Hydrology

Removing the fill will result in restoring a seasonal flow regime that was historically present.

3.2.4 Vegetation

Preserved and restored desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat will be treated to remove invasive (except naturalized grass species) and noxious non-native plant species and planted with native plant stock or seed from the Coyote Springs area. CSI has personnel licensed to collect both native plants and seeds of native plants within lands owned by CSI (see Appendix 2 and Section 3.5). Non-native species used as landscape screen or borders can be planted along trails and roadways within the Preserve. On the basis of similar revegetation efforts conducted by HBG, it is anticipated that seeding or planting with native species will be successful because:

1. The soils to be exposed by removal of accumulated sediment in all likelihood contain an existing seed bank of native species.
2. The preserved and restored habitats and upland buffer habitat for preserved desert dry wash habitat are located within the seed dispersal range of adjacent populations of native species.
3. Planting and seeding with native vegetation local to the area can be accomplished using proven vegetation management techniques.

Native Plants

For purposes of this Plan, native plants are defined as those plants believed by the scientific community to have been present in Nevada prior to European settlement. Taxonomic manuals can be a reference for determining if a plant is native or non-native. Section 3.5 provides a partial listing (but not inclusive) of native plants found at the Coyote Springs Project Development Area. The Project Wetland Scientist and later, the Conservation Easement Manager, CSI Restored Habitat Manager and CSCCA Restored Habitat Manager may consult with local botanists or the local chapter of the Nevada Native Plant Society (<http://heritage.nv.gov/nnps.htm>) to determine if a plant should be considered native.

Non-Native Plants

Given the above definition of plants considered to be native, non-native plants can be construed to be plants that are not regionally native (native to southern Lincoln County) and/or plants that are not native to Nevada or the United States.

Invasive Plants

Plants are considered invasive if they have been introduced into an environment where they did not evolve. As a result, they may have no natural enemies or other constraints to limit their reproduction and spread (Westbrooks, 1998, cited by BLM). Some invasive and noxious plants can produce significant changes to vegetation, composition, structure, or ecosystem function (Cronk and Fuller, 1995, cited by BLM).

Noxious Weeds

Nevada Revised Statutes (NRS) 555.005 defines noxious weeds as “any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate.” However, NRS 555.130 states that, “The State Quarantine Officer may declare by regulation the weeds of the state that are noxious weeds, but a weed must not be designated as noxious which is already introduced and established in the State to such an extent as to make its control or eradication

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impracticable in the judgment of the State Quarantine Officer.” Invasive plants are listed as noxious weeds in the Nevada Revised Statutes, but not all noxious weeds are invasive. The Project Wetland Scientist, Conservation Easement Manager, CSI Restored Habitat Manager and or CSCCA Restored Habitat Manager may refer to the species found on the Nevada lists to assist them in determining if a plant is a noxious weed. The list can be found at http://agri.nv.gov/nwac/PLANT_No WeedList.htm. Noxious weeds are discussed further in Appendix 3, the Weed Management Plan.

3.2.5 Protective Upland Buffer Habitat

To provide further assurance that the functional integrity of the preserved desert dry wash habitats is maintained, protective upland buffer habitat will be established around each preserved habitat. Prior to determining the appropriate buffer width, HBG consulted *Corridors and Vegetated Buffer Zones: A Preliminary Assessment and Study Design* (Fischer, et al. 1999).

The primary purpose of upland buffer habitat is to provide water quality protection (in addition to that provided within the Project Development Area) by filtering and buffering non point source pollution, which would mainly consist of sediment from exposed soil surfaces in the watershed adjacent to desert dry wash habitats to be preserved in accordance with this Mitigation Plan. The upland buffers will be 100 feet wide on each side of the Pahrnagat Wash Incised Channel, and a minimum of 30 feet on each side of all preserved drainages. Buffer locations will be established from the edge of the top of bank of preserved desert dry wash habitat and extend outward toward adjacent developed areas within the Coyote Springs Project Development Area. These upland buffer widths were determined to be sufficient to absorb nutrients and trap sediment adjacent to the desert dry wash. These buffers will also provide a vegetated corridor that will adequately screen wildlife movement from urban activity.

The upland buffer areas will extend around each preserved habitat. Buffer locations will be established from the edge of the top of bank of preserved desert dry wash habitat and extend outward toward adjacent developed areas within the Coyote Springs Project Development Area. The upland buffer boundary will be designated by installing rust- and wind-proof durable aluminum signs at 300-foot intervals along the perimeter of the buffer habitat. The signs will be a minimum of 4” x 6” and will be worded as follows:

Protected Habitat Area

The Coyote Springs Preserve has been set aside to protect sensitive biological resources in the watershed.

Dumping, vehicular access, removal of vegetation, and other similar activities are strictly prohibited.

3.3 Federal and State Regulatory Authorizations

Implementation of this Mitigation Plan will begin upon authorization from the Corps (Section 404 of the Clean Water Act) and the Nevada Department of Environmental Protection (State 401 Water Quality Certification).

3.4 Habitat Mitigation Construction Approach and Sequence

Before site-specific fill removal activities begin, the Project Wetland Scientist will conduct biological baseline monitoring in “reference” habitats to be identified as described in Section 5.2 in order to establish background data for use in evaluating whether success criteria (Section 5.0) are attained. Baseline monitoring will include evaluation of soil, hydrology, and vegetation conditions and assessment of habitat functions and associated values. The Project Wetland Scientist will also conduct environmental sensitivity training regarding protected habitats and sensitive species for all individuals who will work on the mitigation project.

Following the baseline monitoring and worker training, all vehicle access routes, equipment staging areas, and excavated material stockpile areas will be identified and clearly marked in the field and on detailed restoration plans by the Project Wetland Scientist working in conjunction with the CSI Restored Habitat Manager.

Figures 3 and 4 are conceptual plans for the location of preserved and restored desert dry wash habitats and upland buffer habitat for preserved desert dry wash habitat under either the Preferred Project Alternative or Alternative 1. For each project construction phase where work will occur in a WOUS, a detailed restoration plan will be provided to the Corps for approval 180 days before mitigation construction grading activities commence (see Table 1). The sequence of construction activities for each habitat type is summarized below:

Preserved Desert Dry Wash Habitats

The desert dry wash habitats will be preserved at the locations shown by Figures 3 and 4 for either the Preferred Project Alternative or Alternative 1. An upland buffer habitat will be established around each side of the preserved desert dry wash habitat as described in Section 3.2.5 (100 feet wide on each side of the Pahranaagat Wash Incised Channel and 30 feet wide on each side of all other preserved drainages) and as shown by Figures 3 and 4 for the Preferred Project Alternative or Alternative 1. Buffer locations will be established from the edge of the top of bank of preserved and restored desert dry wash habitat and extend outward toward adjacent developed areas within the Coyote Springs Project Development Area. The total area of the upland buffer habitat is 334.1 acres for the Preferred Project Alternative and 344.8 acres for Alternative 1.

Where practicable, remove non-native invasive and noxious plant species (except naturalized grassland species) from the desert dry wash habitat and the adjacent upland buffer habitat using one or more of the vegetation management techniques described in Section 4.2.6. Remove any accumulated manmade trash or debris from the area being preserved and the adjacent upland buffer habitat.

Restored Desert Dry Wash Habitat

1. Desert dry wash habitat will to be restored at the locations shown on Figures 3 and 4 for the Preferred Project Alternative and Alternative 1.
2. Where practicable, remove non-native invasive and noxious plant species (except

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naturalized species) from the area to be restored using one or more of the vegetation management techniques described in Section 4.2.6.

3. Any accumulated manmade trash or debris will be removed from the area being restored.
4. Prior to mass grading, locations where restored desert dry wash habitat construction will occur will first be salvaged for macrophytic plant material (cactus, succulents and shrubs) and then mowed close to the ground. The area will then be graded using earth movers to remove the upper 6 inches of topsoil material. This material will be hauled to and stockpiled on an upland site (non WOUS) for use as inoculum (contains native plant seed) once the mass grading is complete. The inoculum will be applied during smooth grading of the site.
5. Mass grading will be accomplished using tractors outfitted with front-end loaders and rear scrapers and/or earth movers to form bottom microtopography and the side slopes of the desert dry wash habitats being restored. Figure 5 is a typical cross section showing grading details for restored desert dry washes. Soil material excavated from the restored desert dry wash construction areas will be hauled to upland locations (non WOUS) within the Coyote Springs Project Development Area for use as fill.
6. Finish grading will involve grading along the edges of areas to tie the adjacent upland buffer habitat with the top of the bank of the desert dry wash habitat. Grading equipment will consist of rubber-tire road graders with blades adjusted using a laser leveler and rubber-tire tractors with front-end loaders with rear scrapers. During finish grading, previously stockpiled topsoil material will be shredded to create a smooth base material, then hauled to the restored desert dry wash habitat construction area and applied to the graded areas to a depth of 4 to 6 inches. This seed-bearing material (inoculum) will be applied to facilitate native plant growth. Grading activities will be monitored by a grade checker using a laser device to ensure that the restored desert dry wash habitat has similar side slope and bottom topography as representative preserved desert dry wash habitats. Graded channels will typically have a rate of downslope fall of approximately 2 percent. The grade checker will be under the direction of a qualified biologist under the direction of the Project Wetland Scientist.
7. Upon completion of construction, any fill material greater than a de minimus amount that has been placed inadvertently within the upland buffer habitat will be removed and access routes will be restored to original grade by filling in ruts with topsoil excavated from the site and disking the route to loosen surface soils that were compacted by vehicular traffic. Signs will be installed along the perimeter of the upland buffer habitat as described in Section 3.2.5. Pedestrian access trails, golf cart paths, and benches will be constructed where needed within the upland buffer habitat for preserved desert dry wash habitat and at crossing points through preserved and restored desert dry wash habitat within the Coyote Springs Preserve. Figure 6 provides an illustration of this type of construction. As-built plan survey activities and reporting will also be conducted at completion of work (see Section 3.4.5).

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- The activities described above will be monitored by a qualified biologist under the direction of the Project Wetland Scientist to assure that site restoration is complete (See Section 3.4.3, below).

Table 9 lists estimated quantities of cut and fill material resulting from this project.

Table 9. Estimated Quantities of Cut and Fill for Mitigation Implementation

Project Component	Type of Activity	Estimated Cut (cubic yards)	Estimated Fill (cubic yards)
Upgrade Access Points.	Add aggregate to roadway transition areas		15,750
Restored Desert Dry Wash Habitats	Obtain Inoculum	54,000	
Restored Desert Dry Wash Habitats	Mass Grading	6,440,000	
Restored Desert Dry Wash Habitats	Smooth Grading		29,075
Restore Access Routes	Fill in ruts and disk to loosen ground surface		10,400
TOTALS		6,494,000	55,225

3.4.1 Worker Environmental Sensitivity Training

Prior to mobilization for each habitat mitigation area restoration, CSI's Environmental Monitor under the direction of the Project Wetland Scientist will provide environmental training to all Coyote Springs Development, contractor, and subcontractor staff who will be onsite to ensure that the measures in the Mitigation Plan designed to protect waters of the United States are adhered to during project construction. No Coyote Springs Development, contractor, or subcontractor personnel, including the project manager, project engineer, Restored Habitat Manager, grade checker, vehicle and equipment operators, and laborers, will be allowed to work onsite unless they have received "site-specific" training. The training will include an onsite tour of project landscape features and discussion of project objectives; project map orientation; protective measures for waters of the United States and sensitive species; sediment and erosion control measures; and actions to take should an inadvertent impact to waters of the United States or sensitive species occur.

3.4.2 Construction Site Access

Access to an area during restoration work will be planned so as not to adversely affect desert dry wash habitat to be preserved. All vehicle access routes will be marked. Where necessary, access routes will be temporarily upgraded with coarse aggregate to prevent soil displacement that could lead to future sedimentation and erosion problems. Where desert dry wash habitat to be preserved cannot be avoided, it will be crossed using steel plates or wood mats or similar bridging materials to minimize impacts to habitat relief. The temporary over-crossings will be removed after access needs end, and any impacts to desert dry wash habitat relief will be restored.

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Unimpacted desert dry wash habitat to be preserved immediately adjacent to restoration areas will be fenced using orange construction fencing or brightly colored rope to prevent damage from construction equipment. Fencing or roped off areas will be set back 25 feet from preserved desert dry wash habitat except at roadway over crossings and scour protections and where desert dry wash habitat restoration is occurring immediately adjacent to preserved desert dry wash habitat. Measures to prevent inadvertent deposition of soil excavated from desert dry wash restoration sites or graded to create upland buffer habitat improvements, including bike and pedestrian trails, include placement of sterile certified weed-free straw wattles or rolls, silt fencing, or other suitable barrier materials along construction limit boundaries.

If more than a de minimus amount of soil or sediment becomes deposited in a preserved desert dry wash habitat, restored desert dry wash habitat, or established upland buffer habitat, or in the event of accidental excavation or motor vehicle access through one of these habitats, all work within 50 feet will cease immediately and the CSI Restored Habitat Manager will immediately notify the Project Wetland Scientist in order to determine what corrective action needs to be taken. Corrective actions likely would involve removal of the soil or repair of the damaged habitat using rubber-tired vehicles. Such measures would be conducted under the supervision of a qualified biologist under the direction of the Project Wetland Scientist in association with the CSI Restored Habitat Manager. The land surface would be restored to original grade and erosion control measures implemented as appropriate. If more than a de minimus amount of fill is placed within waters of the United States present within preserved desert dry wash habitat, the Corps will be contacted by the Project Wetland Scientist to determine what corrective action is appropriate.

Upon completion of construction, access routes through areas not being developed within the development area will be restored to original grade by filling in ruts and disking the route to loosen any compacted surface soils. Appropriate erosion control measures will be employed, including reseeded exposed soil with native vegetation. If erosion subsequently occurs, the area affected will be recontoured and protected from further erosion until it is revegetated.

3.4.3 Restoration Monitoring

A qualified biologist working under the direction of the Project Wetland Scientist, working in close coordination with the CSI Restored Habitat Manager, will monitor all preserved and desert dry wash habitat and adjacent upland buffer habitat mitigation activity to ensure that the Mitigation Plan is followed and activities comply with applicable regulatory authorizations. Corrective actions will be taken for any activities found not to be in compliance, but only after obtaining approval from the Project Wetland Scientist and the appropriate agency, if required. At a minimum, a qualified biologist under the direction of the Project Wetland Scientist will monitor restoration activities on a weekly basis, and will be on call during the normal work week, in the event the CSI Restored Habitat Manager requires his/her advice.

3.4.4 Sediment and Erosion Control

Appropriate erosion control measures will be implemented to prevent sedimentation during habitat preservation or restoration activities. A Stormwater Pollution Prevention Plan (SWPPP) has been prepared and approved by the Nevada Department of Environmental Protection. A copy of the approved SWPPP is available for agency inspection or contractor/subcontractor

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review at the onsite CSI Restored Habitat Manager's office. Contractors and subcontractors will be given a copy of the SWPPP and required to follow its Best Management Practices (BMPs) to prevent sedimentation or erosion in existing desert dry wash habitat to be preserved and/or newly restored desert dry wash habitat. Sterile (certified weed-free) straw will be placed on bare soil areas following construction. The CSI Restored Habitat Manager, in coordination with a qualified biologist under the direction of the Project Wetland Scientist, may also use certified weed-free straw or straw rolls, silt fences, or other suitable barrier material to prevent sediments from entering habitats adjacent to areas being graded.

If soil or sediment becomes deposited in a preserved or restored desert dry wash habitat or in the event of accidental excavation or motor vehicle access through a preserved or restored desert dry wash habitat all work within 50 feet will cease immediately. If the activity was in a preserved desert dry wash habitat (WOUS), the CSI Restored Habitat Manager will immediately notify the Corps to determine what corrective action needs to be taken. Corrective actions likely would involve removal of the soil/sediment or repair of the damaged habitat using rubber-tired vehicles. Such measures would be conducted under the supervision of a qualified biologist under the direction of the Project Wetland Scientist in association with the CSI Restored Habitat Manager. The land surface would be restored to original grade and erosion control measures implemented as appropriate. If the activity is in a desert dry wash where restoration is ongoing, the CSI Restored Habitat Manager may proceed with corrective action as described above without notifying the Corps.

3.4.5 Documentation of Completed Restoration

Within 180 days following completion of mitigation activities within each development phase of the Coyote Springs Development Project, the Project Wetland Scientist will prepare a report documenting restoration activities and results and submit it to the Corps. The report will include a copy of the as-built plans and a description and photodocumentation of mitigation activities at each preserved and restored desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat. The locations of the permanent photodocumentation points, to be established at the beginning of site restoration activities using a GPS unit with sub-meter accuracy, will be identified on a map.

3.5 Planting

Natural revegetation within restored desert dry wash habitat is expected to be successful because the soils contain an existing seed bank of native plant species. In addition, the restoration sites occur within the seed dispersal range of adjacent populations of native plants.

Where planting is to occur as part of the habitat restoration, any native plant material stock or topsoil inoculum material will be taken from the Coyote Springs Project Development Area to ensure the genetic integrity of the plants. CSI has personnel licensed to collect both plants and seeds of native plants within lands owned by CSI. Copies of the licenses are presented in Appendix 2. A number of salvaged plants will be taken and planted within the upland buffer areas that will surround the preserved desert dry wash habitat. The following is a representative (but not inclusive) list of plant species native to CSI lands that would be used to supplement vegetation in the preserved and restored desert dry wash habitats and upland buffer habitat for preserved desert dry wash habitat:

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Plants for preserved and restored dry wash habitat (Dominant Species):

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acacia gregii</i>	Cat Claw Acacia	<i>Prosopis pubescens</i>	Screwbean Mesquite
<i>Chilopsis linearis</i>	Desert Willow	<i>Salvia dorrii</i>	Desert Sage
<i>Ambrosia dumosa</i>	White Bursage	<i>Larrea tridentata</i>	Creosote Bush
<i>Baccharis sarothroides</i>	Desert Broom	<i>Ferocactus</i> sp.	Barrel Cactus
<i>Baileya multiradiata</i>	Desert Marigold	<i>Oreocereus celsianus</i>	Old Man Cactus
<i>Gutierrezia sarothrae</i>	Snakeweed	<i>Elymus elymoides</i>	Squirreltail
<i>Lyceum andersonii</i>	Desert Wolfberry	<i>Oryzopsis hymenoides</i>	Indian Ricegrass
<i>Encelia farinosa</i>	Brittlebush	<i>Pleuraphis rigida</i>	Big Gallet
<i>Ephedra nevadensis</i>	Mormon Tea		

Plants for preserved and dry wash dry wash habitat (Associated Species):

Scientific Name	Common Name	Scientific Name	Common Name
<i>Artemisia filifolia</i>	Sand Sage	<i>Opuntia</i> sp.	Various Beavertail Cactus
<i>Atriplex canescens</i>	Four-Wing Saltbush	<i>Populus fremontii</i>	Fremont Cottonwood
<i>Senna nemophila</i>	Green Cassia	<i>Fraxinus velutina</i>	Arizona Ash
<i>Encelia farinosa</i>	Brittlebush	<i>Sphaeralcea ambigua</i>	Globe Mallow
<i>Ericameria larcifolia</i>	Turpentine Bush	<i>Yucca brevifolia</i>	Joshua Tree
<i>Eriogonum</i> sp.	Various Buckwheats	<i>Opuntia</i> sp.	Various Cholla Cactus
<i>Fallugia paradoxa</i>	Apache Plume	<i>Echinocereus</i> sp.	Various Barrel Cactus

3.6 Irrigation

Native plants anticipated to occur voluntarily or, if necessary, planted as a maintenance action in the upland buffer habitat are adapted to seasonal moisture conditions. Irrigation is believed, therefore, to be unnecessary since the goal of the Mitigation Plan is to restore desert dry wash habitat where the primary source of water is direct precipitation and seasonal runoff from the upslope watershed. Neither of the mitigation habitats – desert dry wash or upland buffer – will receive untreated wastewater; however, these habitats will receive stormwater runoff from adjacent development that has received prior treatment using best management practices, including grass-lined swales and settling basins. If necessary to achieve successful restoration, these areas will also be irrigated using wastewater effluent (tertiary level of treatment) or water from a groundwater source.

3.7 Funding

CSI will fund all the costs associated with mitigation.

3.8 Responsible Parties

Successful mitigation implementation is the responsibility of the following:

Owner:

Coyote Springs Investment LLC
6600 North Wingfield Springs Parkway
Sparks, Nevada 89436
775.626.6000

Contact:

Mr. Terry Reynolds
Coyote Springs Investment LLC
6600 North Wingfield Springs Parkway
Sparks, Nevada 89436
775.626.6000

3.9 Project Schedule

The following is an activity schedule for implementing the Mitigation Plan applicable to each phase of development:

Table 10. Restoration and Mitigation Plan Implementation Schedule for Development Phases 1, 2, 3 and 4.

Activity	Timing
Conduct sensitive habitat training for project workers.	Prior to site mobilization and subsequent restoration activities.
Initiate site restoration activities.	Early Spring – Summer.
Prepare post-restoration conditions report.	Within 180 days following completion of Mitigation Plan implementation.
If necessary, conduct planting of native species within unsuccessful preserved and restored habitat restoration areas.	To be determined.

4.0 MANAGEMENT PLAN

This section presents the Mitigation Management Plan (Management Plan), which details site inspection, and maintenance activities for Years 1 through 5 following completion of desert dry wash habitat and upland buffer habitat preservation and mitigation activities within each phase of the Coyote Springs Development Project.

4.1 Mitigation Site Management Plan

The purpose of the Mitigation Management Plan is to ensure that the preserved and restored desert dry wash habitats and upland buffer habitat for preserved desert dry wash habitat continue to function according to the Mitigation Plan goal and objectives. The Mitigation Management Plan will be implemented under the guidance of the Project Wetland Scientist. Activities will include scheduled management inspections at the mitigation area and, if necessary, maintenance. The Project Wetland Scientist will determine if maintenance is needed to satisfy the Mitigation Plan goal and objectives. If problems are found during inspections, appropriate maintenance will be initiated to correct the problem(s). Unimpacted waters of the United States shall be avoided when conducting maintenance activities wherever practicable. Any desert dry wash habitat or upland buffer habitat inadvertently damaged shall be restored under the supervision of a qualified biologist under the direction of the Project Wetland Scientist. Inspection activities and appropriate corrective actions, if necessary, are described in Section 4.2.

Documentation of management inspections and maintenance will be required. A record of management inspection and maintenance activities by date will be submitted annually to the Corps. All annual reports will include information on the frequency and dates of management inspections, what was observed, a summary of maintenance repairs, and any recommended follow-up maintenance actions that may be required. An example *Maintenance Monitoring Field Form* is included behind the Forms tab.. Any problems discovered will be photo-documented during each monitoring inspection the problem is identified. In addition, annual site photographs will be taken during the April quarterly management inspection period. The photos will be taken from permanent photo points and directions of view.

4.2 Inspection and Maintenance Activities

This section describes inspection and maintenance activities to be performed regularly to ensure mitigation success (Sections 4.2.1 through 4.2.8), reporting and record keeping (Section 4.2.9), and funding (Section 4.2.10). Responsible parties are identified in Section 4.2.11, and the inspection and maintenance schedule is presented in Section 4.2.12. Examples of appropriate corrective actions to be implemented if necessary are described for each inspection/ maintenance task.

4.2.1 Vandalism

Quarterly maintenance visits will include inspection for any evidence of vandalism. The sites will also be monitored for signs of excessive or uncontrolled human disturbance such as off-road vehicle use, presence of brush and litter, and human foot traffic. Disturbance observations will be recorded along with remedial action taken (e.g., fill tire ruts, cover bare soil with weed-free sterile straw, seed with appropriate local native vegetation and/or barrier placement within access route).

4.2.2 Trash and Debris

The site will be inspected quarterly for trash and debris; any accumulated trash and debris will be removed and disposed of at an appropriate county-approved disposal location.

4.2.3 Vehicle Barriers and Signage

The perimeter of the upland buffer areas surrounding the preserved desert dry wash habitat will be blocked at roadway access points to prevent unauthorized off-road vehicle access to prevent off-road vehicle access. Similarly roadway access points will be blocked adjacent to restored desert dry wash habitat. Earth berms, bollards, gates, or v-ditches will be placed between buffer areas and residential and commercial areas to prevent unauthorized off-road vehicle access. Earth berms, bollards, gates or v-ditches will be placed along buffer areas where other land use activities occur such as golf course facilities or trails. The type of structure may vary to be architecturally compatible with the adjacent development. If gates are used they will be mounted on metal posts. Gates will remain locked at all times, except as authorized by CSI, easement holders, the Project Wetland Scientist or Conservation Easement Manager, or the perpetual conservation easement Grantee (for preserved WOUS and protective upland buffer habitat) or CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat). Vehicle barriers will be inspected quarterly to ensure it is maintained in good condition. This inspection shall involve checking to see that denial of passage by vehicles is maintained.

Signs

At the beginning of the 5-year management period, signs will be placed 5 feet to the right of each gate and at approximate 300-foot intervals along the outer perimeter of the Preserve area to include signs being placed at all potential vehicle access points. Wording on the signs, subject to Corps approval, will indicate presence of sensitive habitat, and that dumping, vehicular access, removal of vegetation, and other similar activities are strictly prohibited (see Section 3.2.5, above). Signs will be replaced if they are found during the quarterly inspections to be damaged, illegible, or the wording needs to be revised.

4.2.4 Prohibited Activities

The site will be inspected quarterly for encroachment or activities that would reduce the integrity of either preserved or restored desert dry wash habitat or habitat for preserved desert dry wash habitat. If necessary, appropriate actions will be taken with the assistance of local, state, or federal agencies to deal with encroachment within mitigation areas. Certain activities will be prohibited; they are listed in Table 8 at the end of Section 2.0 and will be incorporated in the Conservation Easement (for preserved WOUS and protective upland buffer habitat) or Drainage and Maintenance Easement (for restored WOUS and protective buffer habitat).

4.2.5 Sedimentation and Erosion Control

The mitigation site will be inspected quarterly for signs of erosion and the potential for resulting transport of sediment within the preserved and restored desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat. If it is determined that erosion is occurring, measures will be taken to divert or slow runoff before implementing remedial actions. These measures will include placement of certified weed-free sterile straw wattles or rolls, silt fences, or other suitable barrier material to prevent sediments from entering adjacent preserved and restored desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat.

Any soil that becomes deposited in a WOUS during an erosion event will be removed using rubber-tired vehicles, and the land surface will be restored to original grade. Appropriate erosion control actions will also be taken, such as stabilizing the bare ground area with weed-free sterile straw or other appropriate measures, as necessary. Work activities of this nature must be approved by a qualified biological monitor.

4.2.6 Vegetation Management

Both native and non-native plant species occur within the preserved desert dry wash and buffer habitat areas and the desert dry wash and buffer habitat areas to be restored. The Coyote Springs Project Area is relatively free of large numbers of noxious or invasive species. With the exception of red brome (*Bromus rubens*) and Mediterranean grass (*Schismus barbatus*), whose populations in Lincoln County are so well established as to be considered ubiquitous, few invasive non-native species are found onsite. Eleven plant species have been identified as species of concern for weed control in the vicinity of the CSI Project Area. These species were identified using the Nevada Department of Agriculture Noxious Weed List and interviews with noxious and invasive species management professionals working in southern Nevada. Ground surveys of the area have confirmed the presence of six (6) of the species within the Project Area. Current survey data reports the presence of tamarisk (*Tamarix ramosissima*), Sahara mustard (*Brassica tournefortii*), African malcomia (*Malcomia africana*), red brome (*Bromus rubens*), and Mediterranean grass (*Schismus arabicus* and *S. barbatus*) considered to be “species of concern.”

If not properly managed, invasive and noxious non-native plant species can out-compete native plant species. Appendix 3 provides a long-term Weed Management Plan for detection, control, and monitoring on noxious and invasive species of concern for the Coyote Springs Project Area. Work activities of this nature must be approved by a qualified biological monitor.

Vegetation Management Objective

The vegetation management objective of this plan is to enable a competitive advantage of native species over non-native invasive and noxious plant species.

Allowable Methods

To meet the objective of this Mitigation Plan, allowable methods shall include hand removal, use of small handheld powered equipment, mechanized grading and reapplication of native top soil, seeding, and/or controlled herbicide application in order to control invasive and noxious plant species.

Mechanical Removal

Hand removal or use of small handheld equipment (such as a Weed Whip or Weed Wrench) should always be the preferred method of removing non-native plant species from the mitigation area. If hand removal methods are tried and found to be ineffective, or the problem is too widespread for hand removal to be practical, then chemical controls as described below can be implemented.

Controlled Herbicide Use

Application of herbicides will be accomplished in accordance with the Chemical Application Management Plan (CHAMP) for the Coyote Springs Project Area (see Appendix 4).

Inspection Schedule

The site will be inspected quarterly for signs of invasive and noxious plant growth that has the potential of gaining a competitive advantage over native species.

4.2.7 Altered Hydrology Patterns

Essential to long-term preservation of the preserved and restored desert dry wash and upland buffer habitat for preserved desert dry wash habitat is maintaining site hydrology conditions. Hydrologic features will be monitored quarterly and if existing or potential adverse effects are identified, appropriate and timely action will be taken. Currently the site receives surface water primarily from rainfall.

Protection from Adjacent Area Impacts

Adverse Effects of Runoff

Although not anticipated to be problematic, if runoff from adjacent areas becomes a problem in terms of sedimentation, one or more sediment control devices will be used. These include earth or rock check dams, weed-free sterile straw wattles or rolls, silt fences, continuous earth berms, concrete k-rails, sand bags, and sediment barriers (semi-pervious). If erosion becomes a problem, erosion control blankets and mats and/or weed-free sterile straw wattles or rolls will be used. Work activities of this nature must be approved by a qualified biological monitor.

Protection from Onsite Impacts

Placement of Underground Utilities

If necessary, installation or replacement of underground utilities within utility easements will be done in a manner that will not alter either lateral or vertical subsurface drainage characteristics. Soil surface (upper 12 inches) will be restored to original grade using the same native soil excavated from the utility line trench. Work activities of this nature must be approved by a qualified biological monitor.

Roadway, Trail and Bridge Construction

Leveling or grading or otherwise altering the general topography will be allowed for roadway crossings, nature trails, bike and pedestrian paths, and bridge crossings and scour protections if done in a manner that will minimize impacts to surface drainage characteristics. Soil surface (upper 12 inches) outside of roads and pathways will be restored to original grade using the same native soil excavated during construction. Work activities of this nature must be approved by a qualified biological monitor.

Restoration of Drainage Patterns

If existing onsite drainage becomes blocked or diverted, the land surface will be restored to its former grade. Appropriate erosion control actions will also be taken such as stabilizing resulting bare ground areas with weed-free sterile straw and placement within restored areas of weed-free sterile straw wattles or rolls, if necessary. Work activities of this nature must be approved by a qualified biological monitor.

4.2.8 Mosquito Abatement

The Grantee / Conservation Easement Manager (for preserved WOUS and protective upland buffer habitat) or CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat) will coordinate with staff representatives of the state or local Mosquito Control Program, as applicable, related to the maintenance of the mitigation area for mosquito abatement purposes. Management guidelines for this particular area will be developed in coordination with the General Assessment District and/or a qualified biological monitor. If absolutely necessary, mosquito larvicide such as *Bacillus thurengensis* or Altoside formulations will be utilized. Any pesticide/larvicide shall be applied by a licensed individual or contractor.

4.2.9 Record Keeping and Reporting

Documentation of all management/maintenance activities by either (1) the conservation easement holder (for preserved WOUS and protective upland buffer habitat), or (2) CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat) will be required. A record of maintenance activities by date will be submitted yearly to the Corps. All annual reports will include information on the frequency and dates of observations, site photographs, location of permanent photo points and direction of view, what was observed, maintenance activities, summary of repairs and any recommended follow-up maintenance actions that may be required.

4.2.10 Funding

The Permittee, CSI, will fund an endowment that will be used by the grantee for long-term management, maintenance inspections, and maintenance of the mitigation area.

4.2.11 Responsible Parties

Successful implementation of this Restoration and Mitigation Site Maintenance Plan is the responsibility of:

Owner:

Coyote Springs Investment LLC
 6600 North Wingfield Springs Parkway
 Sparks, Nevada 89436
 775.626.6000

Contact:

Mr. Terry Reynolds
 Coyote Springs Investment LLC
 6600 North Wingfield Springs Parkway
 Sparks, Nevada 89436
 775.626.6000

Table 11. CSI Responsibilities for Inspection and Maintenance Activities, Years 1 – 5

Inspection/Maintenance Activity Item	
1. Vandalism	6. Vegetation Management
2. Trash and Debris	7. Altered Hydrology Patterns
3. Vehicle Barriers and Signage	8. Mosquito Abatement
4. Prohibited Activities	9. Record Keeping and Reporting
5. Sedimentation and Erosion Control	10. Funding

4.2.12 Schedule

A schedule outlining the proposed frequency of monitoring and routine maintenance procedures for long-term management of the mitigation site is as follows:

Table 12. Inspection and Maintenance Schedule Years 1 – 5

Inspection/Maintenance Activity Item	Activity	Years 1 – 5
1. Vandalism	I & M *	Quarterly
2. Trash and Debris	I & M	Quarterly
3. Vehicle Barriers and Signage	I&M	Quarterly
4. Prohibited Activities	I & M	Quarterly
5. Sedimentation and Erosion Control Inspection	I & M	Quarterly
6. Vegetation Management	I & M	Quarterly Inspections; Annual Vegetation Sampling (March/April)
7. Inspections for Altered Hydrology Patterns	I & M	Quarterly
8. Mosquito Abatement	I&M	Quarterly
9. Record Keeping	Documentation	Quarterly
10. Reporting	Report Preparation	Annually
* Inspection and maintenance.		

5.0 MONITORING PLAN

This section presents the Restoration and Mitigation Monitoring Plan (Monitoring Plan) to be implemented annually in March/April for each of the preserved and restored desert dry wash habitats, and upland buffer habitat for preserved desert dry wash habitat within the Coyote Springs Project Development Area. Monitoring is required by the Corps to determine whether the preserved and restored habitats meet the success criteria described below. The Project Wetland Scientist will implement the Monitoring Plan to evaluate habitat development in terms of soil, hydrology, and vegetation conditions; determine the presence and geographic extent of the preserved and restored desert dry wash habitat meeting Corps Clean Water Act Section 404 criteria for waters of the United States; document the presence of desert dry wash / WOUS habitat functions and values; and ensure that appropriate habitat preservation measures are in place.

The Project Wetland Scientist will conduct a minimum of 5 years of site monitoring within each preserved and restored desert dry wash and upland buffer habitat for preserved desert dry wash habitat within the Coyote Springs Project Development Area to determine mitigation success as outlined in this Monitoring Plan and to recommend any actions necessary to achieve success. Final inspections of the mitigation areas will be conducted during the last year of scheduled monitoring (Year 5) for each phase to determine whether success has been achieved.

Section 5.1 presents the monitoring objective and Section 5.2 describes baseline monitoring. Sections 5.3 and 5.4 present success criteria and monitoring methods, respectively, for preserved dry wash habitats; Sections 5.5 and 5.6 provide that information for restored desert dry wash habitats; and Sections 5.7 and 5.8 provide that information for the upland buffer habitats. Sections 5.9 through 5.14 provide ancillary data analysis, reporting, and scheduling information.

5.1 Monitoring Objective

The objective of monitoring is to determine whether the success criteria defined below are being met and to identify actual and potential problems that may impact the success of restoration/mitigation efforts. This objective will be accomplished by collecting data to determine the level of success and the need for any improvements in the preservation / restoration mitigation effort.

5.2 Baseline Monitoring

Reference sites will be established within the Coyote Springs area (e.g., at the Desert National Wildlife Refuge or on the Coyote Springs Project Development Area) to provide data to assist in finalizing restoration implementation and to identify specific target native species that would be planted if necessary. A minimum of three undisturbed desert dry wash habitats and three undisturbed upland habitats will be established as reference habitats. The reference sites will be monitored prior to the implementation of the Mitigation Plan and during the 5-year monitoring period to develop data on hydrology, soils, and vegetation composition and the presence of aquatic habitat functions and associated values. These data will provide a basis of comparison between existing and restored desert dry wash and upland buffer habitats and thus be used to determine whether success criteria have been met.

PRESERVED DESERT DRY WASH HABITATS

5.3 Preserved Desert Dry Wash Habitat Mitigation Success Criteria

The entire lengths of WOUS consisting of dry wash habitat (23.6 acres) will be preserved within the 21,454-acre CSI project development area and all of the WOUS consisting of desert dry wash habitat (6.9 acres) will be preserved within the agreed-upon 7,548-acre leased lands. Preservation of these desert dry wash habitats, totaling 30.5 acres, will be deemed successful when the following criteria are satisfied.

5.3.1 Criterion for Preservation of Soil Conditions

The surface of the drainages in the preserved desert dry wash habitats will be free of non-native soil fill material (e.g., construction materials and debris) from the Coyote Springs Development Project.

5.3.2 Criterion for Preservation of Hydrology Conditions

The preserved desert dry wash habitats will allow for unimpeded flow during periodic seasonal precipitation and surface runoff from the upstream watershed.

5.3.3 Criterion for Preservation of Vegetation Conditions

Existing native vegetation conditions will be maintained, with non-native plant species making up less than 2 percent of the plant cover, except for non-native grasses which may comprise up to 25 percent of the plant cover.

5.3.4 Criterion for Preservation of Corps Jurisdictional WOUS

The preserved desert dry wash habitats will continue to meet the Corps criteria for waters of the United States, i.e., possess an ordinary high water mark.

5.3.5 Criterion for Preservation of Functions/Values

The habitat functions/values (see Section 2.2) existing in the preserved desert dry wash habitats will remain present.

5.3.6 Criteria for Long-Term Habitat Preservation of Desert Dry Wash Habitat

1. Fund the Long-Term Protection Plan described in Section 8.0 to ensure that preserved desert dry wash habitats within the Coyote Springs Preserve are managed and protected in perpetuity.
2. Establish the Coyote Springs Preserve subject in perpetuity to a recorded Conservation Easement over the preserved desert dry wash habitats as described in Section 2.4.5, Site Protection.

5.4 Methods for Evaluating Achievement of Mitigation Success Criteria for Preserved Desert Dry Wash Habitats

This section describes the methods to be used to collect data for determining whether the preserved desert dry wash mitigation success criteria are being met.

5.4.1 Soil and Hydrology Criteria for Preserved Desert Dry Wash Habitat

Preserved soil and hydrology conditions will be monitored by walking the entire length of each preserved desert dry wash habitat and documenting the presence of any non-native soil materials and whether any obstructions to desert dry wash flow are present. Observations will be recorded on the *Mitigation Monitoring Data Sheet for Assessing Desert Dry Wash Soil Surface and Hydrology Conditions* (see Forms). The location of any area that does not satisfy the soil or hydrology criteria will be memorialized using a Global Positioning System (GPS) unit or tape measure. These data will be digitally formatted and linked for use in ArcGIS, Microsoft Access, and ERDAS.

5.4.2 Vegetation Criteria for Preserved Desert Dry Wash Habitat

Vegetation conditions within the desert dry wash habitats will be monitored through the use of onsite surveys to determine the percent cover of non-native vegetation. The methods used are as follows:

A random sampling design will be used to sample vegetation to determine plant cover for each species found within each reference and preserved desert dry wash habitat. Methodology to determine plant cover will follow those described by Elzinga, *et al.* (undated). Vegetation will be sampled during March or April using 5-foot by 5-foot sampling quadrats arrayed at 300-foot intervals along each reference and preserved desert dry wash. The location of each sampling quadrat will be loaded into a GPS unit with real-time beacon correction (accuracy <50cm) and located in the field using the GPS unit during each monitoring period.

A *Mitigation Monitoring Data Sheet for Assessing Plant Species Cover* is provided behind the Forms tab. Photographs of each sampling quadrat will be taken and representative photographs of reference and preserved desert dry wash habitats will be taken during each monitoring period. Representative habitat photos will be taken from permanent photo points established during the first monitoring year. The location and direction of view of the representative habitat photo points will be provided with all monitoring reports. These data will be digitally formatted and linked for use in ArcGIS, Microsoft Access, and ERDAS. Color photocopies will be labeled to identify the location and dominant species present and included as an appendix in the Monitoring Report.

Additionally, a floristic survey will be conducted at the same time within each reference and preserved desert dry wash habitat and a list of species found will be prepared and provided with the annual monitoring report.

5.4.3 Presence of Corps Jurisdictional WOUS in Preserved Desert Dry Wash Habitat

The presence of Corps jurisdictional criteria for other waters of the United States (presence of OHW mark) within each preserved desert dry wash habitat will be identified by walking the entire length of the desert dry wash annually during the 5-year monitoring period. Any locations where an OHW mark is absent will be documented using a GPS unit. These data will be digitally formatted and data linked for use in ArcGIS, Microsoft Access, and ERDAS.

5.4.4 Functions and Values Criterion for Preserved Desert Dry Wash Habitat

An assessment of functions and associated values found within each preserved desert dry

wash habitat will be made as part of baseline monitoring and for monitoring Years 1 and 5. Data collection and analysis will follow the Corps Descriptive Approach (see Section 1.10.). Variation in presence or absence of aquatic habitat functions and values as compared with the baseline data will be described. A *WOUS Functions and Values Evaluation Form* is provided behind the Forms tab. Data collected on the form will be digitally formatted for use in ArcGIS, Microsoft Access, and ERDAS.

5.4.5 Habitat Preservation Criterion for Preserved Desert Dry Wash Habitat

Funding and implementation of the Long-Term Protection Plan in Section 8.0 and signing and recordation of the Perpetual Conservation Easement Grant for the Coyote Springs Preserve will satisfy this criterion.

RESTORED DESERT DRY WASH HABITATS

5.5 Desert Dry Wash Habitat Restoration Success Criteria

The restoration of desert dry wash habitat will be determined to be successful when the following criteria are satisfied.

5.5.1 Criterion for Restoration of Soil Conditions

The surface of the drainage in the restored desert dry wash habitats will be free of non-native soil fill material (e.g., construction materials and debris) from the Coyote Springs Development Project.

5.5.2 Criterion for Restoration of Hydrology Conditions

The restored desert dry wash habitats will allow for unimpeded flow during periodic seasonal precipitation and surface runoff from the upstream watershed.

5.5.3 Criterion for Vegetation Conditions for Restored Dry Washes

Non-native plant species will make up less than 2 percent of the plant cover, except for non-native grasses that have become naturalized.

5.5.4 Criterion for Acres of Restored Desert Dry Wash Habitat

Depending on which project alternative is selected, a minimum of either 66.6 acres of desert dry wash habitat will be restored at the Preferred Project Alternative locations designated on Figure 3 or a minimum of 69.8 acres will be restored at the Project Alternative 1 locations designated on Figure 4

5.5.5 Criterion for Corps Jurisdictional WOUS within Restored Desert Dry Wash Habitat

The restored desert dry wash habitats will meet the Corps criteria for waters of the United States, i.e., possess an ordinary high water mark, and will comprise a minimum of 66.6 acres.

5.5.6 Criterion for Preservation and Restoration of Functions/Values within Desert Dry Wash Habitat

Project construction activities that will fill existing desert dry washes will cause aquatic habitat functions and values currently present in those washes to be lost. At a minimum, the desert dry wash habitat functions/values impacted (see Section 2.) by the project will be replaced by the

restored WOUS.

5.5.7 Criteria for Habitat Preservation of Restored Desert Dry Wash Habitat

Preservation of restored desert dry wash habitat will occur within the Coyote Springs Preserve as follows:

1. Depending on which project alternative is selected, preserve either a minimum of 66.6 acres of restored desert dry wash habitat that meets the Corps criteria for other waters of the United States at the Preferred Project Alternative locations indicated on Figure 3, or a minimum of 69.8 acres of restored desert dry wash habitat that meets the Corps criteria for other waters of the United States at the at the Project Alternative 1 locations designated on Figure 4
2. Fund the Long-Term Protection Plan described in Section 8.0 through General Improvement District and/or Home Owner Association(s) assessments to ensure that restored desert dry wash Habitat within the Coyote Springs Conservation Area are managed and protected in perpetuity.
3. Establish a Drainage and Maintenance Easement that insures conservation of habitat within the restored WOUS in perpetuity over the restored desert dry wash Habitat and adjacent protective upland buffer habitat as described in Section 2.3.4, Site Protection.

5.6 Methods for Evaluating Achievement of Mitigation Success Criteria for Restored Desert Dry Wash Habitat

This section describes the methods to be used to collect data for determining whether the mitigation success criteria for the restored desert dry wash habitats are being met.

5.6.1 Soil and Hydrology Criteria for Restored Desert Dry Wash Habitat

Restored soil and hydrology conditions will be monitored by walking the entire length of each restored desert dry wash habitat and documenting the presence of any non-native soil materials and whether any obstructions to desert dry wash flow are present. Observations will be recorded on the *Mitigation Monitoring Data Sheet for Assessing Desert Dry Wash Soil Surface and Hydrology Conditions* (see Forms). The location of any area that does not satisfy the soil or hydrology criteria will be memorialized using a Global Positioning System (GPS) unit or tape measure. These data will be digitally formatted and linked for use in ArcGIS, Microsoft Access, and ERDAS.

5.6.2 Vegetation Criteria for Restored Desert Dry Wash Habitat

Vegetation conditions within the desert dry wash habitats will be monitored through the use of onsite surveys to determine the percent cover of non-native vegetation. The methods used are as follows:

A random sampling design will be used to sample vegetation to determine plant cover for each species found within each reference and restored desert dry wash habitat. Methodology to determine plant cover will follow those described by Elzinga, *et al.* (undated). Vegetation will be sampled during March or April using 5-foot by 5-foot sampling quadrats arrayed at 300-foot intervals along each reference and restored desert dry wash. The location of each sampling

quadrat will be loaded into a GPS unit with real-time beacon correction (accuracy <50cm) and located in the field using the GPS unit during each monitoring period.

A Mitigation Monitoring Data Sheet for Assessing Plant Species Cover is provided behind the Forms tab. Photographs of each sampling quadrat will be taken and representative photographs of reference desert dry wash habitats will be taken during each monitoring period.

Representative habitat photos will be taken from permanent photo points established during the first monitoring year. The location and direction of view of the representative habitat photo points will be provided with all monitoring reports. These data will be digitally formatted and linked for use in ArcGIS, Microsoft Access, and ERDAS. Color photocopies will be labeled to identify the location and dominant species present and included as an appendix in the Monitoring Report.

Additionally, a floristic survey will be conducted at the same time within the reference desert dry wash habitats and a list of species found within each of these habitats will be prepared and provided with the annual monitoring report.

5.6.3 Criteria for Length and Average Width of Restored Desert Dry Wash Habitat

The length and average width of each restored desert dry wash habitat will be determined during the each monitoring year using a GPS unit walking down the centerline of the desert dry wash habitat. Channel width will be measured every 500 feet. The field data will be migrated into Microsoft Access and ArcGIS databases.

5.6.4 Presence of Corps Jurisdictional WOUS in Restored Desert Dry Wash Habitat

The presence of Corps jurisdictional criteria for other waters of the United States (presence of OHW mark) within each restored desert dry wash habitat will be identified by walking the entire length of the desert dry wash annually during the 5-year monitoring period. Any locations where an OHW mark is absent will be documented using a GPS unit. These data will be digitally formatted and data linked for use in ArcGIS, Microsoft Access, and ERDAS.

5.6.5 Functions and Values Criterion for Restored Desert Dry Wash Habitat

Aquatic functions and associated values will be assessed for each restored desert dry wash habitat for monitoring Years 1 and 5. Data collection and analysis will follow the Corps Descriptive Approach (see Section 1.10.). Variation in presence or absence of WOUS functions and values as compared with the baseline data will be described. A *WOUS Functions and Values Evaluation Form* is provided behind the Forms tab. Data collected on the form will be digitally formatted for use in ArcGIS, Microsoft Access, and ERDAS.

5.6.6 Habitat Preservation Criterion for Restored Desert Dry Wash Habitat

Funding and implementation of the Long-Term Protection Plan in Section 8.0 and recordation of the Drainage and Maintenance Easement to insure the conservation of restored WOUS within the Coyote Springs Conservation Management Area will satisfy this criterion.

UPLAND BUFFER HABITATS

5.7 Mitigation Success Criteria for Upland Buffer Habitat

This section presents mitigation success criteria for the upland buffer habitats.

5.7.1 Criteria for Vegetation Condition

1. Vegetation cover in upland buffer habitats for preserved WOUS will consist predominantly of native species.
2. Within upland buffer habitat for preserved WOUS non-native plant species will make up less than 2 percent of the plant cover preserved WOUS, except for naturalized non-native grasses.
3. Landscape planting can be accomplished within the upland buffer habitat for restored desert dry wash habitat for recreational activities such as golf course or landscaped open space areas using native plant species obtained within the Coyote Springs Area (e.g., at the Desert National Wildlife Refuge or in the Coyote Springs Project Development Area) as described in the Plan. Planting non-native vegetation for landscaping purposes is also allowable as long as the plants are not invasive or noxious species. The irrigation of these plantings can be done in a manner that does not adversely affect the hydrology of the restored desert dry wash habitat.

5.7.2 Criteria for Habitat Preservation

Establish a permanent protective upland buffer habitat around each side of the preserved desert dry wash habitat as described in Section 3.2.5 and as shown on Figures 3 and 4 under either the Preferred Project Alternative or Alternative 1.

1. The total area of the upland buffer habitat is 334.1 acres for the Preferred Project Alternative and 344.8 acres for Alternative 1.
2. Establish permanent protective upland buffer habitat along each side of the preserved desert dry wash habitats. The upland buffer habitat will be a minimum of 100 feet wide on each side of the Pahranaagat Wash Incised Channel and a minimum of 30 feet wide on each side of all other preserved drainages. Buffer locations will be established from the edge of the top of bank of preserved desert dry wash habitat and extend outward toward adjacent developed areas within the Coyote Springs Project Development Area.
3. Fund the Long-Term Protection Plan described in Section 8.0 to ensure that upland buffer habitats within the Preserve are managed and protected in perpetuity.
4. Establish the Coyote Springs Preserve subject in perpetuity with a recorded Conservation Easement over the preserved desert dry wash and upland buffer habitat for preserved desert dry wash habitat as described in Section 2.4.5, Site Protection.

5. Establish through a Drainage and Assessment Easement protective upland buffer areas along each side of the restored desert dry wash habitats. The upland buffer habitat will be a minimum 25 feet wide on each side of all other restored drainages. Land uses within the upland buffer areas such as golf course or landscaped open space lands, pedestrian/bicycle trails, roadway and bridge crossings and scour protections, nature trails, benches, educational facilities such as informational signs and kiosks, and utility lines are allowable as long as there is no significant adverse impact on water quality within the restored WOUS as defined by the State of Nevada Water Quality Authority (NDEP);
6. Establish through a Drainage and Maintenance Easement using recorded land use restrictions (see Table 8b) to assure that the restored desert dry wash habitat functions in accordance with the success criteria within the mitigation plan and the conditions of the Corps permit. The land use restriction should also insure that the upland buffer habitat provides an appropriate level of water quality protection within the restored WOUS as defined by the State of Nevada Water Quality Authority (NDEP).
7. The land owner, CSI/Corps Permittee will fund through assessments from the General Improvement District and/or Charter Association funds long-term management, maintenance inspections, and maintenance of the mitigation area within the restored WOUS and adjacent upland buffer habitat.

5.8 Methods for Evaluating Achievement of Mitigation Success Criteria for Upland Buffer habitat

This section describes the methods that will be used to collect data for determining that mitigation success criteria for the upland buffer habitats are being met.

5.8.1 Vegetation Criteria

Vegetation success criteria will be monitored through the use of surveys to collect vegetation data to include species presence and cover.

To determine plant cover, vegetation will be sampled during either March or April each monitoring year using 10-foot x 10-foot sampling quadrats randomly located within the upland buffer surrounding preserved desert dry wash habitats. Each 10-foot quadrat will be assigned a number. Quadrats will be located randomly in groups of 3 quadrats spaced 25 feet apart at approximately 500-foot intervals along the entire length of the upland the buffer. The location of the center of each quadrat will be loaded into a Trimble Pathfinder XRS GPS unit with real-time beacon correction (accuracy <50cm), and located in the field, using the GPS unit during each sample period.

An example *Mitigation Monitoring Data Sheet for Assessing Plant Cover* is included behind the Forms tab. The data sheet will be filled out for each 10-foot quadrat sampled. Photographs of each sampled quadrat will be taken, and photos will be taken from the permanent photo points established the first monitoring year. The location and direction of view of the photo points will be provided with all monitoring reports. The data will be digitally formatted by HBG and data linked for use in ARCINFO, Microsoft Access, and ERDAS. Color photocopies will be included as an appendix in the monitoring reports and labeled to identify the habitat type and dominant

plant species present. A floristic survey will also be prepared each year based on conducting a visual survey of the entire buffer habitat.

5.8.2 Habitat Preservation Criterion

The following actions will satisfy this criterion:

1. Funding through endowment and implementation of the Long-Term Protection Plan in Section 8.0 and signing and recordation of the Perpetual Conservation Easement Grant and land use restrictions (Table 8a) for Preserved Desert Dry Wash and upland buffer Habitat.
2. Funding through assessments from the General Improvement District and/or Charter Association and implementation of the Long-Term Protection Plan in Section 8.0 and signing and recordation of a Drainage and Maintenance Easement and land use restrictions (Table 8b) for Restored Desert Dry Wash and upland buffer Habitat.

5.9 Data Analysis

The yearly monitoring results for the annual monitoring periods (March/April) at the preserved, restored, and reference desert dry wash habitats, and habitat for preserved desert dry wash habitat will be compared statistically, as appropriate, with results from baseline monitoring prior to initiation of habitat restoration activities, and previous years' monitoring to evaluate site progress and success. Analysis for comparative change in attainment of the success criteria will be conducted using field observation and GPS data. This analysis will be accomplished using the database program Microsoft Access to create various graphical comparisons. Habitat feature mapping using the GIS program ArcGIS will be conducted for visual comparative purposes. Features include:

- Presence of native plant species vs. naturalized native grass species vs. non-native plant species vs. invasive plants vs. noxious weeds within preserved, restored, and reference desert dry wash and habitat for preserved desert dry wash habitat.
- Vegetation cover, frequency, and density meeting success criteria
- Species composition meeting success criteria.
- Presence/absence of ordinary high water mark within preserved and restored desert dry wash habitats.
- Reference, preserved and restored desert dry wash habitats meeting the Corps regulatory criteria for waters of the United States.

5.10 Reporting

Monitoring reports will be submitted on an annual basis during the month of September after each monitoring year (1 – 4) and a final report in the fifth (5th) year of monitoring. The first annual Monitoring Report will be submitted following the first full year of monitoring following the implementation of mitigation for project impacts associated with a specific Coyote Springs Development Phase. There will be a separate set of 5 monitoring reports for each of 4 major phases of development at Coyote Springs. Each set of reports will provide technical findings as to the attainment of mitigation success and/or progress toward the achievement of agency required success criteria. The reports will include the following:

- 1.0 Executive Summary**
- 2.0 Introduction**
 - 2.1 Background
 - 2.2 Objective
 - 2.3 Maintenance Requirements
 - 2.4 Mitigation Success Requirements
- 3.0 Methods**
 - 3.1 Sampling
 - 3.2 Analysis
- 4.0 Results**
 - 4.1 Maintenance
 - 4.2 Achievement of Mitigation Success
 - 4.2.1 Vegetation and Site Integrity
 - 4.2.2 Hydrology
- 5.0 Recommendations**
 - Remedial Actions (if necessary)
 - Success Achieved, End Monitoring
- 6.0 Literature Cited**
- 7.0 Appendices**
 - o Names, title and companies of all persons who prepared the report and conducted field work
 - o Maintenance Records (observations and actions taken)
 - o Monitoring Data Sheets (vegetation, hydrology, soils)
 - o Photo Documentation (aerial and onsite)
 - o Location Maps (reference, preserved and restored habitats, sample locations)
 - o GIS Comparison Mapping/Analysis
 - o Data Summaries
 - o Detailed Mitigation Plan
 - o Agency Contact
 - o Agency Permits

5.11 Monitoring Program Review

The protocol and results of the monitoring program will be reviewed annually by the Project Wetland Scientist. Adjustments to monitoring procedures may be required as the site changes over time, or if logistical problems render a procedure unduly difficult to conduct. Such adjustments would be reported to the Corps. After reviewing annual reports, the Corps may have suggestions for adjusting the monitoring program. Agency suggestions will be reviewed and if appropriate will be incorporated into the following year's monitoring program. The key is to anticipate that the monitoring program may need occasional adjustments to remain accurate, complete, and feasible.

5.12 Funding

CSI will fund all the costs associated with the activities outlined in the Monitoring Plan, which includes mitigation success monitoring and agency-required reporting.

5.13 Responsible Parties

Successful implementation of the above-described Mitigation Monitoring Plan is the responsibility of the following organizations:

Owner:

Coyote Springs Investment LLC
 6600 North Wingfield Springs Parkway
 Sparks, Nevada 89436
 775.626.6000

Contact:

Mr. Terry Reynolds
 Coyote Springs Investment LLC
 6600 North Wingfield Springs Parkway
 Sparks, Nevada 89436
 775.626.6000

5.14 Schedule

Given that the project and associated impacts to desert dry wash habitat will be phased over 20+ years monitoring to determine the attainment of success criteria shall be tied to the actual implementation date of the mitigation effort for each major development phase (see Table 1) rather than to predetermined years. It is anticipated that restoration activities for Coyote Springs first phase of development will commence in 2008, with implementation of the mitigation success monitoring beginning during the spring of the following year. The proposed monitoring schedule is outlined below in Table 13.

Table 13. Reports Schedule for Mitigation Success Monitoring Activities for Each Phase of Development

Type Of Report	Schedule
Select reference desert dry wash and upland habitats and prepare location map.	Prior to beginning preservation and restoration activities
Conduct post preserved and restored desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat inspections and prepare a report with before and after descriptions.	Within 10 weeks following the completion of habitat restoration and preservation activities.
Conduct stormwater sampling and testing for total settleable solids in preserved and restored desert dry wash habitats.	Once annually after the first measurable rainfall event which generates surface water flow within the preserved and restored desert dry wash habitats for monitoring Years 1 – 5
Conduct mitigation success monitoring and complete data sheets.	During March/April of monitoring Years 1 – 5.
Prepare and submit annual compliance monitoring report to include data sheets, photo documentation and a report summarizing monitoring results.	September for monitoring Years 1 – 5.

6.0 COMPLETION OF MITIGATION

6.1 Notification of Completion

When the initial monitoring period is complete, and if CSI believes final success criteria have been met, CSI shall notify the Corps when submitting the annual report that documents this completion. A current delineation of the preserved and restored desert dry wash habitat will be submitted with the report.

6.2 Corps Confirmation

Following receipt of the report the Corps may require a site visit to confirm the completion of the restoration and mitigation efforts.

7.0 CONTINGENCY MEASURES

7.1 Initiating Procedures

If an annual performance criterion is not met for all or any portion of the restoration and mitigation in any year, or if the final success criteria are not met, CSI shall prepare an analysis of the cause(s) of failure and, if determined necessary by the Corps, propose remedial action for approval. If the restoration and mitigation sites have not met the performance criteria, CSI's maintenance and monitoring obligations continue until the Corps gives final project approval.

7.2 Alternative Locations for Contingency Mitigation

Alternative restoration and mitigation sites have not been considered at the present time because the proposed mitigation sites appear to be fully suitable for restoration. Alternative mitigation site planning will begin if it becomes apparent that the long-term mitigation success criteria will not be achieved in a timely fashion.

7.3 Funding

CSI will fund all the costs associated with planning, implementation, and monitoring of any contingency procedures that may be required to achieve the goal and objectives of this restoration and mitigation plan.

7.4 Responsible Parties

Owner:

Coyote Springs Investment LLC
6600 North Wingfield Springs Parkway
Sparks, Nevada 89436
775.626.6000

Contact:

Mr. Terry Reynolds
Coyote Springs Investment LLC
6600 North Wingfield Springs Parkway
Sparks, Nevada 89436
775.626.6000

8.0 LONG-TERM PROTECTION PLAN

This section presents a Long-Term Protection Plan that details site inspection and maintenance activities after Mitigation Success Monitoring Year 5. In addition, (1) long-term funding and the perpetual conservation easement designed to protect preserved WOUS and adjacent upland buffer habitat, and (2) long-term funding and the perpetual land use deed restrictions designed to protect restored WOUS and adjacent upland buffer habitat are described. Federal, state, and local regulatory agency protection programs are identified in this section.

8.1 Disclaimer

On June 5, 2007, the United States Army Corps of Engineers and United States Environmental Protection Agency issued guidance to their field offices on how to implement the decisions of the Supreme Court in *Rapanos v. United States* and *Carabell v. United States*. This guidance is intended to reflect and consolidate the differing non-majority views of the Court regarding the reach and extent of the Clean Water Act, particularly over non-navigable tributaries and their adjacent and non-adjacent wetlands. Neither the Court nor the recently-issued guidance draw a bright line with regard to the geographic reach of jurisdiction, particularly in drainages where flows are ephemeral, such as all of the drainage features found on the Coyote Springs property. The Huffman Broadway Group, Inc., and Coyote Springs Investment LLC have made a good-faith effort herein to thoroughly describe and document the presence of potential factors that the Corps may consider to constitute a “significant nexus” to traditionally-navigable waters in asserting jurisdiction pursuant to Section 404 of the Clean Water Act.

Nevertheless, the project sponsor, Coyote Springs Investments, reserves the right to challenge or seek revision to any areas over which the Corps may assert such jurisdiction, as the implementation of the Rapanos and Carabell guidance is further clarified or altered through formal guidance, assertions or disclaimers of jurisdiction over other properties, court decisions, or other relevant actions. In particular, the threshold of what may or may not constitute a “significant nexus” to a traditionally-navigable water is, at present, undefined and unquantified.

Should an actual threshold be established with some reasonable degree of quantification, areas on the Coyote Springs property over which the Corps may now seek to assert jurisdiction should not remain jurisdictional if they do not exceed that minimum threshold in the future. Should the Corps, now or in the future, find that the reach and extent of jurisdictional waters at the Coyote Springs property are reduced, the project sponsor has a clear expectation that project requirements for compensatory mitigation, pursuant to the 404(b)(1) Guidelines [see 40 CFR 230.10(d)] would also be reduced accordingly.

8.2 Long-Term Protection Plan

The purpose of the Long-Term Protection Plan is to ensure that the preserved and restored desert dry wash and adjacent upland buffer habitat continue to function according to the Mitigation Plan goal and objectives. Under the Long-Term Protection Plan, a grantee designated Conservation Easement Manager for preserved WOUS and adjacent upland buffer habitat, and a

8.0 Long-Term Protection Plan

land owner/Corps Permittee designated CSI Restored Habitat Restored Habitat Manager or the Coyote Springs Master Association designated Restored Habitat Manager for restored WOUS and adjacent upland buffer habitat will insure that the long term protection plan is implemented properly. Activities will include scheduled management inspections at the mitigation area, and, if necessary, maintenance.

The designated Conservation Easement Manager for preserved WOUS and adjacent upland buffer habitat, and a land owner/Corps Permittee designated CSI Restored Habitat Restored Habitat Manager or the Coyote Springs Master Association designated Restored Habitat Manager for restored WOUS and adjacent upland buffer habitat will determine if maintenance is needed to satisfy the Mitigation Plan goal and objectives. If problems are found during inspections, appropriate maintenance will be initiated to correct the problem identified. Unimpacted waters of the United States shall be avoided when conducting maintenance activities wherever practicable. Any desert dry wash or buffer habitat inadvertently damaged shall be restored under the supervision of the Conservation Easement Manager or Coyote Springs Master Association Restored Habitat Manager. Inspection activities and appropriate corrective actions, if necessary, are described in detail below in Section 8.2.

Documentation of management inspections and maintenance will be required. A record of management inspection and maintenance activities by date will be submitted annually to the Corps. All annual reports will include information on the frequency and dates of management inspections, what was observed, a summary of maintenance repairs, and any recommended follow-up maintenance actions that may be required. An example *Maintenance Monitoring Field Form* is included behind the Forms tab. Any problems discovered will be photo-documented during each monitoring inspection the problem is identified. In addition, annual site photographs will be taken during the April quarterly management inspection period. The photos will be taken from permanent photo points and directions of view.

8.3 Inspection and Maintenance Activities

This section describes inspection and maintenance activities to be performed regularly to ensure mitigation success (Sections 8.2.1 through 8.2.8), reporting and record keeping (Section 8.2.9), and funding (Section 8.2.10). Responsible parties are identified in Section 8.2.11, and the inspection and maintenance schedule is presented in Section 8.2.12. Examples of appropriate corrective actions to be implemented if necessary are described for each inspection/ maintenance task.

8.3.1 Vandalism

Quarterly maintenance visits will include inspection for any evidence of vandalism. The sites will also be monitored for signs of excessive or uncontrolled human disturbance such as off-road vehicle use, presence of brush and litter, and human foot traffic. Disturbance observations will be recorded along with remedial action taken (e.g., fill tire ruts, cover bare soil with weed-free sterile straw, seed with appropriate local native vegetation and/or barrier placement within access route).

8.3.2 Trash and Debris

The site will be inspected quarterly for trash and debris; any accumulated trash or debris will be removed and disposed of at an appropriate county-approved disposal location.

8.3.3 Fencing, Gates and Signage

The upland buffer areas surrounding the preserved and restored desert dry wash habitats will be blocked at roadway access points to prevent unauthorized off-road vehicle access to prevent off-road vehicle access. Earth berms, bollards, gates, or v-ditches will be placed between buffer areas and residential and commercial areas to prevent unauthorized off-road vehicle access. Earth berms, bollards, gates or v-ditches will be placed along buffer areas where other land use activities occur such as golf course facilities or trails. The type of structure may vary to be architecturally compatible with the adjacent development. If gates are used they will be mounted on metal posts will be used. Gates will remain locked at all times, except as authorized by (1) CSI, (2) easement holders, (3) the Project Wetland Scientist or (4) the Conservation Easement Manager/perpetual conservation easement Grantee (for preserved WOUS and protective upland buffer habitat) or CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat). Vehicle barriers will be inspected quarterly to ensure it is maintained in good condition. This inspection shall involve checking to see that denial of passage by vehicles is maintained.

Signs

At the beginning of the 5-year management period, signs will be placed 5 feet to the right of each gate and at approximate 300-foot intervals along the outer perimeter of the Preserve area to include signs being placed at all potential vehicle access points. Wording on the signs, subject to Corps approval, will indicate presence of sensitive habitat, and that Dumping, vehicular access, removal of vegetation, and other similar activities are strictly prohibited (see Section 3.2.5, above). Signs will be replaced if they are found during the quarterly inspections to be damaged, illegible, or the wording needs to be revised.

8.3.4 Prohibited Activities

The site will be inspected quarterly for encroachment or activities that would reduce the integrity of preserved or restored desert dry wash and upland buffer habitats. If necessary, appropriate actions will be taken with the assistance of local, state, or federal agencies to deal with encroachment within mitigation areas.

Certain activities will be prohibited; they are listed in Tables 8a and 8b at the end of Section 2.0 and will be incorporated into the Conservation Easement (Table 8a) and the Drainage and Maintenance Easement (Table 8b) as appropriate.

8.3.5 Sedimentation and Erosion Control

The mitigation site will be inspected quarterly for signs of erosion and the potential for or resulting transport of sediment within preserved or restored desert dry wash or upland buffer habitats. If it is determined that erosion is occurring, measures will be taken to divert or slow runoff before implementing remedial actions. These measures will include placement of certified weed-free sterile straw wattles or rolls, silt fences, or other suitable barrier material to prevent sediments from entering adjacent desert dry wash and upland buffer habitat. Any soil that becomes deposited in a WOUS during an erosion event will be removed using rubber-tired vehicles, and the land surface will be restored to original grade. Appropriate erosion control actions will also be taken, such as stabilizing the bare ground area with weed-free sterile straw or other appropriate measures, as necessary. Work activities of this nature must be approved by a qualified biological monitor.

8.3.6 Vegetation Management

Both native and nonnative plant species occur within the preserved desert dry wash and buffer habitat areas and the desert dry wash and buffer habitat areas to be restored. The Coyote Springs project area is relatively free of large numbers of noxious or invasive species. With the exception of red brome (*Bromus rubens*) and Mediterranean grass (*Schismus barbatus*), whose populations in Lincoln County are so well established as to be considered ubiquitous, few invasive non-native species are found on-site. Eleven plant species have been identified as species of concern for weed control in the vicinity of the CSI project area. These species were identified using the Nevada Department of Agriculture Noxious Weed List and interviews with professionals working in southern Nevada in the field of noxious and invasive species management. Ground surveys of the area have confirmed the presence of six (6) of the species within the project area. Current survey data reports the presence of tamarisk (*Tamarix ramosissima*), Sahara mustard (*Brassica tournefortii*), African malcomia (*Malcomia africana*), red brome (*Bromus rubens*), and Mediterranean grass (*Schismus arabicus* and *S. barbatus*) considered to be “species of concern.”

If not properly managed, invasive and noxious non-native plant species can out-compete native plant species. Appendix 3 provides a long-term Weed Management Plan for detection, control, and monitoring on noxious and invasive species of concern for the Coyote Springs Project Area. Work activities of this nature must be approved by a qualified biological monitor.

Vegetation Management Objective

The vegetation management objective of this plan is to enable a competitive advantage of native species over non-native plant species.

Allowable Methods

To meet the objective of this Mitigation Plan, allowable methods shall include hand removal, use of small handheld powered equipment, mechanized grading and reapplication of native topsoil, seeding, and/or controlled herbicide application in order to control invasive and noxious plant species.

Mechanical Removal

Hand removal or use of small handheld equipment (such as a Weed Whip or Weed Wrench) should always be the preferred method of removing non-native plant species from the mitigation area. If hand removal methods are tried and found to be ineffective, or the problem is too widespread for hand removal to be practical, then chemical controls as described below can be implemented.

Controlled Herbicide Use

Application of herbicides will be accomplished in accordance with the Chemical Application Management Plan for the Coyote Springs Project Area (see Appendix 4).

Inspection Schedule

The site will be inspected quarterly for signs of invasive and noxious vegetation growth that has the potential of gaining a competitive advantage over native plant species.

8.3.7 Altered Hydrology Patterns

Essential to long-term preservation of the preserved and restored desert dry wash habitat and upland buffer habitats for preserved desert dry wash habitats is maintaining site hydrology conditions. Hydrologic features will be monitored quarterly and if existing or potential adverse effects are identified, appropriate and timely action will be taken. Currently the site receives surface water primarily from rainfall.

Protection from Adjacent Area Impacts

Adverse Effects of Runoff

Although not anticipated to be problematic, if runoff from adjacent areas becomes a problem in terms of sedimentation, one or more sediment control devices will be used. These include earth or rock check dams, weed-free sterile straw wattles or rolls, silt fences, continuous earth berms, concrete k-rails, sand bags, and sediment barriers (semi-pervious). If erosion becomes a problem, erosion control blankets and mats, and/or weed-free sterile straw wattles or rolls will be used.

Protection from Onsite Impacts

Placement of Underground Utilities

If necessary, installation or replacement of underground utilities within utility easements will be done in a manner that will not alter either lateral or vertical subsurface drainage characteristics. Soil surface (upper 12 inches) will be restored to original grade using the same native soil excavated from the utility line trench. Work activities of this nature must be approved by a qualified biological monitor.

Roadway, Trail, and Bridge Construction

Leveling or grading or otherwise altering the general topography will be allowed for roadway crossings, nature trails, bike and pedestrian paths, bridge crossings, utilities, and scour protections if done in a manner that will minimize impacts to surface drainage characteristics. Soil surface (upper 12 inches) outside of road and pathways will be restored to original grade using the same native soil excavated during construction. Work activities of this nature must be approved by a qualified biological monitor.

Restoration of Drainage Patterns

If existing onsite drainage becomes blocked or diverted, the land surface will be restored to its former grade. Appropriate erosion control actions will also be taken such as stabilizing resulting bare ground areas with weed-free sterile straw and placement within restored areas of weed-free sterile straw wattles or rolls, if necessary. Work activities of this nature must be approved by a qualified biological monitor.

8.3.8 Mosquito Abatement

The Grantee / Conservation Easement Manager (for preserved WOUS and protective upland buffer habitat) or CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat) will coordinate with staff representatives with the Lincoln County Health District's Mosquito Control Program, related to the maintenance of the

mitigation area for mosquito abatement purposes. Management guidelines for this particular area will be developed in coordination with the Lincoln County Mosquito Control District. If absolutely necessary, mosquito larvicide such as *Bacillus thurengensis* or Altoside formulations will be utilized. Any pesticide/larvicide shall be applied by a licensed individual or contractor. Work activities of this nature must be approved by a qualified biological monitor.

8.3.9 Record Keeping and Reporting

Documentation of all management/maintenance activities by the conservation easement holder (for preserved WOUS and protective upland buffer habitat) or CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat) will be required. A record of maintenance activities by date will be submitted yearly to the Corps. All annual reports will include information on the frequency and dates of observations, site photographs, location of permanent photo points and direction of view, what was observed, maintenance activities, summary of repairs and any recommended follow-up maintenance actions that may be required.

8.3.10 Funding

The Permittee, CSI, will fund an endowment that will be used by the grantee for long-term management, maintenance inspections, and maintenance of the mitigation area within the preserved WOUS and adjacent upland buffer habitat. The land owner, CSI/Corps Permittee will fund through assessments from the General Improvement District and/or Charter Association funds long-term management, maintenance inspections, and maintenance of the mitigation area within the restored WOUS and adjacent upland buffer habitat.

8.3.11 Responsible Parties

For each phase, once success criteria have been met for the preserved and restored desert dry wash and upland buffer habitat for preserved desert dry wash habitat in that phase, management responsibility for those habitats will be assumed by the Conservation Easement holder (for preserved WOUS and protective upland buffer habitat) and CSI Restored Habitat Manager or CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat).. The Conservation Easement holder will be responsible as the Conservation Easement Manager for assuring long-term protection of the habitats in accordance with the Conservation Easement agreement. It is anticipated that The Conservation Fund will function as the Conservation Easement Manager. The Grantee will name the Conservation Easement Manager. The fee title land owner/Corps Permittee for will name the CSI Restored Habitat Manager and the Coyote Springs Charter Community Association, Inc will name the CSCCA Restored Habitat Manager (for restored WOUS and protective buffer habitat).

Grantee of Conservation Easement:

The Conservation Fund
National Office
1800 North Kent Street, Suite 1120
Arlington, Virginia 22209-2156
Phone: 703.525.6300
Fax: 703.525.4610

Conservation Easement Manager:

The Conservation Fund
Nevada and Southwest Office
3960 Howard Hughes Parkway, Suite 534
Las Vegas, Nevada 89109
Phone: 702.990.3540
Fax: 702.990.3541
MikeFordTCF@aol.com

Table 14. Grantee and Land Owner/Corps Permittee Responsibilities for Inspection and Maintenance Activities, Years 6+

Inspection/Maintenance Activity Item	
1. Vandalism	6. Vegetation Management
2. Trash and Debris	7. Altered Hydrology Patterns
3. Vehicle Barriers and Signage	8. Mosquito Abatement
4. Prohibited Activities	9. Record Keeping and Reporting
5. Sedimentation and Erosion Control	10. Funding

8.3.12 Schedule

A schedule outlining the proposed frequency of monitoring and routine maintenance procedures for long-term management of the mitigation site is as follows:

Table 15. Inspection and Maintenance Schedule Years 6+

Inspection/Maintenance Activity Item	Activity	Years 1 – 5
1. Vandalism	I & M ¹	Quarterly
2. Trash and Debris	I & M	Quarterly
3. Vehicle Barriers and Signage	I & M	Quarterly
4. Prohibited Activities	I & M	Quarterly
5. Sedimentation and Erosion Control Inspection	I & M	Quarterly
6. Vegetation Management	I & M	Quarterly Inspections; Annual Vegetation Sampling (March/April)
7. Inspections for Altered Hydrology Patterns	I & M	Quarterly
8. Mosquito Abatement	I & M	Quarterly
9. Record Keeping	Documentation	Quarterly
10. Reporting	Report Preparation	Annually

¹ Inspections, and if necessary, maintenance.

8.4 Conservation Easement and Declaration of Environmental Restrictions

To ensure that the preserved habitats and upland buffer habitat for preserved desert dry wash habitat within the Coyote Springs Project Development Area remain in perpetuity, the Long-Term Protection Plan (Section 8.0) includes:

1. Placing preserved habitats and upland buffer habitat for preserved desert dry wash habitat within the Coyote Springs Project Development Area under a perpetual conservation

8.0 Long-Term Protection Plan

easement in accordance with Nevada Revised Statutes (NRS) 111.390 through 111.440. This area will be called the Coyote Springs Preserve. CSI will be the Grantor. The Grantee will be The Conservation Fund (www.conservationfund.org), a 501.3(c) corporation. The easement will cover mitigation lands containing:

- c. Preserved desert dry wash habitat, and
- d. Upland buffer habitat for preserved desert dry wash habitat.

The Conservation Easement must be signed by all parties and recorded prior to the start of any construction activities within waters of the United States. When initially recorded, the Conservation Easement will include an Exhibit or Exhibits showing the general location of the washes to be preserved. The Conservation Easement will be amended from time to time to amend the Exhibits, either in whole or in part, to provide the legal description for preserved desert dry wash and upland buffer habitat for preserved desert dry wash habitat as determined and surveyed during each phase of construction.

Legal protections afforded by the Conservation Easement are important to prevent land use changes and activities that would cause the preserved habitats to fail. The Conservation Easement will contain environmental restrictions to include those listed in Table 8a, above.

2. Placing restored desert dry wash habitat and upland buffer habitat within the Coyote Springs Project Development Area under a Drainage and Maintenance Easement which protect the functions of the restored desert dry wash habitat. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. The Drainage and Maintenance Easement will be placed by the land owner/Corps Permittee on restored desert dry wash habitat and protective upland buffer. The Drainage and Maintenance Easement will include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Coyote Springs Charter Community Association, Inc (CSCCA) and funding for in-perpetuity management and maintenance will be provided by a General Improvement District (GID) and/or Homeowner's Association(s). The CSI Restored Habitats Manager will be the point of contact regarding management of the restored WOUS in accordance with Corps permit conditions. The CSCCA Restored Habitats Manager will be the point of contact once mitigation has been determined successful by the Corps.

The easement will cover mitigation lands containing:

- c. Restored desert dry wash habitat, and
- d. Upland buffer habitat for restored desert dry wash habitat.

8.0 Long-Term Protection Plan

The land use restrictions in Table 8b must be recorded by the property owner/Corps Permittee prior to the start of any construction activities within waters of the United States. When initially recorded, the land use restrictions will include an Exhibit or Exhibits showing the general location of the washes to be restored and the location of the upland buffer area. The land use restrictions will be amended from time to time to amend the Exhibits, either in whole or in part, to provide the legal description for preserved and restored desert dry wash and upland buffer habitat for restored desert dry wash habitat as determined and mapped and/or surveyed during each phase of construction.

The restrictions and protections afforded by the recorded Drainage and Maintenance Easement restrictions (see Table 8b, above) are important to prevent land use changes and activities that would cause the restored WOUS habitat to fail. The deed restrictions will contain environmental land use restrictions to include those listed in Table 8b below. No person shall engage in any of the restricted activities in the restored desert dry wash or adjacent upland buffer habitat areas unless that activity is in the future approved by the land owner, CSI/Corps Permittee.

8.5 Federal Regulatory Protection

Federal programs, which are listed below, provide additional levels of protection habitat and species protection.

- The Corps and the U.S. Environmental Protection Agency (EPA) are mandated under §404 the Clean Water Act to regulate the discharge of fill dredged or fill material in to waters of the United States, including wetlands.
- The USFWS provides protection to federally-listed species and their designated critical habitat under the Endangered Species Act.

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FIGURES

- Figure 1 General Location of the Coyote Springs Development
- Figure 2 Coyote Springs Project Development Area
- Figure 3 Plan View, Location and Features Associated With Preserved and Restored Desert Dry Wash Habitat, Preferred Alternative
- Figure 4 Plan View, Location and Features Associated With Preserved and Restored Desert Dry Wash Habitat, Alternative 1
- Figure 5 Typical Sections, Restored Desert Dry Wash Habitat
- Figure 6 Plan View, Typical Trail Design Within Preserve Area



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Nellis AFB Bombing Range



Coyote Springs Development

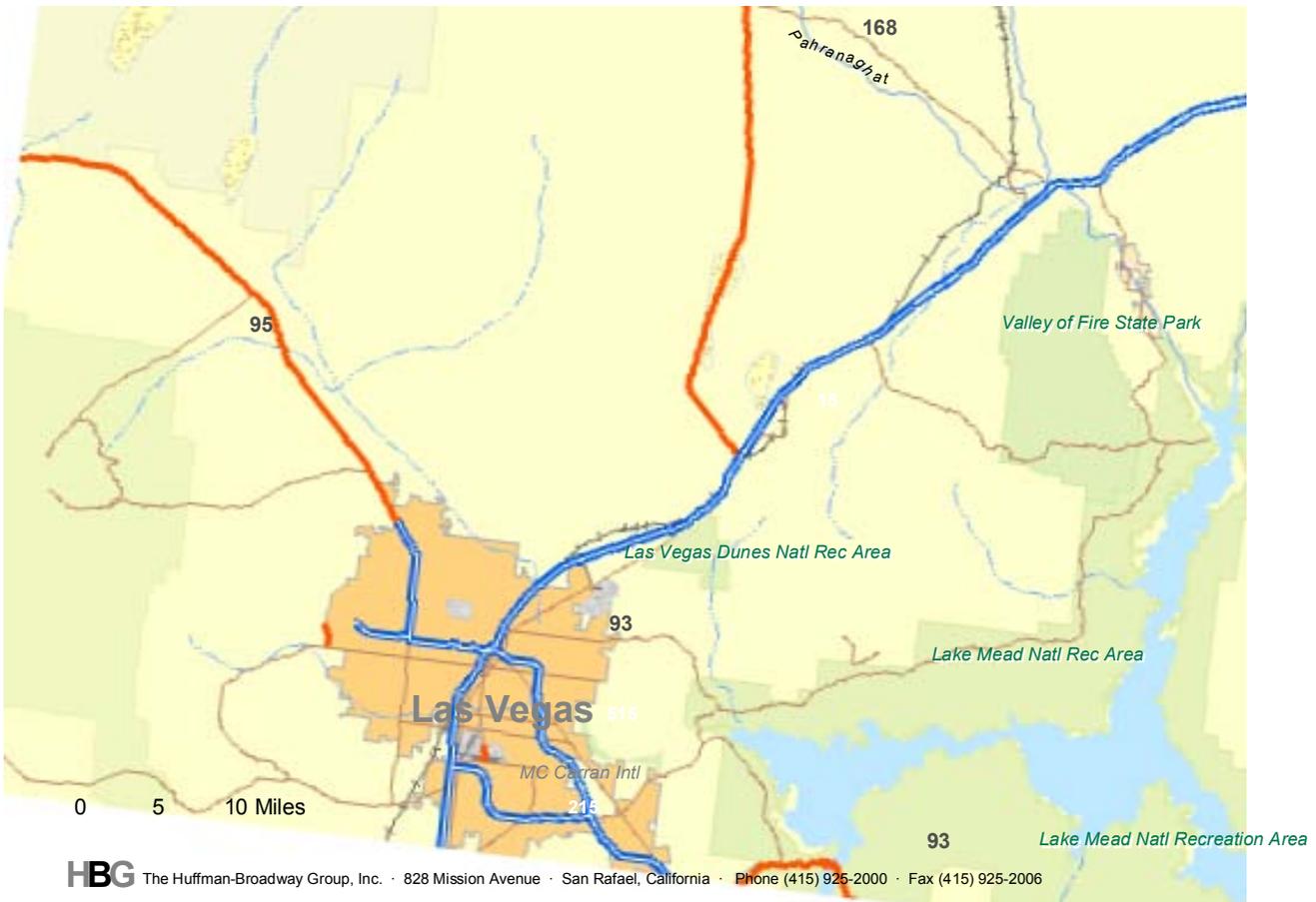


Figure 1. General Location of the Coyote Springs Development

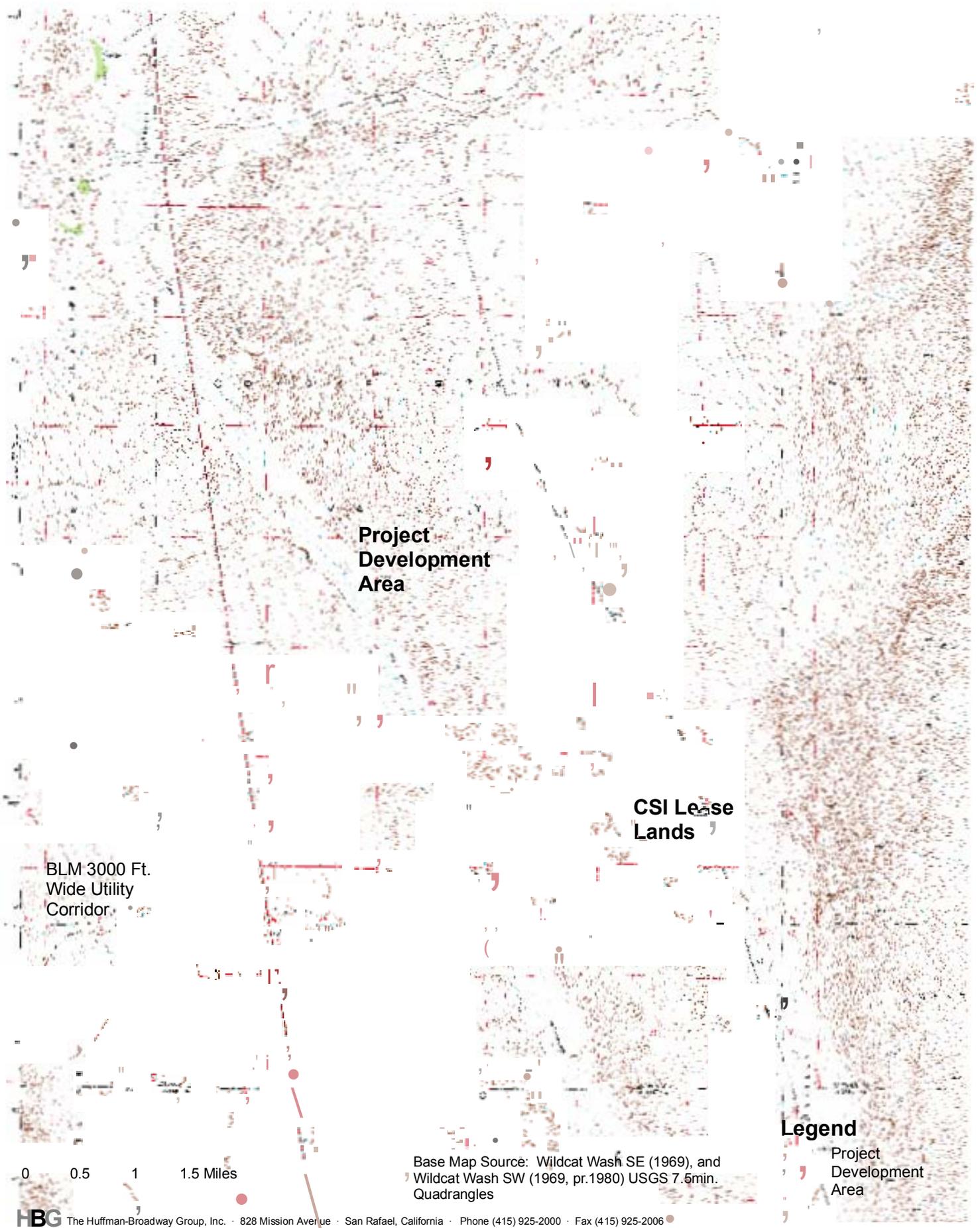


Figure 2. Coyote Springs Project Development Area

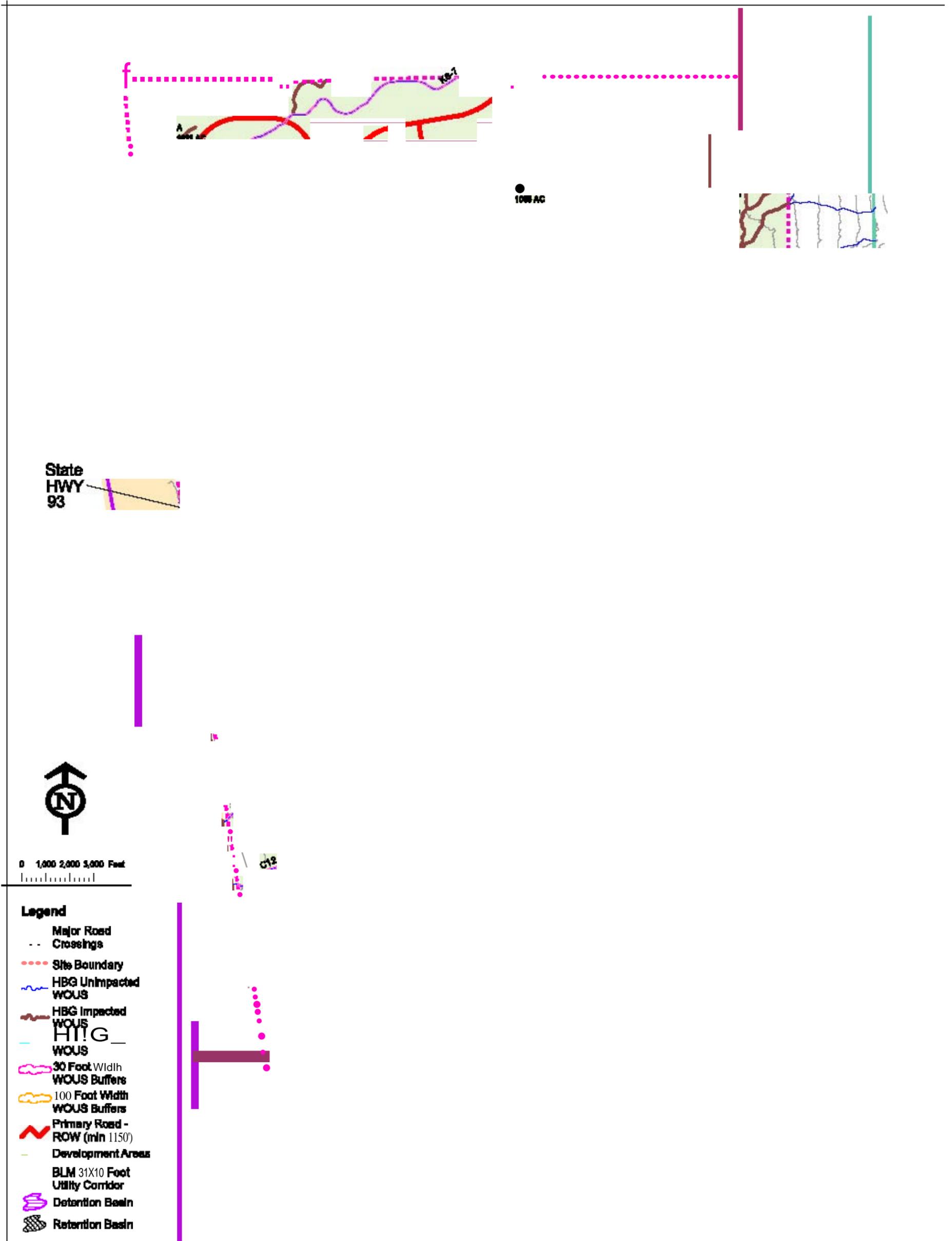


Figure 3. Plan View, Location and Features Associated With Preserved and Restored O. ...rt Dry Preferred Alternative

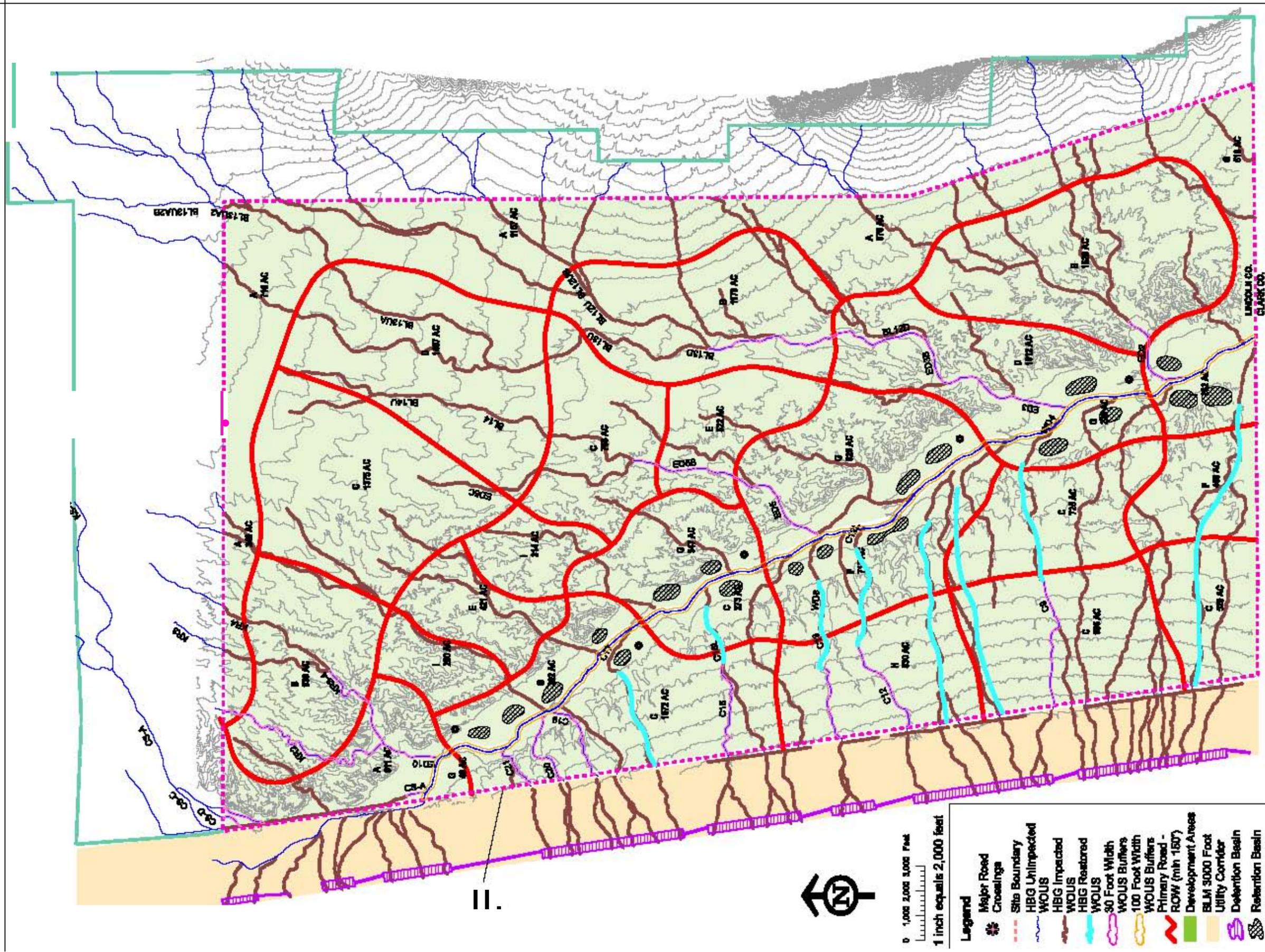
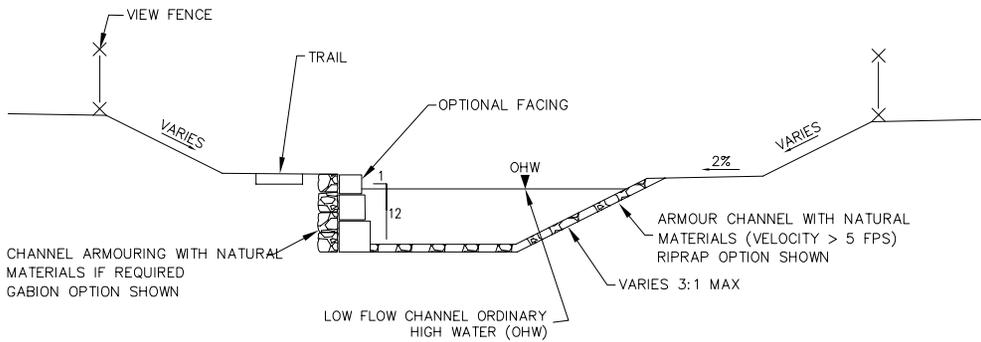
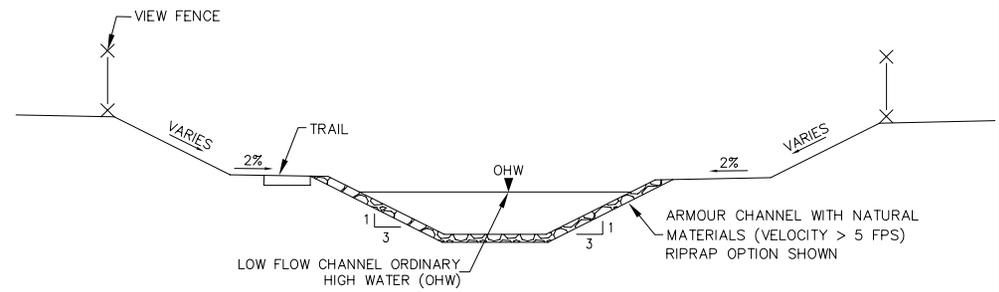


Figure 4. Plan View, Location and Features Associated With Preserved and Restored Desert Dry Wash Habitat, Alternative 1



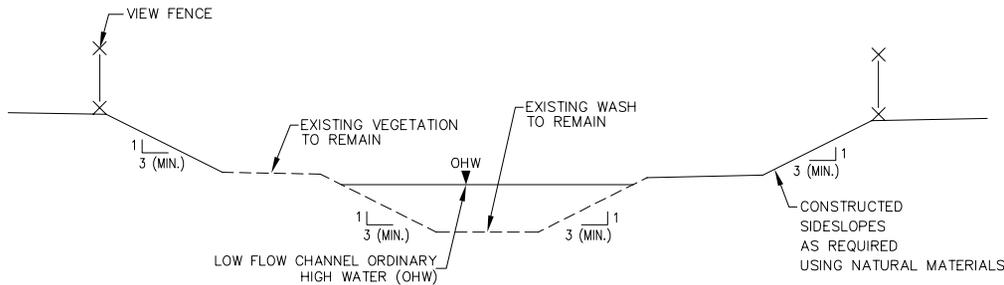
TYPICAL RESTORED WASH WITH VERTICAL WALL

NOT TO SCALE



TYPICAL RESTORED WASH WITH 3:1 SIDESLOPES

NOT TO SCALE



TYPICAL EXISTING WASH WITH RESTORED SIDESLOPES

NOT TO SCALE

Figure 5. Typical Sections, Restored Desert Dry Wash Habitat

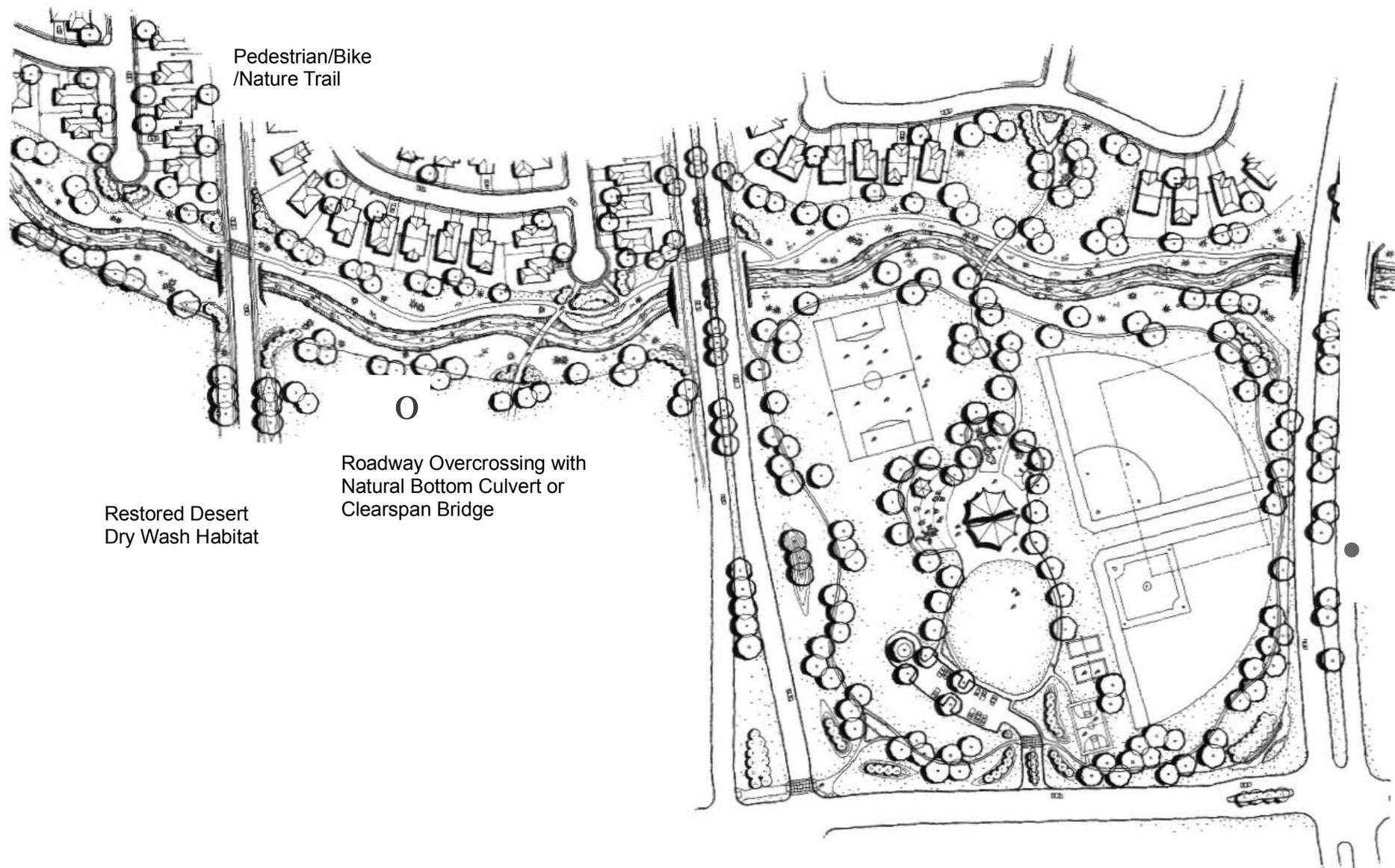


Figure 6. Plan View, Typical Trail Design Within Preserve Area

FORMS

1. Maintenance Monitoring Field Form
2. Mitigation Monitoring Data Sheet for Assessing Desert Dry Wash Soil Surface and Hydrology Conditions
3. Mitigation Monitoring Data Sheet for Assessing Plant Cover
4. Data Form – To Determine Presence/Absence Of Other Waters Of The United States (WOUS
5. WOUS Functions and Values Evaluation Form

MAINTENANCE MONITORING FIELD DATA COLLECTION FORM

Site Name & Address: _____

Date: _____ **Time:** _____ **Inspected By:** _____

Inspection Item	Status	Location*	Describe Action To Be Taken Or Taken
1. Vandalism Inspections			
2. Trash and Debris Inspections			
3. Fencing, Gates, and Signage Inspections			
4. Protective Buffers			
5. Sedimentation and Erosion Control Inspections			
6. Vegetation Management			
7. Inspections for Altered Hydrology Patterns			
8. Other			

* Attach location map and photo.

Page ____ **of** ____

MITIGATION MONITORING DATA SHEET FOR ASSESSING PLANT SPECIES COVER

Corps Permit # _____ Restored WOUS # _____ Recorder _____

Date _____ Monitoring Year _____ Technical Reviewer _____

Regulatory Requirement: Determine for each year of required compliance monitoring the overall abundance and habitat distribution of the various plant species found within the Corps' approved mitigation area(s).

Cover Class	Range %	Midpoint %
1	0 – 5	2.5
2	5 – 25	15
3	25 – 50	37.5
4	50 – 75	62.5
5	75 – 95	85
6	95 – 100	97.5

No.	Species	NWI ¹	Strata ²	Cover Class/Quadrat										Overall Percent Cover
				1	2	3	4	5	6	7	8	9	10	
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
¹ National Wetland Inventory Status ² H-herbaceous, S-shrub, T-tree		Notes/Comments:												

DATA FORM –
TO DETERMINE PRESENCE/ABSENCE OF OTHER WATERS OF THE UNITED STATES (WOUS)
 (Adapted From 1987 Corps *Wetlands Delineation Manual*)

Project/Site: Permittee/Owner: Investigator(s):	City: State:
Do Normal Circumstances exist on the site? ____ Yes; ____ No Is the site significantly disturbed (Atypical Situation)? ____ Yes; ____ No Is the area a potential Problem Area? ____ Yes; ____ No (If needed, explain answer on reverse or attach separate sheet.)	Community ID: Transect ID: ____ Plot ID: ____

VEGETATION

Dominant Plant Species	Strata (H, S, T or V)	Regional NWI Indicator Status	Dominant Plant Species	Strata (H,S,T or V)	Regional NWI Indicator Status
1.			8.		
2.			9.		
3.			10.		
4.			11.		
5.			12.		
6.			13.		
7.			14.		

Observations & Remarks:

1. Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): herb ____%; shrub ____%; tree ____%; vine ____%

2. Assume presence of wetland vegetation? ____ Yes; ____ No, or,

3. Visually observed rooted emergent vegetation growing in flooded, ponded and/or saturated soils: ____ Yes; ____ No

4. Taxonomic Reference(s):

HYDROLOGY

Recorded Data (Attach):
 Stream, Lake, or Tide Gauge
 Aerial Photographs:
Dates: _____

 Other:
a. _____
b. _____
c. _____
 No Recorded Data Found

Comments

Current Field Observations within upper 12" of soil profile

Depth of Surface Water: _____ in.
Depth to Free Water in Pit: _____ in.
Depth to Saturated Soil: _____ in.
 Tidal Influence Non-Tidal Influence

Comments:

Corps Wetland Hydrology Indicators within upper 12" of soil profile:

Corps Primary Indicators (current conditions):
 Inundated: _____ Flooded _____ Ponded _____
 Saturated: _____ In Upper 12" of Soil Profile

Corps Primary Indicators (historical conditions):

Water Marks
 Drift Lines
 Sediment Deposits
 Drainage Patterns in Wetlands

Corps Secondary Indicators (2 or more required; historical conditions):

Oxidized Root Channels (Living Roots with Oxidized Rhizospheres) in: _____ Upper 12" of Soil Profile
 Water-Stained Leaves
 Local Soil Survey Data
 FAC-Neutral Test

Other, If Necessary (Explain)

a. Landscape Position "Drains"
b. Landscape Position "Ponds"
c. Landscape Position "Saturates"

Comment(s):

Hydrology Observations and Remarks:

1. Filamentous or sheet forming algae present? Yes No
2. Matted vegetation Yes No
3. Surface Sediment with Bedding Planes Yes No
4. Encrusted detritus Yes No
5. Slope: 0-2%; or >2%
6. Oxidized rhizospheres: new roots only; old roots only; new and old roots; none
7. Flooding: none, flooding not probable; rare, unlikely but possible under unusual weather conditions; occasional, occurs on an average of once or less in 2 years; frequent, occurs on an average of more than once in 2 years.
8. Continuous flooding duration: None; very brief, if <2 days; brief, if <5% growing season (GS); long, if 5% to 12.5% GS; or very long, if >12.5% GS.
9. Ponding? Yes No
10. Continuous ponding duration: None; very brief, if <2 days; brief, <5% growing season (GS); long, if 5% to 12.5% GS; or very long, if >12.5% GS.
11. Saturation? Yes No
12. Continuous duration of saturation: None; very brief, if <2 days; brief, <5% growing season (GS); long, if 5% to 12.5% GS; or very long, if >12.5% GS

Comment(s):

DETERMINATION of OTHER WATERS OF THE UNITED STATES (WOUS)

Hydrophytic Vegetation Conditions Present? _____ Yes _____ No Wetland Hydrology Conditions Present? _____ Yes _____ No Hydric Soils Conditions Currently Present? _____ Yes _____ No	Is this Sampling Point Within a Wetland? _____ Yes _____ No Signature: _____ _____
<p><i>Remarks:</i></p> <p>1. Possible water of the U.S.? _____ Yes _____ No (can be a water and not a wetland when vegetation is absent if bed and bank present).</p> <p>2. Possibly exempt from Corps/EPA regulation? _____ Yes _____ No (If yes, check item(s) below).</p> <p>(a) _____ Non-tidal drainage and irrigation ditches excavated on dry land</p> <p>(b) _____ Artificial irrigated areas which would revert to upland if the irrigation ceased.</p> <p>(c) _____ Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.</p> <p>(d) _____ Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.</p> <p>(e) _____ Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).</p>	

NOTES:

¹ Drainage class: Excessively drained (ED), Somewhat excessively drained (SED), Well drained (WD), Moderately well drained (MWD), Somewhat poorly drained (SPD), Poorly drained (PD), Very poorly drained (VPD), or Variable (V).

² Permeability: Very slow (VS-less than 0.06 inch), slow (S-0.06 to 0.20 inch), moderately slow (MS-0.2 to 0.6 inch), moderate (M- 0.6 to 2.0 inches), moderately rapid (MR-2.0 to 6.0 inches), rapid (R-6.0 to 20 inches), very rapid (VR-more than 20 inches), or Variable (V).

³ Runoff: Very slow (VS) Slow (S), Moderate (M), Rapid (R), or Variable (V).

⁴ Mottle abundance: Few (F), Common (C), or Many (M).

⁵ Mottle contrast: Faint (F), Distinct (D), or Prominent (P).

⁶ Texture: Sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.

⁷ Structure: Platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), or granular.

⁸ Reliance on visual observation of flooding, or ponding is required, or the use of indicators other than factors such as soil color, the presence of mottles, or hydric soil classification.

WOUS FUNCTIONS AND VALUES EVALUATION FORM

Corps Permit # _____ Restored WOUS # _____ Recorder _____

Date _____ Monitoring Year _____ Technical Reviewer _____

Total area of WOUS: _____ acres
 Manmade? _____ Yes _____ No
 Adjacent land use:

 Distance to nearest roadway or other development: _____
 Dominant WOUS systems present:

 Is the WOUS a separate hydraulic system?
 _____ Yes _____ No

How many tributaries contribute to the WOUS? _____
 Is WOUS part of a wildlife corridor?
 _____ Yes _____ No
 Or a "habitat island" _____ Yes _____ No
 Contiguous undeveloped buffer zone present?
 _____ Yes _____ No
 If not, where does the WOUS lie in the desert dry wash basin?

WOUS Impact:
 Type _____ Area _____
 Evaluated based on:
 Office _____ Field _____
 Corps Manual WOUS delineation completed?
 _____ Yes _____ No

Functions	Occurrence		Rationale	Principal Function(s)?	Comments
	Y	N			
Groundwater Recharge/Discharge					
Floodflow Alteration					
Fish and Shellfish Habitat					
Sediment/Toxicant Retention					
Nutrient Removal, Retention and/or Transformation					
Production Export					
Sediment/Shoreline Stabilization					
Wildlife Habitat					

WOUS FUNCTIONS AND VALUES EVALUATION FORM, continued

Values	Occurrence		Rationale	Principal Value(s)?	Comments
	Y	N			
Recreation					
Educational/Scientific					
Uniqueness/Heritage					
Visual Quality/Aesthetics					
Threatened or Endangered Species Habitat					

Note: WOUS = Desert Dry Wash Habitat.

APPENDIX 1

Example Conservation Easement

A portion of APNs: 8-201-04;
8-201-03; 8-201-06;
8-201-08; 8-201-15;
and 8-201-18

Mail Tax Statements to:

Coyote Springs Investment LLC
6600 N. Wingfield Parkway
Sparks, Nevada 89436
Attn: Controller

**Recording Requested by, and
When Recorded Return to:**

The Conservation Fund
1800 North Kent Street, Suite 1120
Arlington, Virginia 22209
Attn: General Counsel

GRANT OF CONSERVATION EASEMENT

THIS GRANT OF CONSERVATION EASEMENT ("Grant") is made as of _____, __, 2007, by Coyote Springs Investment LLC, a Nevada limited liability company ("Grantor"), in favor of The Conservation Fund, a Maryland non-profit corporation ("Grantee"), whose address is 1800 North Kent Street, Suite 1120, Arlington, Virginia 22209.

RECITALS

A. Grantor is the owner of that certain real property situated in Lincoln County, Nevada commonly known as a portion of the Lincoln County Coyote Springs Master Planned Community ("Coyote Springs Lincoln County Development Project"), as more fully described on Exhibit A attached hereto and incorporated herein ("Current Fee Land").

B. Grantor is the lessee of that certain real property situated in Lincoln County, Nevada commonly known as a portion of the Coyote Springs Lincoln County Development Project, as more fully described on Exhibit A attached hereto and incorporated herein ("Current Leased Land").

C. Pursuant to agreement by and among the United States Fish & Wildlife Service ("FWS"), the Bureau of Land Management ("BLM"), and Grantor, and subject to completion of a cadastral survey, the Current Fee Land and the Current Leased Land will be reconfigured by issuance of a final patent ("Final Fee Land") and an amendment to the lease ("Final Leased Land") to a configuration substantially the same as shown on Exhibit B attached hereto and incorporated herein for the benefit of the desert tortoise and other sensitive species and their habitat.

D. The Current Fee Land and the Current Leased Land are collectively referred to herein as the "Project Area". Because the exterior boundary of the Current Fee Land and the Current Leased Land is identical to the exterior boundary of the Final Fee Land and the Final Leased Land, the Final Fee Land and the Final Leased Land are also collectively referred to herein as the "Project Area". The Final Fee Land constitutes that portion of the Coyote Springs Lincoln County Development Project scheduled for development ("Development Area"). Subject to BLM's consent the Final Leased Lands will be placed into the Coyote Springs Resource Management Area by a separate instrument.

E. Grantor intends to develop the Development Area as a planned unit development that will include, among other uses, residential, commercial, industrial and recreational uses.

F. Grantee is a publicly supported, tax-exempt non-profit organization, qualified under §501(c)(3) and §170(h) of the Internal Revenue Code, whose primary purpose is the preservation, protection, or enhancement of land in its natural, scenic, historical, forested and/or open space condition. Grantee is qualified to do business in the State of Nevada.

E. Grantee qualifies as the "holder" of the easement under the provisions of Nevada Revised Statutes ("NRS") §§ 111.390 through 111.440, inclusive.

DEFINITIONS

1. As used herein, "Corps" means the United States Army Corps of Engineers within the United States Department of the Army, which is authorized by Federal law to administer the Federal Clean Water Act, Section 404, and other laws and regulations.

2. As used herein, "Desert Dry Wash Habitat" means those Areas that are WOUS having plant communities within and adjacent to WOUS that are affected by surface water of ephemeral flows, such as washes, playas, or drainage ways. These areas have a distinctive bed and bank with an ordinary high water mark and distinctly different vegetation than the vegetation in adjacent areas or have species similar to the adjacent areas that exhibit a more vigorous or robust growth form.

3. As used herein, "Management Plan" means the provisions set forth in Section 8.0 of the Mitigation Plan, Coyote Springs Development Project, Lincoln County, Nevada, prepared by the Huffman-Broadway Group, Inc., dated _____ 2007, as now or hereafter amended ("Mitigation Plan").

4. As used herein, "Preserve" means all of the areas totaling approximately _____ acres as generally depicted on Exhibit C attached hereto and incorporated herein which contains or will contain preserved and restored Desert Dry Wash Habitat and upland buffer zones which shall be maintained as a Preserve in accordance with the provisions of Section 3 below; provided, the actual Preserve lands shall be designated and granted in phases corresponding to the development phases of the Project Development Area upon the completion of one or more surveys and the recording of an amendment to this Grant from time to time, which amendment sets forth the legal description of each preserved or restored WOUS and the upland buffer zone associated therewith in each development phase.

5. As used herein, "WOUS" means the area defined in 40 CFR §122.2, as now or hereafter amended, as a feature under the regulation of the Federal Clean Water Act.

6. As used herein, "Uplands" means those desert habitat areas that are not Desert Dry Wash Habitat, WOUS, and habitats that are not riparian or wetlands.

CONSERVATION VALUES

The Coyote Springs Lincoln County Development Project Area is bounded on the north by the Delamar Mountains, on the east by the Meadow Valley Mountains, on the south by the Lincoln/Clark County boundary, and on the West by U.S. Highway 93.

The Development Area contains WOUS, Desert Dry Wash Habitat and associated upland habitat which possess significant natural resource values, including drainage ways that in turn provide habitat, aesthetic, ecological, educational, recreational and scientific values (collectively, the "Conservation Values") that are of great importance to the Grantor, Grantee, the people of Lincoln County, the State of Nevada and the United States of America. Specifically, the Conservation Values include (a) WOUS, which as a result of their formation provide ecological and habitat values benefitting endangered, threatened and other rare species, (b) Desert Dry Wash Habitat, (c) segments of WOUS that will be restored to provide functioning drainage ways and Desert Dry Wash Habitat, (d) waters flowing in and through the preserved and/or restored Desert Dry Wash Habitat whether resulting from precipitation onto the Preserve and/or flows through the drainage features from natural storm events which partially or completely fill the drainages on the surface of the Preserve.

The Preserve has been identified as containing some WOUS, with associated Desert Dry Wash Habitat deemed worthy of preservation, while other WOUS will be relocated with new construction and restored as functioning WOUS with restored Desert Dry Wash Habitat, which preservation and restoration is very important to Grantors, Grantee, Lincoln County and the Corps. The preservation and restoration work will be carried out in accordance with the Management Plan.

This Grant provides conservation measures and mitigation for certain impacts to WOUS located in Lincoln County, as described in that certain U.S. Army Corps of Engineers Permit Number _____, dated _____, 2007 ("404 Permit"), and that certain Federal Endangered Species Act Section 7 Biological Opinion dated _____, 2007 for the Coyote Springs Lincoln County Development Project. This conservation easement is being granted to enable Grantor to undertake the Coyote Springs Lincoln County Development Project. Grantor proposes to build a new town development within the Development Area. The Development Area is within approximately one hour's drive from Las Vegas. The town will include, among other things, residential, commercial, institutional, industrial and recreational (golf courses) components.

Grantor intends to convey to Grantee the right but not the duty to preserve, protect, restore and/or enhance the Conservation Values of the Preserve.

COVENANTS, TERMS, CONDITIONS, AND RESTRICTIONS

NOW, THEREFORE, in consideration of the above and the mutual covenants, terms, conditions, and restrictions contained herein, and pursuant to the laws of the State of Nevada and in particular NRS §§ 111.390 through 111.440, Grantor hereby voluntarily grants and conveys to Grantee a conservation easement, subject to all encumbrances of record on the date hereof, in perpetuity on, over and through

the Preserve of the nature and character and to the extent hereinafter set forth (“Easement”), together with the power and authority to enforce the terms, covenants and conditions of this Grant.

Notwithstanding any provision to the contrary in this Grant, Grantor and Grantee expressly acknowledge and agree that upon the recording of this Grant the Easement shall not encumber the Current Leased Land unless and until such land becomes Final Fee Land. Further, any Current Fee Land that becomes Final Leased Land shall be released from the encumbrance of this Grant concurrently upon the recording of the final patent establishing the Final Fee Land without the need for either party to record any release or reconveyance instrument; provided, however, Grantor and Grantee shall cooperate to delivery and record any instrument reasonably requested by BLM or a title insurance company to separately evidence such release of record.

1. Purpose.

It is the purpose of this Easement that the Preserve will be retained forever in an open space condition and to prevent any use of the Preserve that will impair or interfere with the Conservation Values of the Preserve. Grantor intends that this Easement (i) will assure that the Preserve will be used for such activities as are consistent with the purpose of this Easement and (ii) shall be implemented consistently with the Management Plan.

2. Affirmative Rights of Grantee.

To accomplish the purpose of this Easement, the Grantor hereby grants and conveys the following rights but not the duty to Grantee none of which shall be construed or interpreted to impose affirmative obligations or duties on the Grantee.

A. To preserve, protect, restore and/or enhance the Conservation Values of the Preserve in a manner consistent with the Management Plan;

B. To enter upon and traverse all portions of the Preserve at all times in order to have access to the Preserve and to monitor Grantor’s compliance with and otherwise enforce the terms of this Easement; provided, that such entry shall not unreasonably impair or interfere with Grantor’s use and quiet enjoyment of the Preserve or unreasonably disturb natural resources in the Preserve;

C. Subject to the reservations contained in Section 6 below, to prevent any activity on or use of the Preserve that is inconsistent with the purpose of this Easement and to require the restoration of such area or features of the Preserve that may be damaged by any inconsistent activity or use; and

D. To conserve and protect all mineral, air, and surface water flows necessary to protect and to sustain the biological resources of the Preserve.

E. The rights set forth in Section 2(A)-2(D) above shall not be construed as duties of the Grantee nor does acceptance of this Grant impose any affirmative obligation on Grantee to undertake any action or expend any sum of money hereunder other than as set forth in Sections 3(B), 3(D) and 3(E) below.

3. **Preservation, Maintenance and Management of Preserve**

A. General Nature of the Preserve. The Preserve provides for the protection and restoration of WOUS, Desert Dry Wash Habitat, water quality, management of surface drainage, drainage detention, wildlife corridors, upland desert habitat, and buffer zones for such areas. Further, the Preserve provides recreational, educational and scientific opportunities. Grantor intends that the Preserve be utilized and maintained in such a manner as to preserve and protect the natural features and resources of the area. The preliminary and approximate Preserve location is shown on Exhibit C attached hereto and incorporated herein ("Plot of Approximate Preserve Location"). Notwithstanding any provision to the contrary contained in this Grant, Grantor and Grantee expressly acknowledge and agree that the actual location of the Preserve shall be fixed in phases coinciding with the phases of the Coyote Springs Lincoln County Development Project by the recording of an amendment to this Grant from time to time during development of the Development Area that provides a valid legal description and a plot of that portion of the Preserve occurring within each phase of development. From and after the date of recording of each such amendment the recorded legal description shall control the location of the Preserve and the Easement and the Plot of Approximate Preserve Location shall be of no further force or effect.

B. Monitoring Biologist. The Grantee shall retain a competent biologist utilizing funds made available by Grantor (the "Monitoring Biologist"), professionally trained in matters related to the conservation and preservation of natural resource values, to undertake an annual field review and prepare an annual report, as set forth in Section 3(E), with respect to the status of the Preserve.

C. Structures and Improvements. There are proposed improvements that will be made and structures that will be constructed within the Preserve for parks and recreational areas, educational and safety purposes. These include, without limitation, parks and recreational areas, equestrian trails, a pedestrian trail/bike path, stormwater protection features, erosion control features, underground utilities, low level path lighting, benches, information kiosks and roadways and associated WOUS overcrossings. The construction and maintenance activities relating to these structures shall be carried out according to the Management Plan.

D. Monitoring and Reporting Activities. The Grantee and/or a Monitoring Biologist shall once yearly inspect the Preserve as outlined in the Management Plan. The Grantee shall twice yearly inspect the Preserve as outlined in the Management Plan which inspection(s) may include that outlined in the preceding sentence.

E. Annual Report. By March 31st of each year, the Grantee or Monitoring Biologist shall deliver to the Corps an annual report through December 31st of the immediately preceding year describing the status of the Preserve. This report shall contain:

1. A map showing the project location;
2. Photographs documenting the status of the Preserve;
3. A narrative summarizing the general condition of the Preserve;
4. Any recommendations regarding remedial actions or management activities.

F. Maintenance and Repair. Maintenance and repair of existing and proposed structures and improvements shall be made according to the Management Plan by Grantor at Grantor's sole and exclusive expense.

4. Prohibited Activities

The following activities are prohibited as outlined in the 404 Permit (attached hereto as Exhibit D) or as outlined in the Management Plan. From and after the date this Grant is recorded no person shall engage in any of the following activities in any preserved wash (as shown on Exhibit D) unless that activity is in the future approved by the Corps, and from and after the date that construction activity associated with the restoration of each restored wash (as shown on Exhibit D) no person shall engage in any of the following restricted activities within any such restored wash or the Preserve unless that activity is in the future approved by the Corps:

a. Planting, landscaping, plowing, grading with native top soil replacement, or cultivating within the Preserve or any portion of such area shall not be done or permitted except for the purpose of enhancing the Preserve. Planting can be accomplished in preserved and restored desert dry wash and upland buffer habitats using native plant species obtained within the Coyote Springs area (e.g., at the Desert National Wildlife Refuge or the Coyote Springs Lincoln County Development Area) as described in the Management Plan. Planting of non-native vegetation along trails and roadways or within upland buffer areas for landscaping purposes is also allowable as long as the plants are not invasive or noxious species. The irrigation of these plantings, if any, will be done in a manner that does not adversely affect the hydrology of either preserved or restored desert dry wash habitat, wetland habitat or preserved / restored upland buffer habitat within the Preserve;

b. Planting, introducing, or dispersing non-native invasive or exotic plant or animal species is prohibited;

c. Construction waste materials or debris shall not be stored or placed (whether temporarily or permanently) within the Preserve;

d. Discharge of any dredged or fill material shall not be done or permitted within the WOUS within the Preserve except as allowed by and consistent with the terms and conditions of the 404 Permit;

e. Discharge, dumping, disposal, storage, or placement of any soil, ashes, trash, refuse, rubbish, grass clippings, cuttings, biosolids, or other waste materials shall not be done or permitted within the Preserve;

f. Excavating, dredging, or removing loam, gravel, soil, rock, sand, or other material is prohibited except as further defined and set forth in the Mitigation Plan or with prior written approval by the Corps;

g. Leveling or grading or otherwise altering the general topography of the Preserve or any portion of such area is prohibited except as described in the Mitigation Plan;

h. Pesticides, herbicides, rodenticides, or other chemicals shall not be used within the Preserve except as described in the Mitigation Plan or with prior written approval by the Corps;

i. Destruction or removal of any native vegetation that exists on the Preserve shall not be done or permitted except as provided in the Mitigation Plan or with prior written approval by the Corps;

j. Except for golf carts and maintenance vehicles operating on designated paths, no motorized vehicles shall be ridden, brought, used or permitted on any portion of the Preserve, except as provided for in the Mitigation Plan or with prior written approval by the Corps;

k. Roads, equipment storage, buildings, billboards, signs, or other structures or activities shall not be permitted except for golf cart paths, equestrian trails, pedestrian/bicycle trails, roadway and bridge crossings, underground utilities, low level path lighting, nature trails, benches, educational facilities such as informational signs and kiosks, and utility lines. The term utility line as used herein is not meant to include high-tension power lines;

l. Granting use of the land to any third party for off-road vehicle use is prohibited;

m. Notwithstanding the initial recording of this Easement depicting the general location of preserved washes and buffers, and restored washes and buffers, the actual easement locations will be defined and created from time to time pursuant to the NRS ch. 278 mapping process during the various development phases. The holder of the Easement and all segments thereof will be a single entity;

n. Paving or otherwise covering of the Preserve with concrete, asphalt, or any other impervious paving material is prohibited except for roadways, trails, paths, golf cart paths and bridge crossings;

o. Granting surface entry for the exploration or extraction of minerals without approval by the Corps is prohibited;

p. Any and all other uses that may adversely affect the purposes of the Conservation Values of the Easement is prohibited;

q. Except as described in the Mitigation Plan, no other change in the hydrology of the site shall be permitted without prior written approval by the Corps.

5. Grantor's Duties

Grantor shall undertake all commercially reasonable actions to prevent the unlawful entry and trespass by persons whose activities may degrade or harm the Conservation Values of the Preserve. In addition, Grantor shall undertake all commercially reasonable actions to perfect Grantee's rights under Section 2 of this Grant.

6. Reserved Rights

Grantor expressly reserves unto itself and its personal representatives, heirs, successors, assigns, agents, and present and potential future lessees, all rights accruing from their ownership of the Preserve including, but not limited to: (i) the right to engage in or invite others to engage in activity on or use of the Preserve for the purpose of construction of the Coyote Springs Lincoln County Development Project in accordance the terms and conditions of the 404 Permit, including, without limitation, equestrian trails, pedestrian trails/bike paths, low level path lighting, golf cart paths, stormwater protection features, erosion control features, benches, information kiosks, and roadways and associated WOUS overcrossings; (ii) the right to engage or invite others to engage in activity on or use of the Preserve for the purpose of complying with the requirements of any governmental permits or authorizations including, but not limited to, those granted pursuant to the Federal Endangered Species Act, Section 404 of the Clean Water Act or analogous Nevada statutes; (iii) the right to engage in or invite others to engage in all uses of the Preserve that are not expressly prohibited herein and are not inconsistent with the conservation purposes of the Easement; (iv) the right to adopt rules governing the right of access to and the use of the Preserve by owners, lessees, guest, invitees and employees of or within the Coyote Springs Lincoln County Development Project, including the right to amend such rules from time to time; (v) the right to grant or dedicate easements and rights of ways or road, path and trail over-crossings and underground utility crossings; and (vi) the right to conduct maintenance and repair activities on all trails, paths, golf cart paths, path related facilities, educational facilities, stormwater facilities, road and bridge facilities, utility facilities, or any other authorized facility located within the Preserve.

CSI expressly excludes and reserves unto itself any and all water rights appropriated under Nevada law that are appurtenant to the Preserve either in whole or in part. This Easement includes stormwater flows generated within the Preserve, the Development Area, or off-site but that flow through the WOUS within the Preserve.

7. Remedies

A. Enforcement Rights. If Grantee determines that there is a violation of the terms of this Easement or that a violation is threatened, Grantee shall give written notice to Grantor of such violation and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Preserve resulting from any use or activity inconsistent with the purpose of this Easement, to restore in accordance with the Management Plan, the portion of the Preserve so injured. If Grantor fails to cure a violation within thirty (30) days after receipt of written notice thereof from the Grantee, or under circumstances where the violation cannot reasonably be cured within a thirty (30) day period Grantor fails to commence and continue diligently to cure such violation until finally cured, the Grantee may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement, to enjoin the violation, ex parte as necessary, by temporary or permanent injunction, to recover any damages to which it may be entitled for violation of terms of this Easement or injury to the Conservation Values protected by this Easement, including damages for the loss of aesthetic, ecological, educational, historical, recreation, or scientific values and to require the restoration of the Preserve pursuant to the Plan to the condition that existed prior to any such injury.

If Grantee, in its good faith and reasonable discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the Conservation Values of the Preserve,

Grantee may pursue its remedies under this paragraph without prior notice to the Grantor or without waiting for the period provided for the cure to expire. Grantee's rights under this paragraph apply equally in the event of either actual or threatened violations of the terms of this Easement, and Grantor agrees that the Grantee's remedies at law for any violation of the terms of this Easement are inadequate and that Grantee shall be entitled to the injunctive relieve described in this paragraph, both prohibitive and mandatory, in addition to such other relief to which Grantee may be entitled, including specific performance of the terms of this Easement, without the necessity of proving actual damages or the inadequacy of otherwise available legal remedies.

Grantee's remedies described in this paragraph shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity. Furthermore, the provisions of NRS §§ 111.390 through 111.440 are incorporated herein, and this Easement is made subject to all of the rights and remedies set forth therein. If at any time in the future Grantor or any subsequent transferee or assignee uses or threatens to use the Preserve for purposes not in conformance with the provisions of this Easement, or, except as set forth in Section 12 below, Grantee releases or abandons this Easement in whole or in part, notwithstanding NRS §§111.390 through 111.440, the Nevada Attorney General shall have standing as an interested party, and as a third party beneficiary in any proceeding affecting this Easement.

B. Cost of Enforcement. Reasonable costs incurred by Grantee enforcing the terms of this Easement, including without limitation, costs of suit and attorneys' fees, and any costs of restoration necessitated by a violation of the terms of this Easement shall be borne by the breaching party. If a party prevails in any action to enforce the terms of this Easement, such party's costs of suit including, without limitation, attorneys' fees, shall be borne by the other party.

C. Parties' Discretion. Enforcement of the terms of this Easement shall be at the discretion of the Grantee and any forbearance by Grantee to exercise its rights under this Easement shall not be deemed or construed as a waiver by Grantor or Grantee of such term or of any subsequent breach of the same or any other term of this Easement or of any of their rights under this Easement. No delay or omission by Grantee in the exercise of right or remedy upon any breach by Grantor shall impair such right or remedy or be construed as a waiver.

D. Acts Beyond Parties' Control. Nothing contained in this Easement shall be construed to entitle any party to bring any action against Grantor or Grantee for any injury to or change in the Preserve resulting from causes beyond their control, including, without limitation, fire, drought, flood, storm, and earth movement.

8. Access

Grantee, its successors, assigns, agents, invitees and licensees shall have the right to access the Preserve at all times, subject to Section 2(B) above.

9. Costs and Liabilities

Except as set forth in this Easement, or as otherwise agreed in writing between the parties hereto, Grantor retains all responsibilities related to the ownership of the Preserve.

A. Taxes: Grantor shall pay before delinquency all taxes, assessments, fees, and charges of whatever description levied on or assessed against the Preserve by competent authority, including any taxes imposed upon, or incurred as a result of, this Easement, and shall furnish Grantee with satisfactory evidence of payment upon request.

B. Hold Harmless: Grantor or its successors and assigns shall hold harmless, indemnify, and defend Grantee and its members, directors, officers, employees, agents and contractors and the heirs, personal representatives, successors, and assigns of each of them (collectively, the "Grantee Indemnified Parties") from and against all liabilities, penalties, costs, losses, damages, expense, causes of action, claims, demands, or judgments, including without limitation, reasonable attorney's fees, arising from or in any way connected with: (1) injury to or the death of any person, or physical damages to any property, resulting from any act, omission, condition or other matter occurring on the Preserve, unless caused by the gross negligence of any of the Grantee Indemnified Parties; and (2) the existence or administration of this Easement, unless caused by the gross negligence of any of the Grantee's Indemnified Parties.

10. Assignment

This Easement is assignable, but Grantee shall give Grantor and the Corps at least 30 days' prior written notice of the transfer. Grantee may assign its rights and obligations under this Easement only to an organization that is (1) approved by the Grantor and the Corps; and (2) a public agency or a qualified organization at the time of transfer under Section 170(h) of the Internal Revenue Code of 1986, as amended (or any successor provision then applicable), and the applicable regulations promulgated there under; and (3) authorized to acquire and hold conservation Easements under NRS §§111.390 through 111.440 (or any successor provision then applicable). As a condition of such assignment or transfer, the Assignee or Transferee shall agree in writing that the conservation purposes that this Easement is intended to advance and shall continue to be fulfilled and that the Management Plan will be followed. In the event of the termination of Grantee's existence, the rights of Grantee hereunder shall, by that fact itself, and without any further action on the part of any entity, be deemed assigned to an entity approved by the Corps.

11. Subsequent Transfers or Amendments, Subordination of Deeds of Trust

Grantor agrees to incorporate the terms of this Easement by reference into any deed or other legal instrument by which Grantor amends the Preserve's legal description or by which Grantor divests itself of any interest in all or a portion of the Preserve, including without limitation, a leasehold interest. Grantor further agrees to give written notice to the Grantee and the Corps at least fifteen (15) days prior to the date of any Preserve transfer. Grantor covenants and agrees that at the time of either amending the Easement relative to the Preserve description, or transferring its interest in all, or a portion, of the Preserve, any mortgage or deed of trust then affecting the Preserve shall be either released from or subordinated to the terms of this Easement. The failure of Grantor to perform any act required by this paragraph shall not impair the validity of this Easement or limit its enforceability in any way. This Grant may be amended by Grantor and Grantee only by mutual written agreement and with written approval of the Corps. Any such amendment shall be consistent with the purposes of this Easement and shall not affect its perpetual duration.

12. Extinguishment

If circumstances arise in the future such as render the purpose of this Easement impossible to accomplish, this Easement can only be terminated or extinguished, whether in whole or in part, by judicial proceedings in a court of competent jurisdiction, and the amount of the proceeds to which Grantee shall be entitled, after the satisfaction of prior claims, from any sale, exchange, or involuntary conversion of all or any portion of the Preserve subsequent to such termination or extinguishment, shall be determined, unless otherwise provided by Nevada law at the time, in accordance with the immediately following paragraph. Grantee shall use all such proceeds in a manner consistent with the conservation purposes of this Grant.

This Easement constitutes a real property interest immediately vested in Grantee, which, for the purposes of this Section 12, the parties stipulate to have a fair market value determined by multiplying the fair market value of the Preserve unencumbered by the Easement (minus any increase in value after the date of this Grant attributable to improvements) by the ratio of the value of the Easement at the time of this Grant to the value of the Preserve, without deduction for the value of the Easement, at the time of this Grant. For the purposes of this paragraph, the ratio of the value of the Easement to the value of the Preserve unencumbered by the Easement shall remain constant.

If the Easement is taken, in whole or in part, by exercise of the power of eminent domain, Grantee shall be entitled to compensation in accordance with applicable law.

Notwithstanding any provision to the contrary in this Section 12 or elsewhere in this Grant, Grantee may reconvey this Grant to Grantor or its successors and assigns if (i) by regulation or policy adopted by the Corps after the date hereof, or (ii) by a decision of a court of competent jurisdiction after the date hereof, the Corps no longer has jurisdiction over the subject WOUS because it has been determined that desert dry washes do not constitute WOUS. In such event, the rights and obligations of Grantor hereunder shall terminate and neither party shall have any further rights or obligations under this Grant from and after the time such instrument of reconveyance is recorded in the Official Records of Lincoln County, Nevada.

13. Estoppel Certificates

Upon request by the Grantor, Grantee shall within 15 business days execute and deliver to Grantor any document, including an estoppel certificate, which certifies Grantor's compliance with any obligation of Grantor contained in this Easement and otherwise evidences the status of this Easement, as may be requested by Grantor.

14. Notices

Any notice, demand, request, consent, approval, or communication that the parties desire or is required to give to the others shall be in writing and shall be validly given or made only if personally delivered or deposited in the United States Mail, certified or registered, postage prepaid, return receipt requested, if made by Federal Express or other similar delivery service keeping records of deliveries and attempted deliveries, or by facsimile transmission. Service shall be conclusively deemed made upon receipt if personally delivered or sent by facsimile, or, if delivered by mail or delivery service, on the first

business day delivery is attempted or upon receipt, whichever is sooner. Any notice or demand shall be addressed as follows:

If to Grantor: Coyote Springs Investment, LLC
Attn: Terry Reynolds, VP Entitlement Services
6600 North Wingfield Springs Parkway
Sparks, Nevada 89436
Tel: (775) 321-5942
Fax: (775) 626-8925

If to Grantee: The Conservation Fund
Nevada and Southwest Office
3960 Howard Hughes Parkway, Suite 534
Las Vegas, Nevada 89109
Tel: (702) 990-3540
Fax: (702) 990-3541

The Conservation Fund
1655 N. Fort Myer Drive, Suite 1300
Arlington, Virginia 22209
Attn: General Counsel
Tel: (703) 525-6300
Fax: (703) 525-4610

If to the Corps: United States Army Corps of Engineers
Sacramento Regulatory Branch
1325 J Street, Room 1480
Sacramento, California 95814
Tel: (916) 557-5250
Fax: (916) 557-6877

or to such other address or the attention of such other officer as from time to time shall be designated by a party upon written notice to the other parties given in the manner set forth above.

15. Funding

Grantor has provided an escrow fund to Grantee for the purposes of fulfilling all of Grantor's obligations, long-term operations, and maintenance of the Easement under the Management Plan. The balance of funding, if any, shall be transferred to the appropriate transferee or assignee if the Easement is assigned or transferred.

16. Recordation

Grantee shall promptly record this instrument in the official records of Lincoln County, Nevada, and may re-record it at any time as may be required to preserve its rights in this Easement. Costs of recordation shall be borne by Grantor.

17. Additional Easements

Except as set forth in Section 6 above, Grantor shall not grant any additional easements, rights-of-way, or other interests in the Preserve without the prior written authorization of Grantee given through the Corps. Such authorization will be given unless the Corps, among other things, determines that the proposed interest will adversely impact the functions and values of the WOUS within the Preserve. This paragraph shall not be deemed to prohibit the transfer of a fee title or leasehold interest in the Preserve that is subject to the terms of this Easement.

18. General Provisions

A. Governing Law. The interpretation and performance of this Easement shall be governed by the laws of the State of Nevada, the Federal Clean Water Act, and other applicable Federal laws.

B. Construction. Any general rule of construction to the contrary notwithstanding, this Grant shall be construed in favor of the Grant to effect the Conservation Purpose of this Easement and the policy and purpose of NRS §§111.390 through 111.440. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the purposes of this Easement that would render the provisions valid shall be favored over any interpretation that render it invalid.

C. Severability. If any provision of this Grant, or the application thereof to any person or circumstances, is found to be invalid, the remainder of the provisions of this Grant, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.

D. Entire Agreement. This instrument sets forth the entire agreement of the parties with respect to the Preserve, and supersedes all prior discussions, negotiations, understandings, or agreements related to this Preserve.

E. No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

F. Successors and Assigns. The covenants, terms, conditions, and restrictions of this Grant shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns shall continue as servitude running in perpetuity with the Preserve.

G. Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

H. Counterparts. The parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by both parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

I. Third-Party Beneficiary: Grantor and Grantee acknowledge that the Corps is an intended third party beneficiary of this Grant with the right of access to the Preserve and shall have the right to enforce all of the provisions of this Grant.

19. No Merger

In the event the Preserve and the Easement are ever owned by the same entity, there shall be no express or implied merger by operation of law or otherwise. If any party should claim such a merger, the parties agree that any and all terms and conditions of this Easement shall be deemed covenants and restrictions upon the Preserve, which, shall run with the land according to Nevada and/or other applicable law and otherwise exist in perpetuity.

20. No Charitable Deduction

It is agreed and understood that Grantor does not intend to claim a charitable contribution deduction relating to this Grant of Conservation Easement and Grantee shall have no obligation to assist Grantor in the corroboration of such a claim should one be made.

IN WITNESS WHEREOF, Grantor and Grantee have executed this Grant as of the date first written above.

GRANTOR:

**COYOTE SPRINGS INVESTMENT LLC,
a Nevada limited liability company**

By: _____
_____, Manager

GRANTEE:

**THE CONSERVATION FUND,
a Maryland non-profit corporation**

By: _____
Print Name: _____
Its: _____

STATE OF NEVADA)
):SS
COUNTY OF)

This instrument was acknowledged before me on _____, 2007, by _____ as
Manager of Coyote Springs Investment LLC, a Nevada limited liability company.

Notary Public

STATE OF)
):SS
COUNTY OF)

This instrument was acknowledged before me on _____, 2007, by _____
as _____ of The Conservation Fund, a Maryland non-profit corporation.

Notary Public

Exhibit A

Legal Description of Project Development Area

Current Fee Land:

All that certain real property situate in the County of Lincoln, State of Nevada, described as follows:

Township 11 South, Range 63 East, M.D.M. (Lincoln County):

Section 13, S½;

Section 19, that portion lying easterly of the westerly boundary of the transmission corridor, that boundary being ½ mile easterly of the centerline of U.S. Highway 93;

Section 20, all;

Section 21, all;

Section 22, all;

Section 23, all;

Section 24, all;

Section 25, all;

Section 26, all;

Section 27, all;

Section 28, all;

Section 29, all;

Section 30, that portion lying easterly of the westerly boundary of the transmission corridor, that boundary being ½ mile easterly of the centerline of U.S. Highway 93;

Section 31, that portion lying easterly of the westerly boundary of the transmission corridor, that boundary being ½ mile easterly of the centerline of U.S. Highway 93;

Section 32, all;

Section 33, all;

Section 34, all;

Section 35, all; and

Section 36, W½.

Township 12 South, Range 63 East, M.D.M. (Lincoln County):

Section 1, Lots Three (3), Four (4), South Half (S½) of the Northwest Quarter (NW¼) and the Southwest Quarter (SW¼);

Section 2, Lots One (1) thru Four (4), South Half (S½) of the North Half (N½) and the South Half (S½);

Section 3, Lots One (1) thru Four (4), South Half (S½) of the North Half (N½) and the South Half (S½);

Section 6, that portion lying between the Centerline of U.S. Highway 93 and the Western boundary of the transmission corridor, that boundary being ½ mile Easterly of the Centerline of U.S. Highway 93, excluding that portion of the North Half (N½) of the North Half (N½) lying between the Centerline of U.S. Highway 93 and the Western boundary of the transmission corridor; and that portion lying Easterly of the Western boundary of the transmission corridor, that boundary being ½ mile Easterly of the Centerline of U.S. Highway 93;

Sections 7, 18, 19, 29, 30, 32 all lying Easterly of the Centerline of U.S. Highway 93;
Sections 5, 9, 16, 21, 28, 33, that portion lying Westerly of the Eastern boundary of the transmission corridor, that boundary being 1½ miles from the Centerline of U.S. Highway 93.
Section 8, all;
Section 10, all;
Section 11, all;
Section 12, West Half (W½) of the West Half (W½);
Section 13, West Half (W½) of the West Half (W½);
Section 14, all;
Section 17, all;
Section 20, all;
Section 23, North Half (N½) and the Southeast Quarter (SE¼);
Section 24, West Half (W½) of the West Half (W½);
Section 25, West Half (W ½);
Section 26, East Half (E½);
Section 36, all;

Current Leased Land:

All that certain real property situate in the County of Lincoln, State of Nevada, described as follows:

Township 11 South, Range 63 East, M.D.M. (Lincoln County, Nevada):

Section 19, all that portion lying easterly of the centerline of U.S. Highway 93 and the western boundary of the transmission corridor, that boundary being ½ mile easterly from the centerline of U.S. Highway 93;
Section 30, all that portion lying easterly of the centerline of U.S. Highway 93 and the western boundary of the transmission corridor, that boundary being ½ mile easterly from the centerline of U.S. Highway 93; and
Section 31, all that portion lying easterly of the centerline of U.S. Highway 93 and the western boundary of the transmission corridor, that boundary being ½ mile easterly from the centerline of U.S. Highway 93;

Township 12 South, Range 63 East (Lincoln County, Nevada):

Section 4, all;
Section 5, all that portion lying easterly of the centerline of the eastern boundary of the transmission corridor, that boundary being 1½ mile easterly from the centerline of U.S. Highway 93;
Section 9, all that portion lying easterly of the centerline of the eastern boundary of the transmission corridor, that boundary being 1½ mile easterly from the centerline of U.S. Highway 93;

Section 15, all;

Section 16, all that portion lying easterly of the centerline of the eastern boundary of the transmission corridor, that boundary being 1½ mile easterly from the centerline of U.S. Highway 93;

Section 21, all that portion lying easterly of the centerline of the eastern boundary of the transmission corridor, that boundary being 1½ mile easterly from the centerline of U.S. Highway 93;

Section 22, all;

Section 23, Southwest Quarter (SW 1/4);

Section 26, West Half (W ½);

Section 27, all;

Section 28, all that portion lying easterly of the centerline of the eastern boundary of the transmission corridor, that boundary being 1½ mile easterly from the centerline of U.S. Highway 93;

Section 33, all that portion lying easterly of the centerline of the eastern boundary of the transmission corridor, that boundary being 1½ mile easterly from the centerline of U.S. Highway 93;

Section 34, all;

Section 35, all.

Exhibit B

Plot of Final Fee Land and Final Leased Land Configuration

[to be attached]

Exhibit C

Plot of Approximate Preserve Location

Subject to Modification as Provided in the Grant

[to be attached]

Exhibit D

Copy of 404 Permit

[to be attached]

APPENDIX 2

Native Seed Collection License And Native Plant Collection and Salvage Licenses

NATIVE PLANT SALVAGE REVOCABLE LICENSE

THIS NATIVE PLANT SALVAGE REVOCABLE LICENSE ("License") is dated and made effective as of the 19th day of May, 2006 (the "Effective Date"), by and between COYOTE SPRINGS INVESTMENT LLC, a Nevada limited liability Company ("CSI"), and NATIVE RESOURCES NEVADA, a Liability Co., a Nevada limited liability Company ("Native Resources").

WITNESSETH:

WHEREAS, CSI is the owner of the land described on Exhibit A attached hereto and incorporated herein (the "CSI Lands");

WHEREAS, CSI intends to develop the CSI Lands as a master planned community (the "Project") and CSI has started development activity in southern portions of the CSI Lands;

WHEREAS, CSI recognizes that native vegetation will be lost from CSI Lands during the development of the Project;

WHEREAS, CSI desires to mitigate this loss and assist in conservation and propagation of native plant species for the purpose of ensuring their long term survival;

WHEREAS, the CSI Nursery will collect some but not all of the available native plants for future use as landscaping material within the Project;

WHEREAS, CSI has previously granted the Springs Preserve a non-exclusive license to collect native plants, including, without limitation, all species of cacti and yucca occurring on CSI Lands that exceed the quantity that can be utilized by the CSI Nursery and that would otherwise be lost as a result of surface disturbing development activity;

WHEREAS, Native Resources has staff and/or volunteers that are trained and qualified to collect native plants from their natural locations, transplant and transplant such native plants;

WHEREAS, CSI desires Native Resources to collect native plants from the CSI Lands and Native Resources desires to undertake such collection;

WHEREAS, Native Resources desires to provide CSI with salvaged native plants, including, without limitation, cacti and yucca plant species for use in developing and maintaining landscape areas within the Project;

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, CSI and Native Resources mutually agree as follows:

1. Subject to the terms and conditions set forth below, CSI hereby grants Native Resources, its employees, agents and contractors a non-exclusive revocable license with a right of access to enter the CSI Lands for purposes of collecting native plants species as listed on Exhibit B attached hereto and incorporated herein, from within those areas as may be specified by CSI from time to time. Native Resources expressly acknowledges and agrees the lands described on Exhibit A shall change from time to time during the term hereof and that no plant salvage activity shall be conducted on any lands not owned by CSI from time to time during the term hereof. Further, no plant salvage activity shall occur on any CSI lands located in Lincoln County, Nevada unless and until CSI shall have received a Section 10 Permit issued by the United States Fish & Wildlife Service covering such lands and CSI has notified Springs Preserve of such coverage in writing.

2. Native Resources shall notify CSI of its intent to enter the CSI Lands for native plant collection activity not less than twenty-four (24) hours before the start of such activity. Native Resources shall deliver this notice to CSI by contacting Steve DeRico (CSI's Nursery Manager) at (702) 422-1205.

3. Native Resources acknowledges and agrees that CSI may restrict access to portions of the CSI Lands from time to time during the term hereof to minimize potential conflicts between native plant collection activity and any planned construction activity. Native Resources shall ensure that its employees, agents and contractors only work within those areas of the CSI Lands designated in advance by CSI as native plant collection areas for Native Resources' salvage work from time to time during the term hereof. Further, Native Resources shall insure that its employees only enter and exit designated work areas by means of the access route or routes designated by CSI from time to time during the term hereof.

4. All plant salvage work conducted by Native Resources on CSI lands shall comply with the salvage specifications set forth on Exhibit C attached hereto and incorporated herein.

5. In consideration of CSI granting Native Resources the non-exclusive right to collect native plants on and from designated portions of the CSI Lands, Native Resources shall: (a) give the Coyote Springs Nursery ("Nursery") plants at the ratio of 2: 1 for salvaged cacti and yucca species, and Mormon tea; and (b) at the ratio of 3: 1 for all other native species salvaged from CSI's lands (collectively, the "CSI Plants"); and (c) assist Nursery staff in the implementing the proper care all salvaged plants delivered to the Nursery. The CSI Plants will be for the benefit of and use by the Nursery. Native Resources shall deliver the CSI Plants to the Nursery at the time of collection.

6. Native Resources shall maintain all appropriate workers' compensation insurance, liability insurance, personal injury and property damage insurance and shall hold CSI, its officers, managers, employees, agents and contractors harmless from and against any and all losses, claims, damages, liability, personal injury or property damage of any kind and nature whatsoever (including, without limitation, attorneys' fees and costs), resulting from or related to native plant salvage activity, except to the extent of CSI's gross negligence or intentional misconduct.

7. Native Resources shall comply with all applicable provisions of NRS ch. 527 during the term of this License. CSI shall cooperate and assist Native Resources in obtaining any necessary State Forester Firewarden permits allowing for the lawful salvage and collection of cacti and yucca or other species from the CSI lands.

8. Native Resources shall ensure that each person entering the CSI Lands to salvage native plants on behalf of the Native Resources attends CSI's training seminar and signs CSI's form acknowledging such training before each such person is authorized to enter into or upon the CSI Lands. Each person must sign the CSI training seminar form before they will be allowed to enter the Project. Native Resources acknowledges and agrees that CSI has the right and shall retain the right to remove from or forbid re-entry of any person to the CSI Lands that does not comply with the terms of any environmental permit applicable to the Project.

9. The term of this License shall commence on the Effective Date and shall expire on May 31, 2008, unless earlier terminated as provided herein. CSI may revoke this License immediately by written notice to Native Resources upon the occurrence of a default of Native Resources under the terms and conditions of this License. Notwithstanding any provision to the contrary contained in this License, either party may terminate this License upon thirty (30) days prior written notice to the other party.

10. The execution, delivery, and performance of this License by the persons executing the same on behalf of the parties hereto have been authorized (and by their execution hereof such persons individually represent and warrant that they are so authorized) and this License is the legal, valid and binding obligation of the parties, and shall be binding upon, and inure to the benefit of the respective successors and assigns of the parties hereto.

11. Notwithstanding any provision to the contrary in this License, Native Resources shall only conduct native plant salvage work during the time and only in those areas specifically designated by CSI for plant salvage activity to be conducted by Native Resources. NATIVE RESOURCES SHALL CONTACT ROB DERCK OR TERRY REYNOLDS FOR INFORMATION REGARDING THE DESIGNATED SALVAGE OPERATION TIMES AND DESIGNATED LOCATIONS. ROB DERCK AND TERRY REYNOLDS ARE CSI'S DESIGNATED REPRESENTATIVES UNDER THIS AGREEMENT AND NO OTHER PERSON HAS THE AUTHORITY OF CSI TO DESIGNATE NATIVE PLANT SALVAGE

AREAS OR TO AUTHORIZE NATIVE RESOURCES TO PROCEED WITH NATIVE PLANT SALVAGE ACTIVITIES UNDER THIS AGREEMENT.

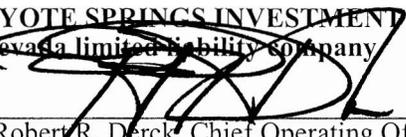
12. CSI and Native Resources acknowledge and agree that Exhibit A of this License will be amended after completion of the fee/leased land adjustment in Lincoln County to reflect the then effective legal description of the CSI Lands.

13. This License shall be governed by, construed and enforced under the laws of the State of Nevada.

14. This License may be executed in any number of counterparts, each of which when executed and delivered shall be an original, but all such counterparts shall constitute one and the same License.

IN WITNESS WHEREOF, the parties hereto have caused this License to be duly executed effective as of the day first written above.

COYOTE SPRINGS INVESTMENT LLC,
a Nevada limited liability company

By: 
Robert R. Derck, Chief Operating Officer

NATIVE RESOURCES NEVADA, A NEVADA LIMITED LIABILITY CO.,
a Nevada limited liability company

By: 
Print Name: Bryan Vellinga
Its: VP

Exhibit A

Current Legal Description of the CSI Lands

All that certain real property situate in Township 13 South, Range 63 East, M.D.M., County of Clark, State of Nevada, described as follows:

Sec. 2, SW $\frac{1}{4}$ SW $\frac{1}{4}$;
Sec. 3,
Sec. 4;
Sec. 5, Lots 1,2,5,8,10,11 and 18, SE $\frac{1}{4}$ NE $\frac{1}{4}$, and E $\frac{1}{2}$ SE $\frac{1}{4}$;
Sec. 8, Lots 1,2,9, 10, 11 and 18,
Sec.9,all;
Sec. 10,
Sec. 11, NW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, and SW $\frac{1}{4}$;
Sec. 14, W $\frac{1}{2}$ and W $\frac{1}{2}$ SE $\frac{1}{4}$;
Sec. 15, all;
Sec. 16, all;
Sec. 17, Lots 1,4,5 and 8;
Sec. 22, Lots 1,3,5, and 7, N $\frac{1}{2}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, and N $\frac{1}{2}$ SW $\frac{1}{4}$;
Sec. 23, Lots 1,3,5, and 7, SE $\frac{1}{4}$ NE $\frac{1}{4}$, W $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, and N $\frac{1}{2}$ SW $\frac{1}{4}$; and
Sec. 26, Lot 1.

All that certain real property situate in Township 11 South, Range 63 East, M.D.M. (Lincoln County):

Section 13, S $\frac{1}{2}$;
Section 19, that portion lying easterly of the westerly boundary of the transilission corridor, that boundary being $\frac{1}{2}$ mile easterly of the centerline of U.S. Highway 93;
Section 20, all;
Section 21, all;
Section 22, all;
Section 23, all;
Section 24, all;
Section 25, all;
Section 26, all;
Section 27, all;
Section 28, all;
Section 29, all;
Section 30, that portion lying easterly of the westerly boundary of the transilission corridor, that boundary being $\frac{1}{2}$ mile easterly of the centerline of U.S. Highway 93;
Section 31, that portion lying easterly of the westerly boundary of the transilission corridor, that boundary being $\frac{1}{2}$ mile easterly of the centerline of U.S. Highway 93;
Section 32, all;
Section 33, all;
Section 34, all;
Section 35, all; and
Section 36, W $\frac{1}{2}$.

All that certain real property situate in Township 12 South, Range 63 East, M.D.M. (Lincoln County):

Section 1, Lots Three (3), Four (4), South Half (S $\frac{1}{2}$) of the Northwest Quarter (NW $\frac{1}{4}$) and the Southwest Quarter (SW $\frac{1}{4}$);
Section 2, Lots One (1) thru Four (4), South Half (S $\frac{1}{2}$) of the North Half (N $\frac{1}{2}$) and the South Half (S $\frac{1}{2}$);
Section 3, Lots One (1) thru Four (4), South Half (S $\frac{1}{2}$) of the North Half (N $\frac{1}{2}$) and the South Half (S $\frac{1}{2}$);
Section 6, that portion lying between the Centerline of U.S. Highway 93 and the Western boundary of the transilission corridor, that boundary being $\frac{1}{2}$ mile Easterly of the Centerline of U.S. Highway 93, excluding

that portion of the North Half (NY2) of the North Half (N $\frac{1}{2}$) lying between the Centerline of U.S. Highway 93 and the Western boundary of the transmission corridor; and that portion lying Easterly of the Western boundary of the transmission corridor, that boundary being $\frac{1}{2}$ Mile Easterly of the Centerline of U.S. Highway 93;

Sections 7, 18, 19, 29, 30, 32 all lying Easterly of the Centerline of U.S. Highway 93;

Sections 5, 9, 16, 21, 28, 33, that portion lying Westerly of the Eastern boundary of the transmission corridor, that boundary being $\frac{1}{2}$ Miles from the Centerline of D.S. Highway 93.

Section 8, all;

Section 10, all;

Section 11, all;

Section 12, West Half (WY2) of the West Half (W $\frac{1}{2}$);

Section 13, West Half (W $\frac{1}{2}$),

Section 14, all;

Section 17, all;

Section 20, all;

Section 23, North Half (NY2) and the Southeast Quarter (SEY4);

Section 24, West Half (WY2);

Section 25, all;

Section 26, East Half (EY2);

Section 36, all;

Exhibit B

Schedule of Native Plants that may be Collected

Plant	<u>Maximum Number to be Salvaged</u>
Creosote	30,000
Bursage	20,000
Mojave Yucca	8,000
Miscellaneous cacti - hedgehog, old llan, silver cholla, pencil cholla, cotton top, fish hook	4,000 (combined)
MOfillon tea	2,500

Notwithstanding any provision to the contrary in this Exhibit B or the Agreement, the number of each plant that Native Resources may salvage shall not exceed the maximum number of plants set forth above unless and until any such plant salvage in excess of this amount is subsequently authorized (on behalf of CSI) in writing in accordance with Section 11 of the Agreement.

Exhibit C
Plant Salvage Specifications

APPENDIX 3

Weed Management Plan

(in preparation by Resource Concepts, Inc.)

COYOTE SPRINGS INVESTMENT LLC

Framework for a Long-Term Plan of Detection, Control, and Monitoring of Noxious and Invasive Species of Concern

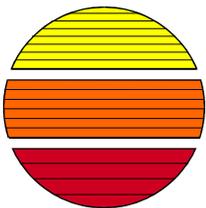
Lincoln County Development Area

May 2007

Prepared for:

Coyote Springs Investment LLC
6600 North Wingfield Springs Parkway
Sparks, NV 89436

Prepared by:



ENGINEERING • SURVEYING • RESOURCES & ENVIRONMENTAL SERVICES

RESOURCE CONCEPTS, INC.

340 N. MINNESOTA ST. • CARSON CITY, NV 89703-4152 • OFFICE: 775-883-1600 • FAX: 775-883-1656
212 ELKS POINT RD, SUITE 443 • ZEPHYR COVE, NV 89448 • OFFICE: 775-588-7500 • FAX: 775-589-633

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- Attachment B Protocol for Finding and Quantifying Invasive Weeds
- Attachment C Example Fact Sheets from Nevada Weeds Project

INTRODUCTION

The spread of invasive, non-native plants is of growing concern and importance in the maintenance of ecosystem health. Without aggressive management efforts, invasive, non-native plants will continue to spread and degrade the wildland habitats and communities necessary to support wildlife and native plants. Coyote Springs Investment LLC (CSI) recognizes the critical role it will play in preventing the establishment of invasive plant species within the Development Area, Coyote Springs Resource Management Area (which includes CSI leased land in Clark and Lincoln County), and on adjacent public lands. As such, CSI has prepared a framework for developing a long-term plan for detection, control, and monitoring of noxious and invasive species of concern on the lands owned CSI (“project area”). This framework document will be developed with review and comments from agencies and organizations vested in detection and control of noxious and invasive species, such as the Nevada Department of Agriculture, the BLM Las Vegas District, and the Tri-County Weed program, which has extensive regional experience in the area of weed management.

The relationship between invasive plant species and wildfire occurrence in the Mojave Desert is now abundantly clear, with wildfire effects on soils, plant communities, fauna, and human welfare becoming increasingly evident each year. During the 2005 fire season, wildfires consumed over 805,400 acres within a 75-mile radius of the project area, with some fires coming within four miles of the project area. A weed management program that focuses on early detection of new invasive populations, abatement of existing populations, and mitigation of invasive population effects will include public awareness and education campaigns; a prevention program; a common inventory, mapping, monitoring, and reporting procedure; and the implementation of integrated weed management practices. An overall management plan and specific action plans will be developed for logical units of land within the Coyote Springs Investment project area, which for the purposes of this document could be considered a discrete Weed Management Area (WMA). The outline for this document comes from “Guidelines for Coordinated Management of Noxious Weeds: Development of Weed Management Areas,” a document produced jointly by the US Forest Service, the Bureau of Land Management, and the National Park Service.

Figure 1, found at the end of this document, plots the results of noxious and invasive plant survey data in the vicinity of the project area. This data comes from observations made in the field during surveys for threatened and endangered plant species; from the Bureau of Land Management, Las Vegas Field Office; from the Weed Sentry program (a partnership between UNLV and the National Park Service); and from the Tri-County Weed Program. The Tri-County Weed Program is responsible for the management and control of invasive and noxious weeds throughout White Pine, Lincoln, and Nye Counties, and is funded by contracts with landowners in the area. The data presented in Figure 1 does not imply that a comprehensive weed survey has been completed for this area; rather, it represents the best efforts to date of these agencies to document the incidence and spread of these plant species.

**LOCATION OF THE COYOTE SPRINGS INVESTMENT WEED MANAGEMENT AREA
(CSI WMA)**

Coyote Springs Investment is a planned community located approximately 50 miles northeast of Las Vegas in the Coyote Springs Valley. Properties owned or leased by CSI in this area are bounded to the north by the Kane Springs Wash, to the east by the southern reaches of the Meadow Valley Mountains, to the south by the Lincoln County line; and to the west by U.S. Highway 93. The project area includes approximately 21,454 acres of land in Lincoln County (Figure 1).

**PURPOSE OF THE COYOTE SPRINGS INVESTMENT WEED MANAGEMENT AREA
(CSI WMA)**

The purpose of the Weed Management Area (WMA) to be established for the Coyote Springs Investment project area is to facilitate the policies and objectives listed below. Construction activities provide increased opportunities for existing weed populations of tamarisk, Sahara mustard, and African malcomia to expand through habitat modification and disturbance. In addition, the creation of new habitat types (i.e. the creation of new wetland areas), not formerly found within the project area increases the potential for colonization of additional weed species, as well as the increased traffic from potentially weed-contaminated vehicles and materials. These factors can also facilitate the introduction of new invasive species of concern such as Malta star thistle, whitetop, and tansy mustard. As residents, pets, and recreationists begin to populate the development areas and explore the surrounding Coyote Spring Resource Management Area, continued education and monitoring to detect new populations of noxious and invasive species will be required.

CSI WMA POLICIES AND OBJECTIVES

Development of the CSI WMA will be guided by the following policies and site-specific objectives:

Policy 1: Commitment to emphasize the role of education in the prevention, detection, and eradication of new populations of noxious and invasive plant species.

Education of personnel involved in construction activities and comprehensive oversight during construction will help to prevent new infestations and limit the spread of existing infestations. A comprehensive inventory of existing weed populations and periodic monitoring for new populations are essential elements in an efficient and effective program to control the entrance and spread of noxious and invasive plant populations.

As construction activities give way to new homeowners, education programs must shift their focus to address the domestic vectors for noxious and invasive plant movement. Monitoring and control activities will continue.

Policy 2: Commitment to use Integrated Weed Management strategies.

A complete integrated weed management plan shall be developed. Each infestation will be evaluated based on location, species of weed, non-target vegetation, intended land use, and topography. The actual control method to be used on each infestation will be stated in a yearly action plan prepared by Coyote Springs General Improvement District (CSGID) personnel. Pesticide application will be in accordance with label instructions and all safety precautions specified in the Material Safety Data Sheets (MSDS) shall be followed, as well as those directives spelled out in the CSI Chemical Application Management Plan. A sample of an integrated management plan for salt cedar is included as Attachment A.

Objective 1. Establish preventative practices that reduce the likelihood of reproductive plant parts from being carried into an area and establishing through construction-related vectors.

Construction-related vectors include: machinery and vehicles moving from weed-contaminated areas into non-contaminated areas, revegetation seed mixes that contain weed content (not certified weed-free), erosion control materials such as straw bales and mulch, and contaminated fill material. To prevent the spread of weed species through construction-related vectors, CSI proposes the following actions:

- Plan for access roads, staging areas and borrow pits to avoid areas with infestations of non-native species. A qualified biologist should inspect all proposed areas intended for access roads, staging areas and borrow pits to ensure that no non-native invasive species are present.

- Before construction equipment moves into an area, all seed-bearing noxious weed plants will be mown, graded, or otherwise treated and removed from travel ways. Treated areas will be revegetated with plant species native to the project area.
- All construction equipment entering the project area from off-site will be cleaned (steam or high pressure) of all mud, dirt, and plant parts before entering the project site. Off-road equipment will also be cleaned when moving from an area of weed infestation to a relatively weed-free area.
- Areas to be disturbed will be minimized to the greatest extent possible.
- Vegetation will be re-established on all disturbed soil from construction and maintenance activities.
- All straw, mulch and seed will come from certified weed-free sources.
- Gravel pits and fill sources will be inspected to identify weed-free sources. Gravel, topsoil and fill material will come from weed-free sources to the greatest extent possible.
- Removal of roadside vegetation will be minimized to the greatest extent possible during construction.

Objective 2. Establish preventative practices that reduce the likelihood of reproductive plant parts from being carried into an area and establishing through domestic vectors.

Domestic vectors include: wild bird seed, certain ornamental plants and seeds, domestic animals carrying seed in their coats, humans carrying seed on their clothing. Developing standards and practices that reduce the potential that these agents carry plant reproductive parts from weed-contaminated areas into areas not contaminated by weeds will be one of the least expensive methods for controlling invasive weeds.

With the establishment of permanent residences, a new set of weed spreading vectors will come into play. CSI will develop a weed abatement and education program to be implemented by the CSGID staff. One component of the education program will strive to educate homeowners against the spread of weeds through domestic vectors and will focus on the following:

- Transportation of seed through picking and transporting plants or plant parts that may spread the noxious weed seeds.
- Transportation of seed through recreational activities such as camping, hunting, and OHV use in wildland areas.
- Transportation of seed by domestic pets.
- Provide information to homeowners regarding the spread of specific landscape cultivars into wildland areas.

Objective 3. Develop and implement an early detection and monitoring methodology for noxious and invasive weed populations.

Systematically identifying and documenting newly introduced invasive weed species (or new populations of known species) will give managers a tremendous advantage in the effort to control or eradicate populations of invasive species. The *Protocol for Identifying and Quantifying Invasive Weeds* (Attachment B) details a prioritization strategy and a methodology for detecting, mapping, and monitoring weed populations.

As a responsibility of the CSGID, the following will be implemented:

- Maintain an inventory of known weed infestations.
- Develop and maintain a monitoring and evaluation system.
- Develop a site- and species-specific eradication program for known infestations.

Objective 4. Develop awareness, education, and training.

Concern for the control of noxious and invasive weeds in the CSI project area has been expressed. Flagging known populations of weed infestations, providing informational materials to aid those currently involved in construction and later, residents of the area in the identification of noxious and invasive species of concern will enhance the effort to identify and document infestations and reduce the likelihood of spread. Cooperative Extension Publication SP 03-09: *Invasive Weed Identification for Nevada* is a publication suitable for use in the field for these purposes. Attachment C provides an example of a flier that can be produced to encourage positive identification of invasive species in and near the project area. It will be the responsibility of the CSGID to continuously educate the residences of the problems posed by noxious weeds. At a minimum, the CSGID will:

- Provide informational brochures and literature to homeowners discussing the impacts caused by noxious weeds and methods for identification and reporting of non-natives identified in wildland areas.
- Place signs at trailheads that aid in identification of non-native and provide a method of reporting weed locations.
- Train construction crews and CSGID staff in identification of noxious weeds.

CSI WMA WEEDS OF CONCERN

The Coyote Springs project area is relatively free of large numbers of noxious or invasive species. With the exception of red brome (*Bromus rubens*) and Mediterranean grass (*Schismus arabicus* and *S. barbatus*), whose populations in Clark and Lincoln County are so well established as to be considered ubiquitous, few invasive non-native species are found on-site. Twelve (12) plant species have been identified as species of concern for weed control in the vicinity of the CSI project area. These species were identified using the Nevada Department of Agriculture Noxious Weed List and interviews with professionals working in southern Nevada in the field of noxious and invasive species management.

Ground surveys of the area have confirmed the presence of six (6) of the species within the project area. Current survey data reports the presence of Tamarisk (*Tamarix ramosissima*), Sahara mustard (*Brassica tournefortii*), African malcomia (*Malcomia africana*), Red brome (*Bromus rubens*), and Mediterranean grass (*Schismus arabicus* and *S. barbatus*) considered to be “species of concern.”

Figure 1 shows documented locations of noxious species relative to the covered area.

Table 1. Lists the weed species of concern with the potential to occur in the covered area.

Table 1. CSI WMA Weeds of Concern

Scientific Name	Common name	Status
<i>Acroptilon repens</i>	Russian knapweed	Category B
<i>Brassica tournefortii</i> *	Sahara mustard	Not listed
<i>Bromus rubens</i> *	Red brome	Not listed
<i>Centaurea diffusa</i>	Diffuse knapweed	Category B
<i>Centaurea melitensis</i>	Malta star thistle	Category A
<i>Descurainia Sophia</i>	Fixweed, tansy mustard	Not listed
<i>Malcomia Africana</i> *	African malcomia, African mustard	Not listed
<i>Schismus arabicus</i> *	Mediterranean grass	Not listed
<i>Schismus barbatus</i> *	Mediterranean grass	Not listed
<i>Tamarix ramosissima</i> *	Tamarisk, saltcedar	Category C
<i>Lepidium latifolium</i>	Tall whitetop, perennial pepperweed	Category C
<i>Cardaria draba</i>	Whitetop, hoary cress	Category C

*Known to occur within the development area.

Definitions of the Nevada Department of Agriculture Noxious Weed Categories:

Category "A": Weeds not found or limited in distribution throughout the state; actively excluded from the State and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations.

Category "B": Weeds established in scattered populations in some counties of the State; actively excluded where possible, actively eradicated from nursery stock dealer premises;

control required by the State in areas where populations are not well established or previously unknown to occur.

Category "C": Weeds currently established and generally widespread in many counties of the State; actively eradicated from nursery stock dealer premises; abatement at the discretion of the State quarantine officer.

Species Description and Locations

Of the six (6) species of concern known to occur within the project area, Salt Cedar and Sahara Mustard are listed as “Noxious” weeds by the State of Nevada. The Nevada Revised Statutes 555 requires that every landowner be responsible for eradication of State listed noxious weeds on their property. As such, saltcedar and Sahara mustard will be given the highest priority for identification and eradication within the project area and surrounding public lands. An Integrated Weed Management Plan has been prepared for saltcedar and is provided in Attachment A. A management plan will be prepared for Sahara mustard after the 2006 field surveys are complete.

Tier 1 – High Priority Species

Saltcedar (tamarisk)

Saltcedar is listed as a Category C Noxious Weed in the State of Nevada. Three occurrences of this species have been documented on or adjacent to the development area: 1) within the Pahranaagat Wash Channel near SR 168 (two individuals), 2) along old Hwy 93 north of the Clark County line (one individual), and 3) adjacent to an old stock watering pond located in the Clark County, west of the Pahranaagat. On-site distribution of this species is limited by suitable habitat. As the project develops, potential habitat for this species may increase.

Tamarisk is an aggressive, woody invasive plant species that has become established within floodplains, riparian areas, wetlands and lake margins throughout the western United States. Because of the limited on-site distribution of this species, complete identification and eradication of this species is possible. Through development of an integrated weed management plan, CSI will assess the extent of infestation and select the best control techniques specific to each saltcedar occurrence.

Sahara mustard

Sahara mustard is currently the highest-profile invasive species in southern Nevada and was added to the State’s Noxious Weed List in 2006. Heavy infestations are reported along the I-15 corridor, and moving north along other transportation corridors. Occurrences have been documented along U.S. Highway 93, the western boundary of the project area. This species can contribute to the fire hazard established by red brome and Mediterranean grass; however its establishment is still emergent enough to be controlled by aggressive eradication and monitoring activities.

Sahara mustard has not been identified within the interior of the covered area. To prevent the spread of Sahara mustard, CSI will:

- Survey locations of access sites from U.S. Highway 93 and SR 168 for the presence of Sahara mustard and other noxious weeds prior to start of construction;

- Work in cooperation with the Tri-County Weed Group in their initiative to eradicate Sahara Mustard along U.S. Highway 93.
- Develop an Integrated Weed Management Plan which identifies specific monitoring protocols and eradication methods.

Tier 2 – Species of Concern

The following four (4) species are not included on the State Noxious Weed List, but pose a threat to habitat integrity and spread of fire. Best management practices will be utilized to prevent further spread of these species.

Red Brome and Mediterranean Grass

These are the two most prevalent invasive species in the WMA. These species are so well established as to be nearly ubiquitous both on-site and throughout the surrounding landscape. Eradication of these species is not a viable option. Reduction should be considered because of the fine and flashy fuel characteristics that these species produce, fuelbreaks created by mowing and/or spraying should be considered in order to limit potential habitat and property damage during a wildfire.

African malcomia

African malcomia is a relatively new invasive species documented within Clark and Lincoln Counties. It is heavily infested along the I-15 corridor and appears to be moving north. It is found within the project area within the southern limits of the Pahrnagat Wash Channel (WOUS). Any construction or mining activities within the Pahrnagat Wash Channel (WOUS) will avoid areas containing African malcomia. Through development of an integrated weed management plan, CSI will assess the extent of infestation and select the best control techniques specific to African malcomia.

Malta star thistle

Occurrences of this plant, which is listed as a Category A Noxious Weed in the State of Nevada, have been noted spreading north from populations in the Glendale and Overton areas. Early detection of this species' arrival in the project area will be key in effectively and economically controlling its spread.

Treatment Methods

CSI will implement control measures for State listed Noxious Weeds that will be in accordance with existing regulations and jurisdictional land management agency agreements. Before construction, appropriate herbicides will be applied to the identified weed infestations to reduce the spread or proliferation of weeds. Post-construction control measures may include one or more of the following methods:

- Mechanical methods rely on equipment that is used to mow or disc weed populations. If such a method is used, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of noxious weeds. Seed selection will be based on site-specific conditions and the appropriate seed mix identified for those conditions.

- Herbicide application is an effective means of reducing the size of noxious weed populations. Applications will be controlled to minimize the impacts on the surrounding vegetation. In areas of dense infestation, a broader application will be used and a follow-up seeding program implemented. The timing of subsequent revegetation efforts will be based on the life of the selected herbicide;

Monitoring

Construction areas, disturbed areas, and areas of high foot and vehicle traffic will be monitored for the presence of federal and state listed noxious weeds with the objective of slowing the spread of known weed populations and preventing the establishment of high priority species.

The locations of known weed populations will be mapped prior to and during the monitoring process to evaluate the success of monitoring and mitigation efforts.

Monitoring will begin during the first growing season following the start of construction and will continue biannually for at least five years following the end of construction in each respective construction zone. Areas of foot and vehicular traffic such as paved roads, dirt roads, and trails will also be monitored during the construction process and on an ongoing basis.

During construction, CSI will provide personnel with training on the identification of high priority weed species and procedures for reporting weed populations or removal and disposal of individual plants whenever possible. CSI will also provide homeowners with education on the spread and control of noxious weeds, invasive ornamental species, high priority weed species identification, and procedures for reporting weed populations when they are encountered.

Implementation Timing

Implementation of the Weed Management Plan will commence upon construction of Coyote Springs Development. The Coyote Springs Development Project is to be constructed in four phases over more than 20 years. The Weed Management Plan will also be implemented in phases coinciding with completion of each development phase. Construction related weed management activities, as discussed under Objective 1, will be on-going throughout all development phases.

Roles and Responsibilities

During construction activities, Coyote Springs Investment will have the sole responsibility of ensuring that best management practices for preventing the spread of noxious and invasive weed species are followed.

Once construction activities are completed and the residences are occupied, the implementation of this long-term plan for detection, control, and monitoring of noxious and invasive species and weeds of concern will become the responsibility of the Coyote Springs General Improvement District (CSGID).

Annual Funding and Resource Availability

Funding and resource needs to initiate an integrated weed management plan will be provided by CSI. Once the CSGID is established, it will assume program responsibilities. GID taxes and fee revenues will provide long-term funding for the program.

Proposed Actions to Meet Annual Objectives

Proposed actions to meet annual objectives will be determined by the CSGID in conjunction and consultation with the CSGID, the Fish and Wildlife Service, the Bureau of Land Management, University of Nevada Cooperative Extension, the Tri-County Weed Program, and the UNLV/NPS Weed Sentry Program.

Actions will include periodic surveys to detect and monitor weed infestations, physical removal or spot application of herbicides on those areas, and preventative (pre-emergent) herbicide application in areas of disturbance as specified within the Integrated Weed Management Plan.

Develop and Maintain a Reporting System

Annual meetings with CSGID stakeholders, county, and state officials, and other interested parties, will be useful in developing and modifying action plans, which become attached to the management plan.

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Figure 1.
Coyote Springs
Weed Management Area

Legend

Species Occurrence

- ◆ Russian Knapweed
- ◆ Diffuse Knapweed
- + Sahara Mustard
- ▲ Tamarisk
- Tall Whitetop
- Perennial Pepperweed
- ✚ African malcomia
- ★ Malta starthistle

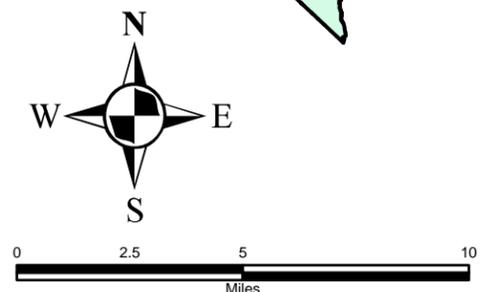
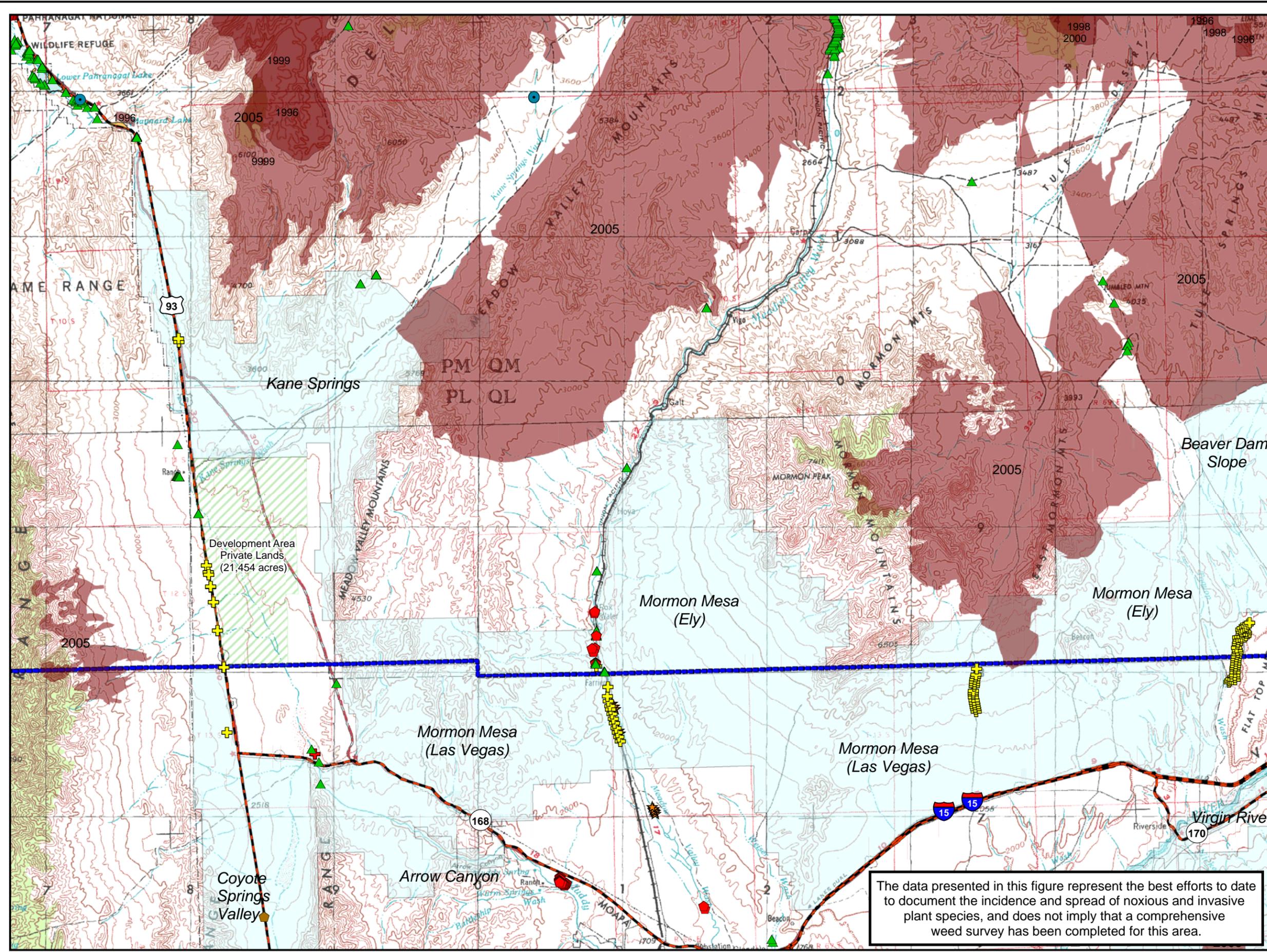
▨ Development Area

■ Major Fire (and Year)

▭ County Line

— Highway

▭ ACEC



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The data presented in this figure represent the best efforts to date to document the incidence and spread of noxious and invasive plant species, and does not imply that a comprehensive weed survey has been completed for this area.

Attachment A

Integrated Weed Management Plan:
Saltcedar

Integrated Weed Management Plan
for
SALT CEDAR
(*Tamarix ramossissima*, *T. parifolia*, *T. chinensis*)



Weed Management Area:

The Coyote Springs Investment Management Area (management area) includes land leased and owned by CSI in portions of Coyote Springs Valley in Southern Nevada. It consists of approximately 13,800 acres of leased land, including approximately 7,548 acres in Lincoln County and 6,219 acres in Clark County, and approximately 22,140 acres of developable private land in Lincoln County.

Current Land Use:

The site is currently undeveloped, with the exception of a nursery located off SR 168, approximately 3.5 miles east of U.S. Highway 93.

Future Land Use:

Approximately 22,140 acres within Lincoln County are planned for residential, commercial and recreational development.

Description of Weed Infestation:

Occurrences of saltcedar have been documented to the west of the Weed Management Area within the Pahrangat Wash Channel near SR 168 and on the fringe of a remnant stock-watering pond in Clark County. The approximate area of infestation is 2-4 acres. Within this area approximately 50% of the plants are saltcedar. Saltcedar is intermixed with plants typical of the desert dry wash habitat. In the area surrounding the stock-watering pond, wetland herbaceous species co-dominate. Distribution of this species is limited by suitable habitat. As the land becomes developed, potential habitat for this species is expected to increase.

Management Goals:

The goals for management for saltcedar are:

1. Prevent the spread of saltcedar from off-site to on-site areas; and
2. Prevent the establishment of saltcedar on disturbed areas during construction.

Management Techniques:

Management techniques will be based on the size of infestations, stage of plant, and the time of year performed: The following table summarizes the considerations for effective chemical treatments to control saltcedar.

MANAGEMENT TECHNIQUES	CUT-STUMP SURFACE	BASAL BARK SPRAY	FOLIAR SPRAY
Plant Stage	All stages; Triclopyr in summer and fall	Most effective when applied to stems < 3" in diameter treated when dormant.	Best results occur with an aerial application of Imazapyr in the late summer to early fall.
Treatment Process	Paint the cut stumps immediately (< 10 min) with Triclopyr.	Spray the lower uncut 15" of the plant with Triclopyr in an oil carrier.	Herbicide and wetting agent are applied via spray devices.
Herbicide Application	Thoroughly treat each stump, especially the cambium layer. Stumps must be wetted completely for good control.	Low-volume application: mix 25-30 gallons of Garlon4 with oil to make a 100-gallon mixture. Apply to plants with stems < 3" diameter.	Apply Imazapyr with the proper surfactant until the saltcedar is wet. Do not disturb the crown and roots of large trees for 2 yrs. to allow Imazapyr to move throughout the tree to prevent root sprouting.
Effectiveness	Most popular and effective in areas unsuitable for aerial or ground rig applications. Use near water to avoid drift.	Retreatment of stems that were not killed is difficult compared with cut stump treatment.	Effective on large stands with few non-target plants growing among the saltcedar.
Retreatment	Necessary to clean up missed stumps.	Retreat the following year.	Retreat if necessary.

Table modified from University of Nevada, Reno Cooperative Extension Fact Sheet FS-02-93.

Preferred Treatment:

Based on the current size of infestation (< 2 hectares at each occurrence) and presence of desirable native vegetation, it is anticipated that the cut-stump treatment followed by herbicide application will be preferentially used. Based on available study results, Triclopyr herbicides, such as Garlon 4 or Pathfinder II, appear to be the best choices for killing tamarisk due to higher phytotoxicity, low toxicity to humans, lack of restriction, and cost effectiveness TNC. The cut-stump treatment will be performed in the fall when plants translocate nutrients from leaves and stems into their roots. Plants will be cut to less than 5 cm of the ground surface. Herbicide will be applied to the entire circumference of the stem cambium within 10 minutes of cutting. Protective clothing, including hand, face, and eye protection will be used during application. The site will be revisited in the spring to spray all resprouts.

Revegetation:

The sites will be revegetated post treatment with native riparian and desert dry wash habitat species known to occur within the management area. Revegetation will occur by transplanting natives salvaged from the development site or through seeding of seeds collected within the management area.

Monitoring and Maintenance:

Monitoring of the sites will occur within 4 to 6 months of treatment to evaluate effectiveness. Follow up treatments may be necessary to kill missed plants and/or resprouts.

Funding:

Funding and resource needs to initiate this management plan will be provided by CSI.

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Attachment B

Protocol for Finding and Quantifying
Invasive Weeds

Protocol for Finding and Quantifying Invasive Weeds (DRAFT)

Robert E. Wilson, UNCE White Pine Co. Extension Educator
Ted Angle, BLM Weed Program Coordinator, Reno

The primary goal of the Nevada invasive weed survey¹ process is to detect and map all established populations within the state. It is impossible to devote adequate resources to survey every square foot of the landscape in Nevada to fully inventory for invasive weed populations. Therefore, this protocol uses a tiered approach that relies first on the premise that the most likely place that invasive weed populations will become established or occur (the target population) are in disturbed areas. The second tier addresses other, presumably less probable areas with limited disturbance. This ensures that invasive weed populations are also surveyed that might have been inadvertently introduced by livestock or wildlife into remote or undisturbed areas. The third tier is a random check to validate the reliability of the survey completed in the first and second tiers. This multi-tiered approach is designed to ensure a high degree of accuracy and reliability across the landscape.

1. **PLANNING** - Initial assessment of the problem and the necessary resources. Personnel must be trained using reliable information, standardized protocol, and adequate resources.
 - a. Decide upon the amount of time your group has and the level of confidence that your group is willing to accept (the accuracy that you will find all of the weeds within a given area). What are the inputs necessary to achieve that level of confidence? What does this mean? We will not be able to find every single weed, even though that might be the initial goal. It is inevitable that individual weed plants, and some weed patches, will be hiding and therefore be missed. The more intense the survey, the smaller size of weed patches that will be found and the higher the certainty that your procedure will find all of that size infestation.
 - b. Identify all invasive plant species of concern.
 - c. Understand enough of the biology of each species to know how they are spread from an area of occupation to form new infestations.
 - d. Select areas to survey that are easily definable by criteria such as a watershed or valley.
 - e. Select a Global Positioning System (GPS) database library compatible with the Geographic Information System (GIS) used to ensure compatibility with others that will be using the information.

¹ The term “survey” is defined as investigation of an area using a sampling methods to obtain an estimate of what the weed population is. Not every square yard is viewed in the sampling process. Information gathered through the sampling is extrapolated to unsurveyed areas. Elsewhere in this paper, the term “inventory” is used to reflect an intensive viewing of an area in order to gain an accurate understanding of the weed population. The method described in Tier I is considered in this paper to be an inventory, while Tier II is considered to be a survey.

- f. Ensure that fields are available in the GPS database library to note not only the size and location, but to also tag information such as weed species, density, individual collecting the data, and any other data needed for future planning.
2. **TIER I** - Inventory and place in a GPS database library any invasive weed infestations found. The assumption is that most likely places that weeds might become established are near transportation systems, in disturbed areas, and areas around water.
 - a. Scout all roads, trails, by-ways, railways, utility corridors, or other transportation systems.
 - b. Scout all known seeps, springs, streams, dry streambeds, riparian systems, irrigation canals, stock ponds, or any wetlands.
 - c. Scout any additional man-made or natural disturbed areas including, but not limited to, campgrounds, corral systems, mining disturbances, chainings, seismic exploration sites, material stockpiles and pits, and any other disturbances.
 - d. Record all paths, routes, or ways traveled by inclusion within the GPS database library. These document places surveyed where no invasive plant populations were found.
 - e. Additional areas may be specifically selected to survey based upon such issues as likely rare or endangered species presence, or other management considerations.
3. **TIER II** - Stratified random survey of areas not associated with disturbances, but potentially may be infested with invasive weed species. Areas not necessarily considered impacted by disturbances constitute huge geographic areas in Nevada; therefore, it is not feasible to survey in detail and can only be spot-checked.
 - a. Random areas are selected from grid maps where disturbances have not occurred.
 - b. Stratify the area by either elevation or plant community, not both.
 - c. Randomly select a representative number of sites to field check within the stratified area.
4. **TIER III** - Randomly check at least 5% of work previously surveyed and stored in a GPS database library to establish accuracy of survey efforts. You can be more confident that you have found most of the weed infestations if you increase the number of random checks and find that they are all accurately assessed in Tier I or Tier II.

References:

Assessing the Extent, Status, and Dynamism of Plant Invasions: Current and Emerging Approaches. Richard Mack. IN: Invasive Species in a Changing World. 2000. Harold A. Mooney & Richard A. Hobbs. Island Press, Washington, D.C.

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Montana Noxious Weed Survey and Mapping System Handbook. 1999. (<http://www.montana.edu/places/mtweeds/index.html>).

North American Invasive Plant Mapping Standards. May 7, 2002. North American Weed Management Association

Principles and Procedures of Statistics, A Biometrical Approach, 2nd Edition. 1980. Robert G.D. Steel & James H. Torrie. McGraw-Hill Book Company.

Trimble Pathfinder Office Software, the Data Dictionary Editor (www.trimble.com).

Attachment C

Example Fact Sheets from
Nevada Weeds Project



Fact Sheet 98-73

WANTED— Dead, Not Alive!

This outlaw weed is hiding out! Find it. Eradicate it.

Russian Knapweed

Alias: *Centaurea repens*

Russian knapweed, like other knapweeds, is native to Eurasia. It is a perennial in Nevada and can be found in cultivated fields, orchards, pastures, roadsides, and rangelands. It prefers areas where the water table is within 20 feet of the surface. It can easily dominate cultivated fields and rangelands where its deep roots penetrate to free water. Transporting infested soils and moving contaminated equipment spreads this weed. Russian knapweed is listed as a noxious weed by Nevada Administrative Code.



This deep-rooted perennial can easily dominate cultivated fields and rangelands.



Distinguishing features:

- ◆ Grows 18 inches to 3 feet tall.
- ◆ Stems are erect and multi-branched.
- ◆ Leaves are blue-green, toothed, and covered with fine hair.
- ◆ Showy pink flowers bloom from June to September. The pearly bracts at the base of the flower head are rounded with papery margins. Flowers are small, ¼ to ½ inch, cone shaped, and usually pink, but can be white to purple.
- ◆ Dense colonies can form from adventitious roots.

Take action:

- ◆ Report its location to the land owner, gardener, manager or park ranger.
- ◆ Avoid walking on, driving on, or camping in Russian knapweed-infested areas and remove all weed seeds before moving out of an infested area.
- ◆ Dispose of the seeds, shoots, and roots in a sealed garbage bag through the trash. Herbicides may be available to kill this plant.
- ◆ Do not purchase, move, or use contaminated soil.

Your reward:

A cleaner, healthier environment and the satisfaction that you have helped make the difference!

For more information about controlling this and other invasive weeds, contact:

Nevada Cooperative Extension
775-784-1334;
Nevada Division of Agriculture
Bureau of Plant Industry,
775-688-1180; or

Your local Weed District manager or Conservation District:

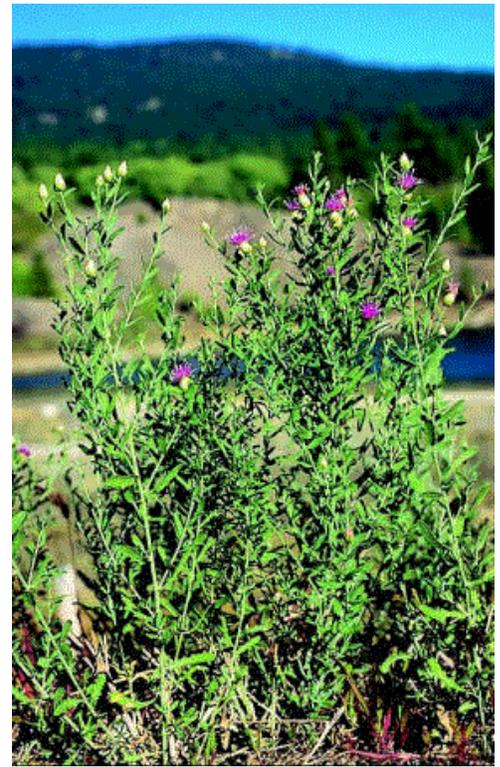
Weed Profile: Russian Knapweed

COMMON NAME: Russian Knapweed

BOTANICAL NAME: *Acroptilon repens*

FAMILY: Asteraceae (Sunflower family)

DESCRIPTION / IDENTIFICATION : Grows 18 to 36" tall. Deeply lobed leaves are 2 to 4" long with gray pubescence. Flowers are pink, lavender, or white, and are produced from June to September. Rosettes have toothed leaves covered with fine hair.



NATIVE TO: Ukraine, S.E. Russia, Iran, and Kazakh to Mongolia.

CURRENT DISTRIBUTION: Found in most western states in cultivated fields, pastures, disturbed sites, roadsides, waste areas, and dry rangelands.



LIFE CYCLE CLASSIFICATION : Perennial; emerges in early spring.

MOST COMMONLY REPRODUCES ITSELF BY: Seed and rhizomes.

NUMBER OF SEEDS/ PLANT: 50 to 500 per shoot.

Control Methods

MECHANICAL: Use mowing in combination with herbicide treatments and then tilling to overcome allelopathic effects. Continuous tillage is somewhat effective, especially when combined with an herbicide program. Hand-pull only while wearing gloves.

CULTURAL: A good management program is essential. Seed competitive perennial grasses after control measures. Avoid overgrazing pastures and range. Use proper irrigation and fertilization.

BIOLOGICAL: Russian knapweed gall nematode.

CHEMICAL: Picloram (Tordon®, restricted use) should be applied after the first killing frost. Till the following spring to remove leaves, then treat again as needed with picloram. Control may be achieved in 2 to 4 years. Clopyralid (Stinger®; Transline®; Curtail® (includes 2,4-D)) works well during flowering, but is not yet registered for use in Nevada. Use chlorsulfuron (Telar®), 2,4-D, and/or dicamba (Banvel®) with cultural practices.

ADDITIONAL COMMENTS: Exhibits allelopathy. Toxic to horses, with irreversible damage resulting in the inability of the horse to pick up and chew food. Does not appear to affect cattle and sheep.



Fact Sheet 98-79

WANTED— Dead, Not Alive!

This outlaw weed is hiding out! Find it. Eradicate it.

Tall Whitetop

Alias: *Lepidium latifolium*

Tall whitetop, or perennial pepperweed, is a native of southern Europe and western Asia. It has naturalized in many parts of the United States, including Nevada. Many western states have declared it a noxious weed. This perennial grows in waste places, wet areas, ditches, roadsides, and croplands, including alfalfa fields. It is a problem in hay bales because it does not cure. The robust, spreading roots and numerous seeds make control difficult to impossible. Mechanical measures such as disking or mowing spread the plant. Chemical control treatments must be timed properly and applied only after last season's debris is removed or the effort is wasted. Tall whitetop is listed as a noxious weed by Nevada Administrative Code.



The robust, spreading roots and numerous seeds of this perennial make control difficult to impossible. It is found in waste places, wet areas, roadsides, ditches and croplands, including alfalfa fields.

Distinguishing features:

- ◆ Grows 1 to 3 feet tall. Leaves and stems are covered with a waxy layer.
- ◆ Flowers are small and white. However, the entire top of the plant blooms in dense clusters in late spring. There may be sporadic blooms on young plants through fall.
- ◆ Bright green leaves are blade-shaped and the basal leaves are larger than the upper leaves.

Take action:

- ◆ Report its location to the land owner, gardener, manager or park ranger.
- ◆ Remove all weed seeds and plant parts from your clothing, shoes, pets, camping gear, vehicle, and tire treads before moving out of an infested area.
- ◆ Monitor ornamental plantings, stream banks, and wetlands. Dispose of the seeds, shoots, and roots in a sealed garbage bag through the trash. Herbicides may also be available to kill this plant.
- ◆ Do not collect this plant as a dried flower for arrangements. This will spread seed wherever it is taken.

Your reward:

A cleaner, healthier environment and the satisfaction that you have helped make the difference!

For more information about controlling this and other invasive weeds, contact:

Nevada Cooperative Extension
775-784-1334;

Nevada Division of Agriculture
Bureau of Plant Industry,
775-688-1180; or

Your local Weed District manager or
Conservation District:

APPENDIX 4

Chemical Application Management Plan

COYOTE SPRINGS INVESTMENT LLC

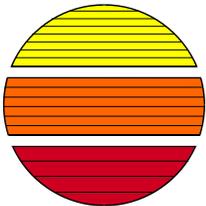
Programmatic CHEMICAL APPLICATION MANAGEMENT PLAN (CHAMP)

May 2007

Prepared for:

Coyote Springs Investment LLC
6600 North Wingfield Springs Parkway
Sparks, NV 89436

Prepared by:



ENGINEERING • SURVEYING • RESOURCES & ENVIRONMENTAL SERVICES

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ATTACHMENT A NDEP General Design Criteria for Reclaimed Water Irrigation Use

*File Doc: 2007-05-04 rptdrft CHAMP 98-041.7 Coyote Sp lz.doc
[June 29, 2007]*

1.0 INTRODUCTION

This Programmatic Chemical Application Management Plan (CHAMP) is an umbrella document designed to guide the use of chemicals, such as fertilizers and pesticides for the 6,881 acres of private land (Project Area) owned by Coyote Springs Investment LLC (CSI) in Coyote Spring Valley. The CHAMP will also guide the preparation of project specific CHAMP as the various projects are designed, approved and constructed. The CSI Project Area is located northeast of the U.S. Highway 93 and four miles north of State Route 168 in Lincoln County, Nevada.

Adherence to this CHAMP will protect surface water and groundwater quality, avoid impacts to wildlife and native vegetation and also mitigate health and safety risks to golf course employees and the public by minimizing their exposure to chemicals. This document describes sources of potential environmental impacts from chemical applications and procedures and practices that will be implemented to avoid, minimize and mitigate these impacts. The procedures will ensure that the use of chemicals, such as fertilizers and pesticides, does not contribute to water quality degradation or health and safety risks through the application of chemicals.

CSI is working in collaboration with Audubon International as part of the Audubon Cooperative Sanctuary Program (ACSP) for golf courses. As a participant in the ACSP and with guidance from Audubon International, CSI will establish a sound detailed environmental management plan which, when implemented, will reduce water use and the need for expensive chemical applications.

CSI intends to utilize reclaimed domestic wastewater on golf courses and landscape areas within the Development Area. Pursuant to NAC 445A.275.1.b, the Nevada Division of Environmental Protection must issue a discharge permit for the reuse of reclaimed wastewater. The NAC is designed to protect the surface water and ground water of the State and the general public, which are consistent with the goal of the CHAMP. A Reuse Permit Application requires information on the level of wastewater treatment, disinfection, irrigation system, soils, crops/turf management, water balance and nitrogen balance. This information is subsequently incorporated into a detailed Effluent Management Plan (EMP) as required by the Reuse Permit issued by NDEP. A copy of the NDEP General Design Criteria for Reclaimed Water Irrigation Use and EMP preparation are provided in Attachment A.

CSI intends to integrate the EMP requirements and CHAMP procedures described below into a single management plan for each specific project and submit the document to NDEP and the COE for review and approval.

2.0 POTENTIAL IMPACTS FROM CHEMICAL APPLICATION

The primary environmental concern is the use of chemicals on turf such as golf courses and large landscape areas. Irresponsible fertilizer and pesticide use can lead to environmental problems such as:

- Contamination of surface water and groundwater
- Adverse impacts to wildlife and native vegetation
- Evolution of resistant insect strains

Additionally, excessive use of chemicals can expose employees and the public to unnecessary health and safety risks, and improper handling of chemicals by maintenance personnel can result in both short- and long-term health impacts.

3.0 CHAMP PROCEDURES

The CHAMP is an important part of the water quality protection strategy within the Development Area. This CHAMP addresses post-construction chemical, fertilizer, and irrigation management of the golf courses and common areas. A monitoring program is provided in the CHAMP that includes vegetation tissue analysis, and soil and water sampling, so that over-application of chemicals does not occur.

3.1 Irrigation Management

The purpose of irrigation management is to ensure that water is not over-applied, which could increase the risk of leaching and runoff of chemicals. The goal is to apply water in a manner such that runoff is prevented and subsurface loss of fertilizers and/or pesticides is minimized. Irrigation management requirements will be based on a water budget, weather conditions, and soil moisture.

The following irrigation management components shall be implemented.

1. A water budget will be developed that will incorporate all water inputs and outputs (i.e., irrigation, rainfall, evapotranspiration).
2. The irrigation practices will account for differences in turf types and drainage characteristics in different areas of the golf course.
3. Irrigation practices shall account for the plant growing season and dormant season on all irrigated areas.
4. Irrigation rate shall be the minimum necessary to promote adequate turfgrass maintenance without allowing transport of applied fertilizer or pesticides below the root zone.
5. Campbell/Scientific weather stations and soil probes will collect and record data on a daily basis to determine the need for water on the course.
6. Irrigation shall be prohibited during significant rainfall events, and prudent judgment shall be used before irrigating when rain is pending.
7. Watering will be conducted at appropriate times to minimize evaporation and reduce the potential for disease.
8. Over-watering or saturation of root zone shall be prohibited to minimize runoff and leaching losses from managed turfgrass.
9. Irrigation facilities shall be properly maintained to ensure the structural integrity of drainage features and application equipment.
10. Watering efficiency shall be maximized by the use of turf growth regulators (TGRs) and frequent turf mowing at moderate height, consistent with industry standards.

11. Irrigation equipment shall be operated to encourage deep root development and to avoid wilting and other stress conditions.

3.2 Nutrient Management

The goal of nutrient management practices is to limit fertilizer nutrient applications to levels equal to or less than turfgrass and vegetation nutrient uptake in order to minimize nutrient transportation via runoff, interflow, or deep percolation. Nutrient management will focus on sustainable practices by maintaining healthy soil, rather than turf treatment. By focusing on the soil where the microbes live, the need for use of synthetic fertilizers that do not sustain the turfgrass over the long term is reduced. The organic fertilizer feeds the microbes, which in turn release bound nitrogen and phosphorous in the soil for uptake by the turf and vegetation.

The following nutrient best management practices will be implemented:

1. A nutrient budget will be developed that accounts for all sources of nutrients. Analysis of plant tissue, soils, and irrigation water will be considered in developing the nutrient budget.
2. Organic fertilizers will be used to reduce nitrogen loss below the root zone. Quick release fertilizers may be used in limited applications.
3. Nutrient applications shall be made not to exceed turf and plant uptake requirements during any season. Nutrient application will be a combination of added fertilizers and clipping management practices.
4. Fertilizer rates will be based on soil and tissue tests to determine nutrient levels (including micronutrient), to prevent nutrient deficiency or over-fertilization.
5. The type and frequency of ongoing plant tissue and soil testing will be developed based on site conditions and initial laboratory analyses.
6. If problem areas develop, sampling will be conducted in both problem and non-problem areas to compare nutrient levels.
7. Chemical applications on bare soils shall be avoided.
8. Increased care and handling of fertilizers shall be used in areas with shallow soils.
9. Constructed conveyance channels or other environmentally sensitive areas shall be protected by the use of buffer zones where no fertilizers or other chemicals are applied.

3.3 Pest Management

As part of the Audubon International Cooperative Sanctuary Program, it is not expected that regular pesticide application will be required at the CSI Project Area. However, pest management procedures have been included in the CHAMP in the event that occasional pest control is necessary.

The productivity of a soil is directly related to the amount and activity of soil microorganisms. Pesticides applied to soils can reduce or destroy microbial activity, and therefore the health of the soil. For this reason, pesticides should only be applied under extreme circumstances. Therefore, if pest control is necessary, application should be restricted to specific problem areas.

The following pesticide best management practices will be followed:

1. Action thresholds shall be developed and implemented for insect, weed, and disease pests, below which no applications are used, to reduce the use of pesticides.
2. Pesticides shall be selected using pest-specific products that are less toxic, less mobile, and less persistent or using alternate control strategies to reduce hazards to beneficial organisms.
3. Spot treatments shall be used wherever possible, rather than broadcast treatments.
4. Pesticide applications shall be incorporated into soil/turf utilizing practices to reduce exposure to runoff and enhance adsorption.
5. Proper equipment maintenance and calibration shall be performed for all volumes of application.
6. Proper procedures for disposal of all unused chemicals and containers shall be followed (see Maintenance Facility Management section).
7. Special care in handling of toxic chemicals shall be implemented in areas of low soil depth.
8. Pesticide formulations shall be selected to minimize pesticide leaching losses (e.g., wettable powders, dusts, microgranules).
9. Pesticide applications shall be controlled and timed utilizing the grower degree day (GDD) method in relation to localized physical, environmental, and weather conditions.
10. Pesticide applicators will be trained in proper handling and application of chemicals.
11. Label directions will be carefully followed when using chemicals. Treatments will be applied in the correct doses and during the recommended conditions to ensure effectiveness and minimize environmental impact.
12. Rodenticides will not be allowed within one mile of known burrowing owl nests.

3.4 Maintenance Facility Management

The maintenance departments at the various facilities will be responsible for irrigation, mowing, fertilization, pesticide application, and general upkeep of the turf areas. The maintenance area is where chemicals are loaded into application equipment, mowers and

other pieces of equipment are serviced, and fertilizers, pesticides, fuel, and cleaning solvents are stored. This is a potential source of soil, surface water, and groundwater contamination. Contamination can occur from spills, and storage and cleaning of containers and equipment. Proper management of the maintenance area is an important part of responsible chemical and waste management.

Maintenance facility management will provide for proper chemical storage and handling, equipment storage, use and disposal of equipment washdown water, and fertilizer and pesticide dilution solutions disposal. The general approach is to:

- Isolate all potential contaminants from soil and water.
- Do not discharge any material other than clean storm water onto the ground.

Maintenance personnel will implement the following procedures:

Fertilizers

1. Fertilizers will be stored separate from pesticides, solvents, fuels and other chemicals.
2. Fertilizers will be stored in a covered area with a concrete floor, or otherwise contained so that the fertilizers are protected from rainfall and from release to soils. Liquid fertilizers will be stored in tanks or other containers with secondary containment.
3. Material Safety Data Sheets (MSDS) will be maintained at the maintenance offices for all fertilizers stored or used at the facilities.
4. Any spilled fertilizers shall be cleaned up immediately.
5. Collected materials from spills or equipment rinsing may be applied as fertilizer or contained for proper disposal. No collected material will be discharged to the environment.
6. Application equipment will be stored in an area that is protected from rainfall.

Pesticides

1. Pesticides will be stored indoors on a concrete floor or similar containment. Floors may contain a sump, but no drains. The floors will be seamless and sealed with chemical resistant paint.
2. Building exhaust fans and eyewashes will be provided at the storage location.
3. Pesticides will be stored separate from other chemicals.
4. Shelving for pesticide storage will be plastic or metal (not wood).
5. Personal protective equipment will be stored in an easily accessible area adjacent to pesticide storage.

6. An inventory of pesticides and associated MSDSs will be maintained at all maintenance facilities.
7. All pesticides will be clearly labeled.
8. Pesticides will be applied in accordance with label directions.
9. Any contaminated pesticides will be properly disposed of at a licensed disposal facility.
10. Mixing and loading of pesticides will be conducted in a pesticide loading station designed with an impermeable surface. The surface will be sloped and bermed/curbed to contain spillage. Spilled pesticides will be cleaned up immediately, and the sump will be cleaned out each day, as appropriate.
11. Application equipment will be stored in an area that is protected from rainfall.
12. Pesticide containers will be rinsed consistent with the label and/or returned to the manufacturer when empty.
13. Unused pesticides will be returned to the manufacturer or disposed of at a licensed disposal facility.
14. Wash water from pesticide application equipment will be applied as pesticides or disposed of at a licensed disposal facility.

Solvents and Degreasers

1. Solvents and degreasers will be stored in lockable metal cabinets, away from ignition sources.
2. Solvents will be stored separately from pesticides and fertilizers.
3. Whenever practicable, solvents and degreasers will be used over a collection basin or pad that can collect used material. The collected material will be labeled and stored for recycling or appropriate disposal.

Grass Clippings

1. Grass clippings will be removed from mowers using compressed air, whenever practicable to reduce or eliminate wash water.
2. If mowers are washed, wash water will not be allowed to enter surface water bodies or drainages.
3. Collected dry clippings will be composted or spread in vegetated areas away from surface water bodies or drainages.

Used Oil, Antifreeze, and Lead-Acid Batteries

1. Used oil and antifreeze will be collected in marked containers and offered for recycling.
2. Used lead-acid batteries will be recycled.

Fuels

1. Fuel storage and pumping areas will be contained by concrete or asphalt surfaces, sloped and curbed/bermed to contain leaks or releases.
2. Nevada State Fire Marshal hazardous material storage permit will be obtained for fuels storage areas.
3. Any storm water released from the contained area will be checked for contaminants prior to release.

4.0 MONITORING

The following monitoring shall be conducted to obtain quantitative information on the impacts of the golf course. Monitoring will be conducted for those constituents that could occur as a result of chemical applications. Monitoring will include the following:

- Pre-operation, and quarterly monitoring shall be conducted for two years thereafter, of golf course water bodies (lakes, ponds). If no significant levels of project related pollutants are detected during this period, sampling will be reduced to annually thereafter. If significant levels of project related pollutants are detected, quarterly sampling will continue until no significant levels of project related pollutants are detected for eight consecutive quarters. If at any time thereafter, significant levels of project related pollutants are detected by annual monitoring, quarterly monitoring will resume until no significant levels of project related pollutants are detected.
- Annual surface water monitoring upstream and downstream of the golf course shall be conducted during storm water runoff events in drainages and/or receiving waters, for a period of five years. If it is not possible to sample at least two runoff events during the first five years due to rainfall conditions, monitoring will continue until at least two events have been sampled. If, at the end of this period, no evidence of significant levels of project related pollutants are detected, sampling will be discontinued. If significant levels of project related pollutants are detected in one or more sampling events, sampling will resume until no significant levels of project related pollutants are detected for two consecutive sampling events.
- Quarterly groundwater monitoring shall be conducted for two years of existing groundwater supply wells, or piezometer or lysimeter installation. If no significant levels of project related pollutants are detected during this period, sampling will be reduced to annually thereafter. If significant levels of project related pollutants are detected, quarterly sampling will continue until no significant levels of project related pollutants are detected for eight consecutive quarters. If at any time thereafter, significant levels of project related pollutants are detected by annual monitoring, quarterly monitoring will resume until no significant levels of project related pollutants are detected.
- If significant levels of project related pollutants are detected in any of the sampling events, the cause of the pollution will be investigated and revisions to the CHAMP will be implemented to effectively control these pollutants.

5.0 RECORD KEEPING AND REVISIONS

A copy of the CHAMP will be maintained in the General Improvement District office. Records of revisions to the plan, monitoring activities, and any corrective action taken will be retained for a period of at least 5 years from the date of the observations, corrective action, or report. The records shall include:

- Date and description of plan revisions and documentation of approvals of the revisions by the NDEP and the U.S. Army Corps of Engineers
- The date, place, and time of the inspections or corrective action
- The individual(s) who performed the inspection or corrective action
- A description of any corrective action

A record of revisions will be maintained on the sheet at the beginning of this plan.

The CHAMP will be reviewed annually to determine if revisions to the plan are appropriate. Any changes to the design or operation and maintenance that have occurred over the previous year that could affect the environment will be identified. These changes will be reviewed to evaluate the need to implement additional measures for the protection of the environment. The CHAMP will be revised and new or revised procedures implemented as appropriate. No changes can be made to the CHAMP that would create a violation of any agency permits or approvals, or a violation of any federal, state, or local regulations. A copy of proposed changes to the CHAMP will be provided to NDEP and the U.S. Army Corps of Engineers for comment, at least 30 days prior to implementation of the changes.

Attachment A

NDEP General Design Criteria for
Reclaimed Water Irrigation Use

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KEYWORDS

AIR GAP: Generally, the safest method of back flow prevention control. For this document, it is defined to be an unobstructed vertical distance through the free atmosphere between the lowest openings from any pipe conveying potable water to the flood level rim of any container with treated effluent. The Uniform Plumbing Code details the requirements for Air Gaps and enforcement is the role of the local water purveyor and/or health department.

BUFFER ZONE:
NAC 445A.2742, 2756 defines a buffer zone..

DMR: Discharge Monitoring Report. A table-formatted report where results from permit analytical requirements are recorded for submittal to the NDEP.

FECAL COLIFORM:
Bacteria from the feces of mammals that are used as indicators of pathogenic organisms.

RECLAIMED WATER:
Domestic Wastewater that has been treated to secondary treatment standards and disinfected to levels necessary (per NAC 445a.276) for the chosen method of reuse. Other terms for this water include Treated Effluent, Reuse Water, and Recycled Water.

SAR : Sodium adsorption Ratio, a ratio determined from the concentration (milliequivalents/liter) of sodium, calcium, and magnesium in water. It is used as an indicator of potential soil problems.

$$\text{SAR} = \frac{\text{Na}}{[(\text{Ca} + \text{Mg}) / 2]^{1/2}}$$

A modification of this ratio, termed the adjusted SAR, considers the changes in calcium solubility in soil water. The procedure for determining this ratio is listed in Wastewater Engineering Treatment, Disposal and Reuse. 1991.

SOIL LEACHING:
Irrigation practice of applying water to soils in an effort to drive salts beyond the crop root zone. Function of crop salinity tolerance and salt level in irrigation water.

SPRAY IRRIGATION:
Spray irrigation is subdivided into solid set (golf courses, parks, etc.), move-stop (wheel lines), and constant move (center pivot) systems.

SURFACE IRRIGATION:
Surface irrigation is subdivided into flood irrigation and drip irrigation. Additionally, flood irrigation is further subdivided into ridge/furrow systems and graded borders.

SITE CHARACTERIZATION DATA

REQUIREMENTS:

A. Maps for Site(s)

1. General location map for the proposed reclaimed water use area that shows any surrounding water courses, all wells or springs on site and within 250 feet of the site boundary. In addition, show any dwelling units on or within 1000 feet of the site.
2. Topographic site map depicting the boundaries of the reuse site(s). The elevation contour intervals should be at least every five feet. All drainage's within and around the site shall be presented on this map. Also, seismic zone information should be provided, if applicable and available.
3. A 100-year flood zone map of the site.

B. Ground Water Information

The groundwater flow direction, gradient, depth below ground surface, and static water level elevation shall be presented from published data or sampling data for the proposed reuse site. Additionally, water quality data that has been collected from wells at or near the site shall be submitted.

C. Soils Data

Soils data to be included in the submittal include soil classifications, infiltration rates, and general soil chemistry as it relates to plant growth. Soil maps from the NRCS (Natural Resource Conservation Service) are a typical source for this type of information.

D. Plant Survey

Provide a list of current vegetation growing at the site.

RECOMMENDATIONS:

E. Boring Logs

The recommended average is one boring per two acres, with a minimum of two logs, and a maximum of five logs for the site. The depth investigated should range from land surface to the groundwater table, or to a predetermined level based on NDEP consultation. A qualified professional should prepare the logs. The logs should detail, at a minimum, the presence of confining layers, highly pervious stratum, fractured bedrock, and depth to groundwater.

F. Soil Test Pits

Exploratory soil test pit data from surface to a depth of five feet (minimum of two per site).
Items to examine include:

1. Soils Texture - NRCS nomenclature
2. Soil Gradation
3. Hardpan, bedrock, or other aquacludes
4. Gravel lenses, soil mottling
5. Soil Chemistry (pH, EC, Cation Exchange Capacity, ESP, SAR, Boron, Sodium, and Nitrogen).

G. Infiltration Tests

Soil infiltration rates determined from field tests. Pilot scale infiltration basin tests are recommended for determining representative values. The EPA Manual “Land Treatment of Municipal Wastewater” provides the procedure for this test. Appendix Six includes the reference citation for the Manual. Standard percolation tests are also acceptable.

PLANT CHARACTERISTICS

REQUIREMENTS:

A. Plant Information to provide for each plant species:*

1. Evapotranspiration Rate (ET);
2. Annual Nitrogen Uptake (pounds per acre per year);
3. Salinity tolerance;
4. Required rooting depth; and
5. Growing season for the region.

* See Appendix Six for references on determining these requirements

RECOMMENDATIONS:

B. Plant information that is recommended for each plant species:

1. Harvesting requirements;
2. Product Demand (economic benefit of crop);
3. Special nutrient needs, sensitivities;
4. Trace Inorganic demands, sensitivities; and
5. Freeze/drought tolerance.

RECLAIMED WATER QUALITY

REQUIREMENTS:

A. Reclaimed Water Quality Data to Provide

1. BOD and TSS.

Reuse water must meet secondary treatment standards (NAC 445A.275.2). This is 30 mg/l BOD₅ and 30 mg/l TSS, unless specifically exempt for “treatment equivalent to secondary treatment”. Please consult the Division for anticipated permit limits.

2. Fecal Coliform or Total Coliform

Limits on Fecal Coliform and Total Coliform levels are based on the method of irrigation and site buffer zones as described in NAC 445A.275-280. (Refer to Appendix Seven and specific guidance sections for more details).

3. Nitrogen Speciation

Nitrogen concentrations and nitrogen forms (Ammonia, nitrate, organic) in the reclaimed water.

RECOMMENDATIONS:

B. Reclaimed Water Quality Data that the Division recommends be evaluated

1. Metals

Examine the concentrations of metals in the reclaimed water that may be present. Certain metals will inhibit plant growth and may also pose a risk to ground water quality if leached.

2. Sodium Adsorption Ratio

Check the SAR or Adjusted SAR of the reclaimed water.

3. Significant Inorganics

Electrical Conductivity, pH, Sodium, Chloride, Boron, Phosphorus, TDS, and other pertinent inorganics as related to plant growth should be evaluated.

DETERMINING THE IRRIGATION BUDGETS

REQUIREMENTS:

- A. The NDEP requires that the applicant conduct three distinct irrigation balances for the reuse site during the planning phase. The first two balances, for the plant consumptive use needs and the nitrogen loading limit, are prepared to determine the **optimal reclaimed water application rate** for the plant(s) per the chosen method of irrigation and yet still be protective of ground water quality. The third evaluation considers the effect of soil permeability at the site, and is used for design purposes to help ensure that the site is appropriate for reclaimed water irrigation, and ponding and run-off will not occur.

Depending upon site-specific factors, such as the reclaimed water nitrogen content and the crop's nitrogen uptake rate, one of the two balances (nitrogen loading or consumptive use) will govern for groundwater protection. Since these are best design estimates of safe application rates, the Division's reuse discharge permit instructs the user to prepare annual reports detailing the reasons (crop management goals, changes in turf management, seasonal weather differences, etc.) for exceeding the optimal application rate during any given year.

Example worksheets are included in Appendices One through Three. The first worksheet (1-A, 2-A, and 3-A) in each appendix is a general **annual overview** sheet and can be used to estimate the optimal reclaimed water application volume to determine the limiting use rate. The second worksheet in each appendix (1-B, 2-B, and 3-B) is a breakdown of monthly reclaimed water application rates and can be used for initial design, irrigation planning, and annual reporting. Use of these worksheets as an ongoing management tool would allow the applicant to track and compare design and actual usage rates throughout the year.

When preparing the annual balance report, the third worksheet in the nitrogen evaluation section (Worksheet 2-C) incorporates the addition of commercial fertilizer. This promotes additional awareness and provides general guidance to the user on the necessary adjustments in chemical fertilization practices when using reclaimed water containing nitrogen.

If more than one crop type is used at the site, the crop nitrogen uptake rates and salinity tolerances will vary. Therefore, separate worksheets should be completed for each crop area, and the total reclaimed water usage for the site would be the sum of the usage rates for each crop.

IRRIGATION SYSTEM DESIGN
General Design Items for All Systems

A. Flow Rate Recording

Requirement: Method of flow rate measurement for the site(s). If flow meters are used, the meter placement should be such to allow access for reading and servicing. Plans for reclaimed water screening and/or filtering for accurate recording of flow should be evaluated.

B. Storm water Run-on and Run-off Controls

1. **Requirement:** Plans for routing Storm water run-on around, or through, the site shall be provided. Typical run-off controls include conveyance ditches and perimeter berms. The 25-year, 24-hour storm event shall be used in these designs; and
2. **Requirement:** Storage reservoirs must contain, without release, the precipitation that falls within the reservoir boundaries for the 25-year, 24-hour storm event at the site. Also, the reservoir must withstand, without release of reclaimed water (from structural damage of berms, etc.), the run-off generated from the 100-year, 24-hour storm event at the site. If run-on will impact exterior berms, a method of erosion control shall be implemented.

C. Storage Reservoirs

1. **Requirement:** WTS-37 “Guidance Document for Design of Wastewater Detention Basins” shall be used as the general guidance for the design of the reservoir (pond). Water balances shall be developed for each systems specific requirements (winter storage, etc.).

The NDEP will evaluate the risk to ground water at the site in determining reservoir lining criteria (such as liner thickness and permeability).

2. **Recommendation:** For reclaimed water use sites where this reuse system is the sole discharge method for a community’s reclaimed water, a minimum of four days of storage volume should be available in reservoirs for periods when the reuse irrigation system is not operating. Storage time is intended to allow time for system repairs.
3. **Recommendation:** In designing a storage reservoir, special focus should be given to algae control, filtering outake water, and odor control devices.

D. Notification Signage and Public Access Controls

1. **Requirement:** Reuse areas shall have appropriate notification signs that clearly state that treated effluent is in use, and to avoid body contact with spray. (NAC 445A.2752). These signs shall be placed along each side of the reuse area at points of public access (such as gates) and at least every 300 feet along a fence line or border, unless otherwise approved by the Division. See Appendix Five for sign examples. Signs should be bi-lingual, english and spanish (or other applicable language), for areas where workers and the public may not speak english.
2. **Requirement:** All ponds containing effluent must be posted with notification signs stating treated effluent is in storage. Signs should be bi-lingual, english and spanish (or other applicable language), for areas where workers and the public may not speak english.

3. **Recommendation:** A continuous fence around the area of reuse is recommended in sites requiring a buffer zone and control of public access during reuse. Buffer zone requirements are defined in NAC 445A.2756.
4. **Recommendation:** In the case of nighttime irrigation at areas with the potential for public access at night, signs should be illuminated if possible.

E. Subsurface Drainage , if applicable, these are requirements

If the reuse operation requires subsurface drainage, the plans for the drain need to be prepared and submitted to this office. Discharge options for the subsurface drainage will be dependent on its quality and its final disposition. This may require coordination with the reuse permit writer.

F. Reclaimed water disinfection at reuse site; if applicable to meet permit limits, these are requirements

1. Design Drawings of the disinfection system, including system redundancy
2. Design calculations for the dosing, contact time, and other related factors
3. Chemical storage plan
4. Spill containment plan
5. Operation and Maintenance Manual

G. Filtration unit, if applicable to meet permit limits, these are requirements

1. Design Drawings for the filter system, including system redundancy.
2. Design calculations for the filter sizing, pumps, and backwash cycle.
3. Plan for backwash disposal.
4. Chemical storage plan.
5. Spill containment plan.

H. Weather Station at site, if applicable, these are requirements

1. Location for the weather station shall be depicted on the site map.
2. Description of the operational features of the station, including the station wind speed recorder, precipitation, and ET system.

I. Cross-connection Certification

Requirement: Documentation shall be provided that notification has been made to the local water purveyor and the local health agency of the permittee's intent to use reclaimed water. This documentation shall describe the plan for complying with cross-connection control requirements of the local water purveyor.

IRRIGATION SYSTEM DESIGN **Spray Irrigation Design Submittal Items**

REQUIREMENTS:

A. Buffer Zones

1. Delineating the Zone(s)

Delineate the required buffer zones for the reuse site and how the public will be kept from encroaching into these zones. Buffer zones are a function of the reclaimed water quality and public access controls. NAC 445A.2756-2771 defines the size of the zone required. The regulation is included in Appendix Seven.

2. Controlling Aerosol Drift

For sites with buffer zone requirements, aerosol drift must be controlled to prevent the carryover of aerosols outside of sites buffer zones (NAC 445A.2754). In order to assess the risk of public contact with wind blown aerosol, the prevailing wind direction shall be presented on the site plan. A typical method of controlling aerosol drift involves the use of a weather station with an anemometer which is automated to cease irrigation at target wind speeds.

B. Reuse Water Application Plans

Detailed plans of the irrigation system layout on the reuse site shall be provided. Items to depict are; the location of control valves, drain valves, blow-off valves, air-gaps, flow meters, pumps, and other related items. Detail drawings shall be provided for control valves, pumps, air gaps, flow meters, and other related items.

C. Irrigation Pump System(s)

Design plans for the reclaimed water pump station(s) shall be presented. Relevant items include:

1. Alarm Systems, level sensors, redundancy, spill containment, and back-up power;
2. If potable water is used for seal water, the local water purveyor and/or health authority shall be consulted to examine back flow prevention controls; and
3. Permanent wording stating that reclaimed water is being used should be placed on visible sections of the pump station(s) such as name plates, meters, and valves. This wording should be bi-lingual in areas where the workers do not all speak english. Purple color coding of piping and ancillaries with arrows showing flow direction on the piping.

D. Reclaimed Water Run-off Prevention

In the event of a line break from the irrigation system, surface flow must be *prevented* from discharging off the site. The design for the surface flow containment system must be based on a conservative estimate of the volume of water from a significant system failure. Some acceptable options are containment berms and collection ditches with conveyance to impoundments.

E. Cross connection control and Potable Water Protection

The guidelines for separation between reclaimed water and potable water lines that are required by the governing health department and/or local water purveyor shall be followed. The Division requires that the reuser provide documentation that the governing health authority has approved the plan(s) for cross connection controls and backflow prevention.

RECOMMENDATIONS:

F. American Water Works Association Guidelines

As guidance, the Division recommends the following from the American Water Works Association with regards to irrigation system installation:

1. Purple color for all piping, risers, valve controllers, and valve box covers. In lieu of this, other approved methods or marking, such as purple marking tape over the entire pipe length, could be used. Permanent wording stating that treated effluent is being used should be stenciled on all valve box covers, reclaimed water pipe, and other ancillaries. NOTE: Other identification plans, provided that they meet the objectives of preventing cross connection, misidentification and misunderstanding of piping systems could be used;
2. Prohibiting hose bibs on the treated effluent system;
3. Quick coupler fittings should be such that interconnection cannot be made between potable and reclaimed water systems;
4. At crossings with potable lines, the applicable rules dictated by the governing health authority must be followed.

RECOMMENDATIONS CONTINUED:

G. Drain Valves

Drain valves should be located at low points on the distribution system to allow reuse water line draining for maintenance and seasonal shut-down of the system. Drain water should be infiltrated on-site.

H. Filter Screens

Filter screens or strainers should be installed on the delivery system to prevent sprinkler clogging from algae or other particulates that may be a problem.

I. Piping Protection

Plastic piping should be protected from sunlight. Openings, such as risers, that may allow rodents to nest should be covered.

IRRIGATION SYSTEM DESIGN

Surface (Flood and Drip) Irrigation Design Submittal Items

REQUIREMENTS:

A. Flood Irrigation Design Items

1. Field Grading.

The reuse field should be leveled to allow for smooth and even distribution of water over the field. The slope of the grade is dependent on the type of flood irrigation. Graded border irrigation should be conducted on relatively flat lands. Ridge and furrow irrigation should be sloped, around 2%-5%.

2. Method of reuse water application.

The design plans for reuse water application to the field should be presented. Some common dosing plans include lined ditches with slide gates, slotted pipe, and ridge and furrow systems. The design should focus on even distribution of effluent over the site. Erosion controls at the discharge locations should be incorporated in the design.

3. Tailwater recovery system design.

Design plans for tailwater containment and return systems should be presented. Sizing of the tailwater system must be based on conservative estimates of the volume of tailwater.

B. Drip Irrigation Design Items

1. System Layout

The design plans for reuse water application to the site should be presented. This includes the layout for the distribution lines, emitter zones, control valves, and design application rates. It is critical that the pressure limits for the distribution system not be exceeded.

RECOMMENDATIONS:

2. Clog Prevention

Design plans for screening particulate matter, to prevent clogging the emitters, is recommended by the Division.

GROUNDWATER MONITORING

Generally, at least one well located up gradient of the reuse site and two wells located down gradient of the site are required. If the permit requires groundwater monitoring, proposed monitoring well locations are to be presented on the required site map. The proposed well sites and construction design must receive approval from NDEP prior to installation.

NDEP's WTS-4 "Guidance Document for Monitoring Well Siting" shall be used for the well siting and design process. The Nevada Division of Water Resources must be contacted for necessary permits and any additional design requirements.

The purpose of the monitoring wells are to demonstrate that the use of reclaimed water does not cause the degradation (exceedance of State Drinking Water Standards) of existing or potential underground sources of drinking water. They are recommended where there is a potential for pollutants to be carried into waters of the state by any means. (NRS 445A.490.3., NRS 445A.465.3)

WTS-1A: APPENDIX ONE

PLANT CONSUMPTIVE USE WORKSHEET

The consumptive use equation for determining the crop's water requirement takes into account precipitation, evapotranspiration, the efficiency of the irrigation system, and the salt tolerance of plant species. The salt tolerance of the plant species is used to calculate the leaching requirement (Lr) to remove excess salts from the root zone. Excess salts within the soil cause the plant cells to expend more energy adjusting the salt concentration within the plant tissues, and therefore, less energy is available for vigorous plant growth. The hydraulic loading rate and the TDS to EC_w conversion equation included below are derived from Wastewater Engineering: Treatment, Disposal, and Reuse, (Metcalf and Eddy, 1991), the equation for the leaching requirement is from the Nevada Irrigation Guide, (USDA, Soil Conservation Service, 1981).

$$Lw_{(c)} = \frac{(ET-P)}{[E \times (1-Lr)]} \quad Lr = \frac{EC_w}{[(5 \times EC_e)-EC_w]}$$

where:

Lw_(c) = Allowable Hydraulic Loading Rate Based on Crop Water Needs (in/yr);

ET = Evapotranspiration Rate (in/yr);

P = Precipitation Rate (in/yr);

Lr = Leaching Requirement (% , expressed as a fraction);

E = Efficiency of Irrigation System (% , expressed as a fraction)

For example: 75% = 75/100 = 0.75; example efficiencies are included below;

EC_e = Salinity Tolerance of Plant Crop (mmho/cm or dS/m)⁽¹⁾;

EC_w = Salinity of Applied Effluent (mmho/cm); If TDS is supplied by the laboratory, see conversion below; and

TDS = Average Total Dissolved Solids in Applied Effluent (mg/l).

“ET” - Evapotranspiration

Evapotranspiration is defined as the “loss of water from the soil both by evaporation and by transpiration from the plants growing thereon” (Websters Dictionary, 1990). Since different plants transpire at different rates, a crop coefficient (K_c) can be used to modify the potential ET for a particular area. Values for K_c vary depending upon the geographical location of the crop, and the species grown. If a crop coefficient can be determined, when multiplied by the potential ET rate, the result is a more accurate estimate of ET for an irrigation site. The Division recommends that reusers contact local agriculture representatives identified in Appendix Six for further crop-specific and regional information.

“E” - Irrigation Efficiency

The irrigation system efficiency is related to how effective the method is in delivering the irrigation water equally to all parts of the crop. Example values for efficiency are⁽⁴⁾:

Sprinkler Irrigation Type	Application Efficiency	Surface Irrigation Type	Application Efficiency
Solid Set	0.70 - 0.80	Narrow Graded Border (< 15' wide)	0.65 - 0.85
Portable Hand Move		Wide Graded Border (<100' wide)	0.65 - 0.85
Wheel Roll		Level Border	0.75 - 0.90
Center Pivot or Traveling Lateral		Straight or Graded Contour Furrows	0.70 - 0.85
Traveling Gun		Drip	0.70 - 0.85

“ECe” - Salinity Tolerance of Plant Crop

The plant salt tolerance is crop-specific, and can be obtained from the local Extension Service, literature, or other reputable sources. The low end of the range identifies the ECe value which would result in a 0% reduction of crop yield. The upper end of the range identifies the ECe value which could result in a 25% reduction of crop yield⁽⁴⁾.

Example ECe’s:

- Annual Ryegrass⁽²⁾ = 3 to 6 mmho/cm or dS/m
- Perennial Ryegrass^(2,4) = 5.6 to 8.9 mmho/cm or dS/m
- Bermudagrass^(2,4) = 6.9 to 10.8 mmho/cm or dS/m
- Tall Fescue^(2,4) = 3.9 to 8.6 mmho/cm or dS/m
- Alfalfa^(3,4) = 2.0 to 5.4 mmho/cm or dS/m

“ECw” - Salinity of Applied Effluent

Direct measurement of ECw is typically preferred. However, if the laboratory has supplied the reuser with a concentration of TDS, an approximate conversion⁽⁴⁾ is $ECw \approx TDS \div 640$. This conversion is considered accurate within 10%. The value for ECw or TDS is obtained from the treatment plant supplying the effluent. For site design, an average value can be used. For completion of the required annual balance report, the actual analytical results from Discharge Monitoring Reports should be used.

(1) For clarity in this document, the unit for electrical conductivity (EC) is expressed as mmho/cm. However, EC can also be expressed in decisiemens per meter, dS/m.
 1 mmho/cm = 1 dS/m

(2) Wastewater Reuse for Golf Course Irrigation, US Golf Association, 1994.

(3) Nevada Irrigation Guide, USDA Soil Conservation Service, 1981.

(4) Wastewater Engineering: Treatment, Disposal, and Reuse, (Metcalf and Eddy, 1991)

Worksheet 1-A

CONSUMPTIVE USE REQUIREMENT WORKSHEET:

Maximum Loading Rate Based on Plant Water Use Requirements

Page _____ of _____ Crop Type = _____

$$Lw_{(c)} = \frac{(ET-P)}{[E \times (1-Lr)]} ; \quad Lr = \frac{EC_w}{[(5 \times EC_e) - EC_w]} ; \quad EC_w \approx TDS \div 640$$

(A) Annual Evapotranspiration (ET, in/yr) = _____

(Multiply by Crop Coefficient (Kc) if value is known)

(B) Annual Precipitation (P, in/yr) = _____

(C) (A) - (B) = _____ (in/yr)

(D) Salinity of Applied Effluent (EC_w, mmho/cm) or $\approx (TDS, \text{mg/l}) \div 640 =$ _____

(Indicate which method was used to determine EC_w, Direct Measurement or Approximation by Calculation.)

(E) Salinity Tolerance of Plant Crop (EC_e, mmho/cm) = _____

(F) 5 x (E) = _____ (mmho/cm)

(G) (F) - (D) = _____ (mmho/cm)

(H) Leaching Requirement (Lr, %, expressed as a fraction) = (D) \div (G) = _____

(I) 1 - (H) = _____

(J) Efficiency of Irrigation System (E, %, expressed as a fraction) = _____

(K) (J) x (I) = _____

(L) (C) \div (K) = $Lw_{(c)} =$ _____ (inches/year)

If the Water Use Rate calculated in ("L") above is the lowest application volume calculated for the annual Consumptive Use Limit (This Worksheet), the Nitrogen Limit (Worksheet 2-A) or the Permeability Limit (Worksheet 3-A), then fill out Worksheet 1-B to estimate the planned maximum daily flow for the site.

Worksheet 1-B

CONSUMPTIVE USE REQUIREMENT WORKSHEET:

Maximum Loading Rate Based on Plant Water Use Requirements

Page _____ of _____ Crop Type = _____

$$Lw_{(c)} = \frac{(ET-P)}{[E \times (1-Lr)]} ; \quad Lr = \frac{ECw}{[(5 \times ECe)-ECw]} ; \quad ECw \approx TDS \div 640$$

Monthly values for evapotranspiration are dependent on the crop type and regional area of the site, as well as the crop coefficient if known. Monthly precipitation is also regional. The values for ET and P can be obtained from the local extension service, literature, or other reputable source. Please see the explanation in the "WTS-1A: Appendix One" text for further discussion of crop coefficients.

To calculate the monthly value for $Lw_{(c)}$, perform the calculation for each month as outlined in Worksheet 1-A, and input the result in the table below. Since this form is crop-specific, a value of zero is acceptable when the crop is not in season; however, use of a zero should be explained.

$$\text{Million Gals/Mo} = Lw_{(c)} \text{ in/mo} \times \text{_____ ac} \div 12 \text{ in/ft} \times 43,560 \text{ ft}^2/\text{ac} \times 7.481 \text{ gals/ft}^3 \div 1,000,000$$

(Enter and use the number of acres for the crop type being irrigated)

$$\text{MGD (Million gallons/day)} = \text{M Gallons/mo} \div \text{Days/mo}$$

Month	Days/Mo	ET (in/mo)	P (in/mo)	$Lw_{(c)}$ (in/mo)	M Gals/Mo	MGD
Jan	31					
Feb	28					
Mar	31					
Apr	30					
May	31					
Jun	30					
Jul	31					
Aug	31					
Sep	30					
Oct	31					
Nov	30					
Dec	31					
Totals (in/yr):					Note: These totals should approximate the annual values calculated in Worksheet 1-A	

WTS-1A: APPENDIX TWO

NITROGEN LOADING LIMIT WORKSHEET

The nitrogen loading equation takes into account precipitation, evapotranspiration, plant nitrogen uptake, nitrogen content of the applied effluent, and allowable percolate nitrogen concentration. The equation included below is from Wastewater Engineering: Treatment, Disposal, and Reuse, (Metcalf and Eddy, 1991)

$$L_{w(n)} = \frac{[(C_p, \text{mg/l}) \times (P-ET, \text{in/yr})] + [(U, \text{lb/acre-yr}) \times (4.4)]}{[(1-f) \times (C_n, \text{mg/l})] - (C_p, \text{mg/l})}$$

where:

$L_{w(n)}$ = Allowable Hydraulic Loading Rate Based on Nitrogen Loading rate (in/yr);

C_p = Total Nitrogen Concentration in Percolating Water (mg/l);

ET = Evapotranspiration Rate (in/yr);

P = Precipitation Rate (in/yr);

U = Nitrogen Uptake Rate by Crop (lb/acre-yr);

4.4 = Combined Conversion Factor;

C_n = Total Nitrogen Concentration in Applied Wastewater (mg/l); and

f = Fraction of Applied Total Nitrogen Removed by Denitrification and Volatilization.

“Cp” - Nitrogen in Percolating Water

A conservative value for Total N in the water that percolates past the root zone (C_p) is 7 mg/l, which is the first “red flag” value for Nitrate as N in monitoring well samples. Setting the C_p limit at a constant value aids in obtaining an hydraulic nitrogen loading rate ($L_{w(n)}$) which should be protective of groundwater resources. The drinking water standard for Nitrate as N is 10 mg/l, which would be the maximum allowable value for C_p .

“ET” - Evapotranspiration

Evapotranspiration is defined as the “loss of water from the soil both by evaporation and by transpiration from the plants growing thereon” (Websters Dictionary, 1990). Since different plants transpire at different rates, a crop coefficient (K_c) can be used to modify the potential ET for a particular area. Values for K_c vary depending upon the geographical location of the crop, and the species grown. If a crop coefficient can be determined, when multiplied by the potential ET rate, the result is a more accurate estimate of ET for an irrigation site. The Division recommends that reusers contact local agriculture representatives identified in Appendix Six for further crop-specific and regional information.

“U” - Crop Nitrogen Uptake

Plant nitrogen uptake rates (U) are crop-specific, and can be obtained from the local Extension Service, literature, or other reputable sources. Using the accepted value for U in this equation assumes that the harvested portion of the crop is removed from the site. If plant cuttings are not removed from the area, then the amount of nitrogen removed by uptake should be offset by the amount of nitrogen returned to the soil by decomposing cutting materials. If alfalfa, or another legume, is the site’s crop, then similar considerations should be made for atmospheric nitrogen which is fixed into the soil by alfalfa. A discussion with the local agricultural extension service is recommended prior to finalizing a “U” value.

“Cn” - Nitrogen in Applied Wastewater

The total nitrogen in the applied effluent water (Cn) can be obtained from the treatment plant that is supplying the effluent. For site design, an average value can be used. For completion of the required annual balance report, the actual analytical results from Discharge Monitoring Reports shall be used.

“f” - Nitrogen lost to Denitrification and Volatilization

The amount of nitrogen lost to denitrification and volatilization varies depending upon the nitrogen characteristics of the applied wastewater and the microbial activity in the soil. Microbial denitrification, in soils with a sufficient carbon source for the biological activity, may account for as much as 15 to 25 percent of the applied nitrogen during warm, biologically active months. Volatilization of ammonia may be as much as 10 percent, depending upon the ammonia fraction in the total nitrogen applied. (Metcalf & Eddy, 1991) For arid climates, such as Nevada, the value typically used for the “f” term is 0.2.

Nitrogen Addition by Chemical Fertilizers

If the allowable reuse water application volume is limited by plant consumptive use (Worksheet 1-A), nitrogen may need to be added by commercial fertilizer. In the design of a reuse site, this should be estimated to provide the site operator with a guideline for fertilizer application, in addition to the nitrogen being applied via the treated effluent. The application of fertilizer must then be incorporated into the required annual report to demonstrate that the application of commercial nitrogen and effluent nitrogen did not exceed the plant crop's uptake rate.

Worksheet 2-C is designed to be used to provide the Division with the required annual report of effluent and fertilizer usage. Worksheet 2-C can also be utilized as a site management tool to *estimate* the amount of commercial fertilizer which may be required in an upcoming month. However, use of the worksheet in this manner does not preclude the responsible use of good irrigation and nutrient management practices.

Worksheet 2-A

WATER REQUIREMENT DESIGN WORKSHEET:

Maximum Hydraulic Loading Rate Based On Annual Nitrogen Balance Evaluation

Page _____ of _____ Crop Type = _____

$$LW_{(n)} = \frac{[C_p \times (P-ET)] + (U \times 4.4)}{[(1-f) \times C_n] - C_p}$$

(A) Total Nitrogen in Percolating Water (C_p , mg/l) = _____

(B) Annual Precipitation (P , in/yr) = _____

(C) Annual Evapotranspiration (ET , in/yr) = _____

(Multiply by Crop Coefficient (K_c) if value is known)

(D) (B) - (C) = _____ (in/yr)

(E) (A) x (D) = _____

(F) Crop Nitrogen Uptake (U , lb/ac-yr) = _____

(G) (F) x 4.4 = _____

(H) (E) + (G) = _____

(I) Fraction of Applied Total Nitrogen Lost to Denitrification and Volatilization (f) = _____

(J) 1 - (I) = _____

(K) Total Nitrogen in Applied Effluent (C_n , mg/l) = _____

(L) (J) x (K) = _____

(M) (L) - (A) = _____

(N) (H) ÷ (M) = $LW_{(n)}$ (inches/year) = _____

If the Water Use Rate calculated in ("N") above is the lowest application volume calculated for the annual Consumptive Use Limit (Worksheet 1-A), the Nitrogen Limit (This Worksheet) or the Permeability Limit (Worksheet 3-A), then fill out Worksheet 2-B to estimate the planned maximum daily flow for the site.

Worksheet 2-B

WATER REQUIREMENT DESIGN WORKSHEET:

Maximum Hydraulic Loading Rate Based On Annual Nitrogen Balance Evaluation

Page _____ of _____ Crop Type = _____

$$Lw_{(n)} = \frac{[Cp \times (P-ET)] + (U \times 4.4)}{[(1-f) \times Cn] - Cp}$$

Monthly values for evapotranspiration are dependant on the crop type and regional area of the site, as well as the crop coefficient if known. Monthly precipitation is also regional. The values for ET and P can be obtained from the local extension service, literature, or other reputable source. Please see the explanation in the "WTS-1A: Appendix Two" text for further discussion of crop coefficients.

The monthly value of crop nitrogen uptake (U) can be calculated according to the equation included on the Table. Please see the discussion in the "WTS-1A: Appendix Two" text regarding "U" values for alfalfa crops or sites that do not remove crop cuttings. If a different distribution of monthly "U" is used, due to circumstances such as germination or dormancy periods, then provide documentation explaining the difference.

To calculate the monthly value for $Lw_{(n)}$, perform the calculation for each month as outlined in Worksheet 2-A, using the monthly values for "U", "P", "ET", and "Cn", and input the result in the table below. Since this form is crop-specific, a value of zero is acceptable when the crop is not in season; however, use of a zero should be explained.

$$\text{Monthly U (lb/ac-mo)} = U \text{ (lb/ac-yr)} \times ET(\text{in/mo}) \div ET \text{ (total in/yr)}$$

$$\text{Million Gallons} = Lw_{(n)} \text{ in/mo} \times \text{_____} \# \text{ acres} \div 12 \text{ in/ft} \times 43,560 \text{ ft}^2/\text{ac} \times 7.481 \text{ gallons/ft}^3 \div 1,000,000$$

Per Month (ea. crop type)

$$\text{MGD (Million gallons/day)} = M \text{ Gallons/mo} \div \text{Days/mo}$$

Month	Days/Mo	P (in/mo)	ET (in/mo)	U (lb/ac-mo)	$Lw_{(n)}$ (in/mo)	M Gals/Mo	MGD of Reclam'd Water
Jan	31						
Feb	28/29						
Mar	31						
Apr	30						
May	31						
Jun	30						
Jul	31						
Aug	31						
Sep	30						
Oct	31						
Nov	30						
Dec	31						
Totals:						Note: The totals for P, ET and $Lw_{(n)}$ should approximate the annual values used or calculated in Worksheet 2-A	

Worksheet 2-C: Regardless of the limiting hydraulic loading rate that was defined during the design phase, Worksheet 2-C is designed to be used to provide the Division with the required annual report of effluent and fertilizer usage.

$$\text{Effluent N Applied (lb/ac-mo)} = \frac{\text{MGD Applied}}{\text{Effluent N Conc. (mg/l)}} \times \frac{8.34}{\text{\# days/mo}} \div \frac{\text{\# Acres}}{\text{(1 - "f") (i.e. 0.2.)}}$$

$$\text{Fertilizer N Applied (lb/ac-mo)} = \text{Monthly Fertilizer used (lbs/mo)} \times \text{\% N in Fertilizer (as a fraction)} \div \text{acres}$$

Crop Name and Nitrogen Uptake Requirement = _____, _____ (lbs/ac-yr)

Month	Days/Mo	Million Gallons Applied (mo)	MGD of Irrigation Water Applied	Effluent N Concentration (mg/l)	Effluent N Applied (lb/ac-mo)	Fertilizer N Applied (lb/ac-mo)	Total N Applied (Effl. N + Fert. N) (lb/ac-mo)
Jan	31						
Feb	28/29						
Mar	31						
Apr	30						
May	31						
Jun	30						
Jul	31						
Aug	31						
Sep	30						
Oct	31						
Nov	30						
Dec	31						
						Total** =	

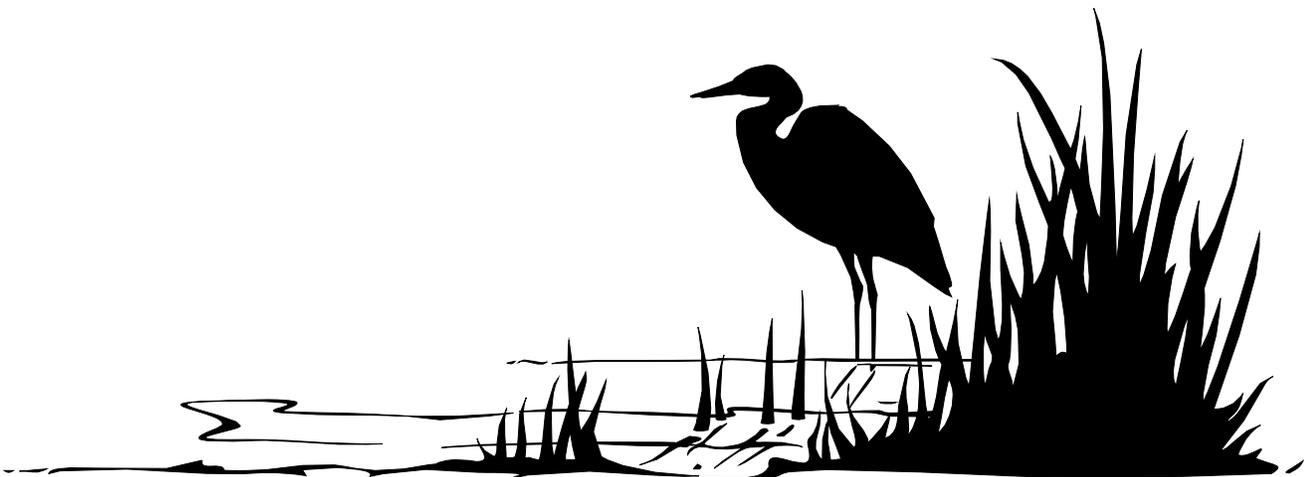
** The Total N Applied to the crop should be less than the crop's Nitrogen Uptake Requirement. Please see your permit for directions if it is not.

APPENDIX THREE

WORKER HYGIENE FACT SHEETS

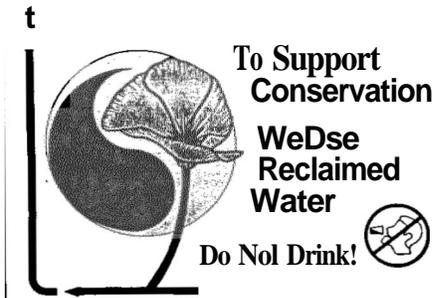
This project area uses reclaimed wastewater for irrigation. This reclaimed wastewater comes from the sewage treatment plant and meets the standards required for this level of reuse. Potential risks of disease transmission from the use of the reclaimed water is low, however, some general guidelines (listed below), should be followed protect you from becoming ill when working with reclaimed water:

1. Do not drink the reclaimed water or use the reclaimed water for washing.
2. Always wash hands and face with clean water and soap before eating, smoking, or drinking.
3. Wear rubber gloves when working on the irrigation system.
4. Try to keep the irrigation water off your skin and clothes as much as possible.
5. Always treat cuts immediately before continuing with work on the irrigation system.
6. Make sure the area is clear of people that may get sprayed before running the irrigation system.
7. Report any problems to your supervisor that you feel could pose a risk.



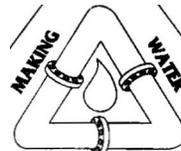
APPENDIX FOUR

NOTIFICATION SIGN EXAMPLES



IRRIGATION SIGN

Figure 4.3



WORK
E: j, ;, ; b' M, l, & E @ 6 N i W. f n 4 h J 4 A
WE IRRIGATE WITH RECLAIMED WATER



DO NOT DRINK

IRRIGATION SIGN

Figure 4.4



IRRIGATION SIGN

Figure 4.5

APPENDIX FIVE

REUSE REFERENCE LISTS

LITERATURE REFERENCE LIST FOR RECLAIMED WATER USE MANAGEMENT

1. “Guidelines for Using Disinfected Recycled Water”, Awwa California-Nevada Section, 1997 & 1984.
2. “Guidelines for Water Reuse”, U S Environmental Protection Agency, 1992, 2004.
3. “Land Treatment of Municipal Wastewater”, U S Environmental Protection Agency, 1981.
4. “Nevada Irrigation Guide”, US Department of Agriculture, Soil Conservation Service, 1981.
5. Wastewater Reuse For Golf Course Irrigation, US Golf Association, 1994, Lewis Publishers.
6. Water Reuse Manual of Practice, Water Environment Federation 1989.
7. Wastewater Engineering Treatment, Disposal and Reuse, Metcalf & Eddy, 1991, Mcgraw-hill Publishers.
8. Irrigation with Reclaimed Municipal Wastewater- A guidance manual. G.S. Pettygrove and T. Asano, 1985, Lewis Publishers.

Contact List for Technical and Regulatory Guidance

1. **Nevada Division of Environmental Protection, Bureau of Water Pollution Control**
901 South Stewart Street, Suite 4001, Carson City, NV, 89701(775) 687-4670
2. **Nevada Division of Water Resources**
901 South Stewart Street, Carson City, NV 89701.....(775) 687-4380
3. **Nevada Division of Health**
901 South Stewart Street, Carson City, NV 89701.....(775) 687-9521
4. **Desert Research Institute**
7010 Dandini Boulevard, Reno, NV 89506.....(775) 673-7300
5. **National Resource Conservation Service (NRCS)**
1528 U.S. Highway 395, Minden, NV 89410.....(775) 883-2623

5301 Longley Lane, Building F, Room 201, Reno, NV 89511(775) 784-5875
6. **University of Nevada Cooperative Extension**
2345 Redrock Street, Suite 100, Las Vegas, NV 89146-3160(702) 222-3130
7. **Nevada Department of Agriculture**
350 Capitol Hill, Reno, NV 89510(775) 688-1180
8. **Center for Urban Water Conservation - UNLV Dept. of Biology**
Las Vegas, Nevada 89157-4004(702) 895-3853

APPENDIX SIX

NEVADA ADMINISTRATIVE CODE - REUSE REGULATIONS

Use of Treated Effluent

NAC 445A.274 Definitions. (NRS 445A.425) As used in NAC 445A.274 to 445A.280, inclusive, unless the context otherwise requires, the words and terms defined in NAC 445A.2741 to 445A.2748, inclusive, have the meanings ascribed to them in those sections.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2741 "Area of use" defined. (NRS 445A.425) "Area of use" means a site, or an area of land, where treated effluent is in use pursuant to NAC 445A.274 to 445A.280, inclusive.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2742 "Buffer zone" defined. (NRS 445A.425) "Buffer zone" means a bounded area adjacent to, and surrounding, an area of use, that is subject to the provisions of NAC 445A.2756.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2743 "Graywater" defined. (NRS 445A.425) "Graywater" has the meaning ascribed to it in NAC 444.7616.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2744 "Impoundment" defined. (NRS 445A.425) "Impoundment" means a lake, reservoir or lined holding basin.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2745 "Spray irrigation" defined. (NRS 445A.425) "Spray irrigation" means irrigation using sprinklers that are located above the ground surface.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2746 "Subsurface irrigation" defined. (NRS 445A.425) "Subsurface irrigation" means irrigation using an underground distribution system.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2747 "Surface irrigation" defined. (NRS 445A.425) "Surface irrigation" means irrigation using a flood irrigation system or a drip irrigation system. The term does not include spray irrigation.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2748 "Treated effluent" defined. (NRS 445A.425) "Treated effluent" means sewage that has been treated by a physical, biological or chemical process. The term does not include graywater.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2749 Limitation on meaning of "agricultural purposes." (NRS 445A.425) For the purposes of NAC 445A.274 to 445A.280, inclusive, the term "agricultural purposes" does not include the growing of crops for human consumption.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.275 General requirements and restrictions. (NRS 445A.425)

1. A person shall not use treated effluent unless:
 - (a) The person has:
 - (1) Received the approval of the Division of a plan for the management of effluent; and
 - (2) Obtained a permit pursuant to NAC 445A.228 to 445A.263, inclusive; and
 - (b) The treated effluent has received at least secondary treatment.
 2. As used in this section:
 - (a) “Five-day inhibited biochemical oxygen demand” means the amount of dissolved oxygen required to stabilize the carbonaceous decomposable organic matter by aerobic bacterial action at 20 degrees centigrade for 5 days.
 - (b) “Plan for the management of effluent” means:
 - (1) An effluent management plan; or
 - (2) A site specific management plan.
 - (c) “Secondary treatment” means the treatment of sewage until the sewage has, calculated as a 30-day average:
 - (1) A 5-day inhibited biochemical oxygen demand concentration of 30 milligrams per liter or less;
 - (2) A total suspended solids concentration of 30 milligrams per liter or less; and
 - (3) A pH of 6.0 to 9.0 SU.
- (Added to NAC by Environmental Comm’n, eff. 9-13-91; A by R063-04, 10-6-2004)

NAC 445A.2752 Signs: Required placement and contents. (NRS 445A.425)

1. A person using treated effluent shall post signs along the outer perimeter of the:
 - (a) Area of use; and
 - (b) Buffer zone, if any.
 2. The signs must provide reasonable notice to the general public that:
 - (a) Treated effluent is in use; and
 - (b) Contact with the effluent should be avoided.
- (Added to NAC by Environmental Comm’n by R063-04, eff. 10-6-2004)

NAC 445A.2754 Irrigation: Requirements and restrictions. (NRS 445A.425)

1. A person using treated effluent for irrigation shall not:
 - (a) Allow the effluent to run off the site being irrigated.
 - (b) Except as otherwise provided in NAC 445A.2768, use treated effluent to irrigate crops intended for human consumption.
 2. A person using treated effluent for spray irrigation shall conduct the irrigation in a manner that inhibits the treated effluent spray from drifting beyond the area of use or the buffer zone, if any.
- (Added to NAC by Environmental Comm’n by R063-04, eff. 10-6-2004)

NAC 445A.2756 Buffer zones: Size; boundaries; restriction. (NRS 445A.425)

1. Except as otherwise provided in NAC 445A.2766, 445A.2768 and 445A.2771, the Division will establish the size of a buffer zone.
 2. The inner boundary of a buffer zone is determined by measuring a distance equal to the size of the buffer zone from:
 - (a) A boundary line of the property on which the site is located;
 - (b) A sign posted pursuant to NAC 445A.2752 informing the public of the presence of treated effluent; or
 - (c) Any point where the property is open to public access, as determined by the Division.
 3. Except as otherwise provided in NAC 445A.2754, a buffer zone must be kept free of treated effluent.
- (Added to NAC by Environmental Comm’n by R063-04, eff. 10-6-2004)

NAC 445A.276 Reuse categories: Requirements for bacteriological quality of effluent. (NRS 445A.425)

1. Treated effluent being used for an activity approved for a reuse category must meet the following requirements for bacteriological quality for that category:

	Total Coliform	Fecal Coliform			
	c.f.u. or mpn/100 ml	c.f.u. or mpn/100ml			
Reuse Category	A	B	C	D	E
30-day geometric mean	2.2	2.2	23	200	No Limit
Maximum daily number	23	23	240	400	No Limit

2. As used in this section, “c.f.u. or mpn/100ml” means colony forming units or most probable number per 100 milliliters of the treated effluent.

(Added to NAC by Environmental Comm’n, eff. 9-13-91; A by R063-04, 10-6-2004)

NAC 445A.2762 Reuse category A: Approved uses. (NRS 445A.425) Treated effluent that meets the requirements for bacteriological quality set forth in NAC 445A.276 for reuse category A may be used for:

1. Spray irrigation of land used as a cemetery, commercial lawn, golf course, greenbelt or park even if:
 - (a) Public access to the area of use is not controlled; and
 - (b) Human contact with the treated effluent can reasonably be expected to occur.
2. An impoundment in which swimming is prohibited even if:
 - (a) Public access to the impoundment is not controlled; and
 - (b) Human contact with the treated effluent can reasonably be expected to occur.
3. Any activity approved for reuse category B, C, D or E.
4. Any other use that is approved by the Division.

(Added to NAC by Environmental Comm’n by R063-04, eff. 10-6-2004)

NAC 445A.2764 Reuse category B: Approved uses. (NRS 445A.425) Treated effluent that meets the requirements for bacteriological quality set forth in NAC 445A.276 for reuse category B may be used for:

1. Spray irrigation of land used as a cemetery, commercial lawn, golf course, greenbelt or park if:
 - (a) Public access to the area of use is controlled; and
 - (b) Human contact with the treated effluent cannot reasonably be expected to occur.
2. Subsurface irrigation of land used as a commercial lawn, greenbelt or park.
3. Cooling water in an industrial process.
4. Fire-fighting operations in an urban area if approved by the fire department, fire protection district or other fire-fighting agency in whose district the fire occurs.
5. Any activity approved for reuse category C, D or E.
6. Any other use that is approved by the Division.

(Added to NAC by Environmental Comm’n by R063-04, eff. 10-6-2004)

NAC 445A.2766 Reuse category C: Approved uses. (NRS 445A.425)

1. Treated effluent that meets the requirements for bacteriological quality set forth in NAC 445A.276 for reuse category C may be used for:

- (a) Spray irrigation of land used as a cemetery, golf course or greenbelt if:
 - (1) Public access to the area of use is controlled;
 - (2) Human contact with the treated effluent does not occur; and
 - (3) A buffer zone of not less than 100 feet is maintained.
- (b) Watering of nursery stock if public access to the area of use is controlled.
- (c) Establishment, restoration or maintenance of a wetland if public access to the wetland is controlled.
- (d) Washing of gravel used in concrete mixing.
- (e) Feed water for a boiler.
- (f) An impoundment if:
 - (1) Public access to the impoundment is controlled; and
 - (2) Human contact with the treated effluent cannot reasonably be expected to occur.
- (g) Fire fighting of forest or other wildland fires if approved by the fire department, fire protection district or other fire-fighting agency in whose district the fire occurs.
- (h) Any activity approved for reuse category D or E.
- (i) Any other use that is approved by the Division.

2. As used in this section:

- (a) "Nursery stock" has the meaning ascribed to it in NRS 555.23562.
 - (b) "Wetland" has the meaning ascribed to it in NRS 244.388.
- (Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2768 Reuse category D: Approved uses. (NRS 445A.425)

1. Treated effluent that meets the requirements for bacteriological quality set forth in NAC 445A.276 for reuse category D may be used for:

- (a) Spray irrigation of land used for agricultural purposes if:
 - (1) Public access to the area of use is prohibited; and
 - (2) A buffer zone of not less than 400 feet is maintained.
- (b) Surface irrigation of land used:
 - (1) As greenbelt if:
 - (I) Public access to the area of use is prohibited; and
 - (II) Human contact with the treated effluent does not occur.
 - (2) For agricultural purposes; and
 - (3) For the cultivation of fruit-bearing trees or nut-bearing trees.
- (c) Subsurface irrigation of land used for agricultural purposes if public access is controlled.
- (d) Dust control.
- (e) Soil compaction.
- (f) Flushing sewer lines.
- (g) An impoundment if:
 - (1) Public access to the impoundment is prohibited;
 - (2) All human activities involving contact with the treated effluent are prohibited; and
 - (3) Human contact with the treated effluent does not occur.
- (h) Any activity approved for reuse category E.
- (i) Any other use approved by the Division.

2. As used in this section, "dust control" means the program required pursuant to NAC 445B.22037 to prevent controllable particulate matter from becoming airborne.

(Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.2771 Reuse category E: Approved uses. (NRS 445A.425) Treated effluent that meets the requirements for bacteriological quality set forth in NAC 445A.276 for reuse category E may be used for:

1. Spray irrigation of land used for agricultural purposes if:
 - (a) Public access to the area of use is prohibited; and
 - (b) A buffer zone of not less than 800 feet is maintained.
 2. Any other use that is approved by the Division.
- (Added to NAC by Environmental Comm'n by R063-04, eff. 10-6-2004)

NAC 445A.279 Determining quality of effluent: Storage reservoirs excluded from treatment process. (NRS 445A.425) For the purpose of determining the quality of effluent, storage reservoirs do not constitute part of the treatment process.

(Added to NAC by Environmental Comm'n, eff. 9-13-91)—(Substituted in revision for NAC 445.178)

NAC 445A.280 Waiver or modification of requirements. (NRS 445A.425) The Director may waive compliance with or modify any requirement of NAC 445A.274 to 445A.280, inclusive, for a specific proposed use of treated effluent upon his determination that because of the size, type or location of the proposed use, the waiver or modification is consistent with the policy set forth in NRS 445A.305.

(Added to NAC by Environmental Comm'n, eff. 9-13-91; A by R063-04, 10-6-2004)