

Las Vegas Wash Coordination Committee

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Cottonwood Cell North Planting Plan



February 2012



SOUTHERN NEVADA
WATER AUTHORITY

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**Cottonwood Cell North
Planting Plan**

**SOUTHERN NEVADA WATER AUTHORITY
Las Vegas Wash Project Coordination Team**

Prepared by:

**Jason R. Eckberg
Southern Nevada Water Authority
Las Vegas Wash Project Coordination Team
100 City Parkway, Suite 700
Las Vegas, Nevada 89106**

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1.0 PURPOSE AND GOALS OF THE PLANTING PLAN

The purpose of this plan is to describe the revegetation strategies to be implemented at the Cottonwood Cell North revegetation site. This site will provide additional erosion control and increase habitat for the diverse fauna found in along the Las Vegas Wash (Wash). The general goals for this and other revegetation activities along the Wash are to develop ecologically functioning wetland, riparian, and upland areas that are self-sustaining in the long-term. Revegetation activities are coordinated by staff from the Southern Nevada Water Authority's (SNWA) Las Vegas Wash Project Coordination Team. Specific planning and strategies required to successfully revegetate the Cottonwood Cell North site are described herein.

2.0 PROJECT SUMMARY

2.1 Site Location

The Cottonwood Cell North revegetation site is located within the Clark County Wetlands Park (Figures 1 and 2) along the lower Wash; approximately 3.5 miles downstream of the discharge of the Clark County Water Reclamation District, upstream of the Historic Lateral Weir (installed in 2000), and north of the Cottonwood Cells revegetation sites (planted in 2002 and 2005). Planting locations include upland areas within desert washes and a large riparian area that surrounds the Cottonwood Cells on the north, east, and west.

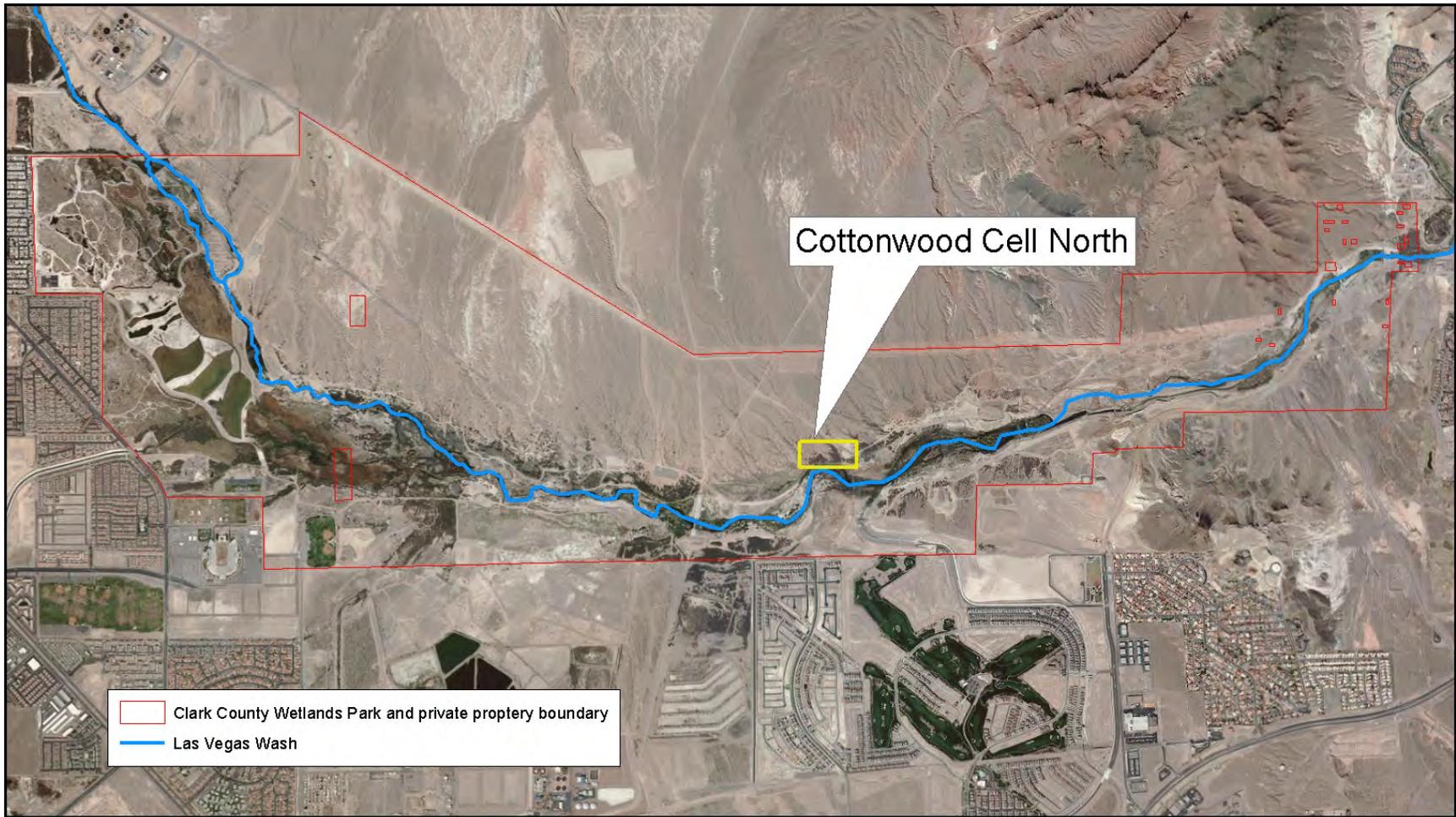
2.2 Prior Conditions

Prior to construction, the footprint of activity where the Cottonwood Cell North revegetation area will be was primarily dominated by salt cedar (*Tamarix ramosissima*). Non-wetland areas included salt cedar dominated areas, areas that included native vegetation, and areas that had little vegetation present at all. The areas that had native vegetation included cat-claw acacia (*Senegalia greggii*) and creosote bush and were cleared as part of the installation of bank protection (visible on Figure 2) to prevent further erosion as a result of flows down the natural desert wash. There was also an area formerly used as a soil stockpile area.

A riparian area surrounded the two Cottonwood Cells. This area included many salt cedar trees that were removed to install the bank protection previously described, as well as large areas dominated by common reed (*Phragmites australis*) and quailbush (*Atriplex lentiformis*).

3.0 REVEGETATION DESIGN

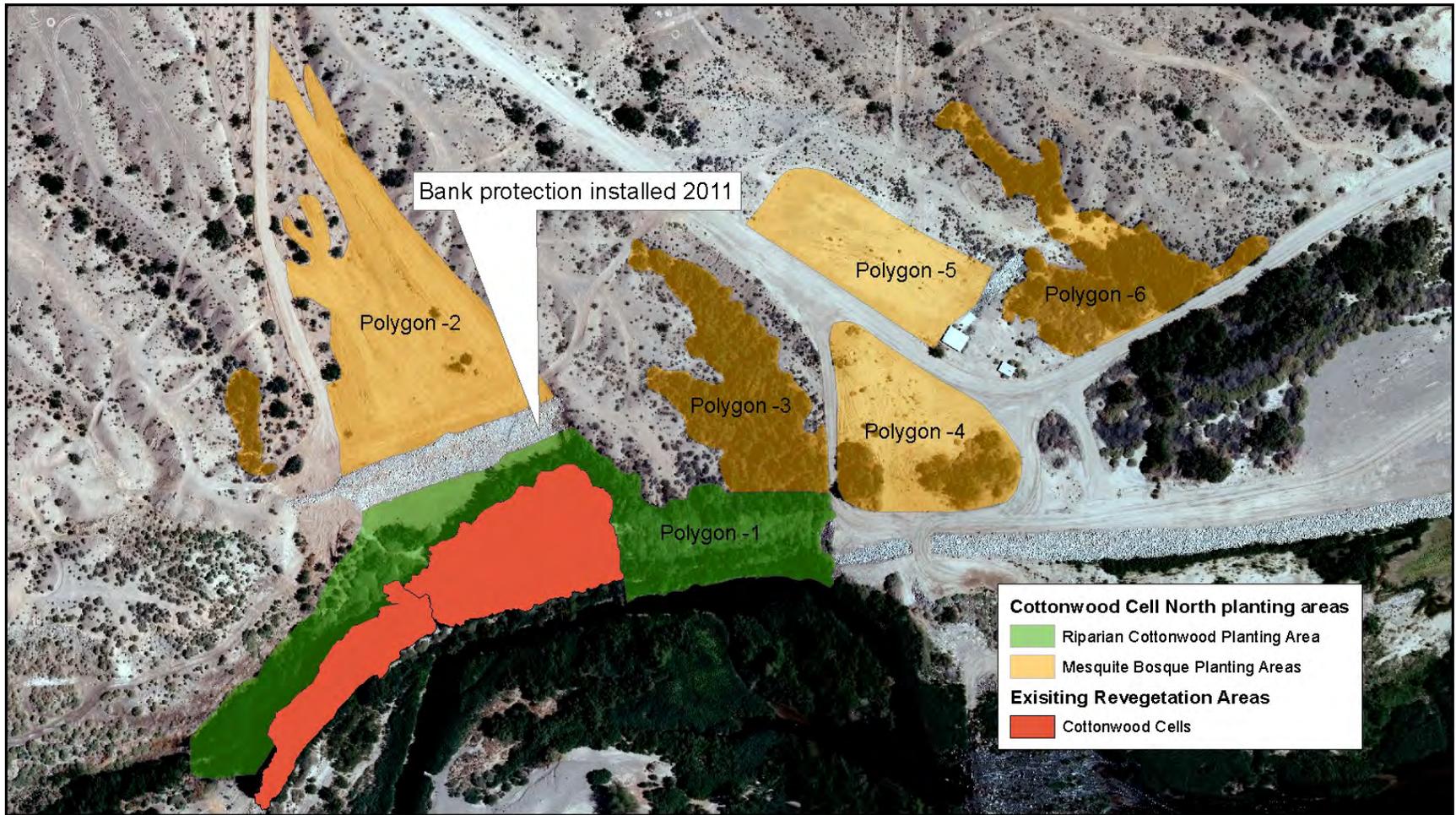
Plantings at the Cottonwood Cell North will be divided into two separate planting schemes; upland and riparian. The upland area will be further divided based on the soil and microhabitat conditions of each particular area. Soil salinity and depth to water measurements were taken at locations throughout the planting area (Figure 3). These measurements were used in the decision making process as to which particular plant species would be used in individual planting areas. Distribution of plants across planting areas and the planting site as a whole is shown in Table 1.



For planning purposes only
Prepared by the Southern Nevada Water Authority
Aerial Image taken 2011



Figure 1: Location of the Cottonwood Cell North planting area within the Clark County Wetlands Park.



For planning purposes only
 Prepared by the Southern Nevada Water Authority
 Aerial Image taken 2011

0 200 400 800 Feet



Figure 2: Location of the Cottonwood Cell North planting area.

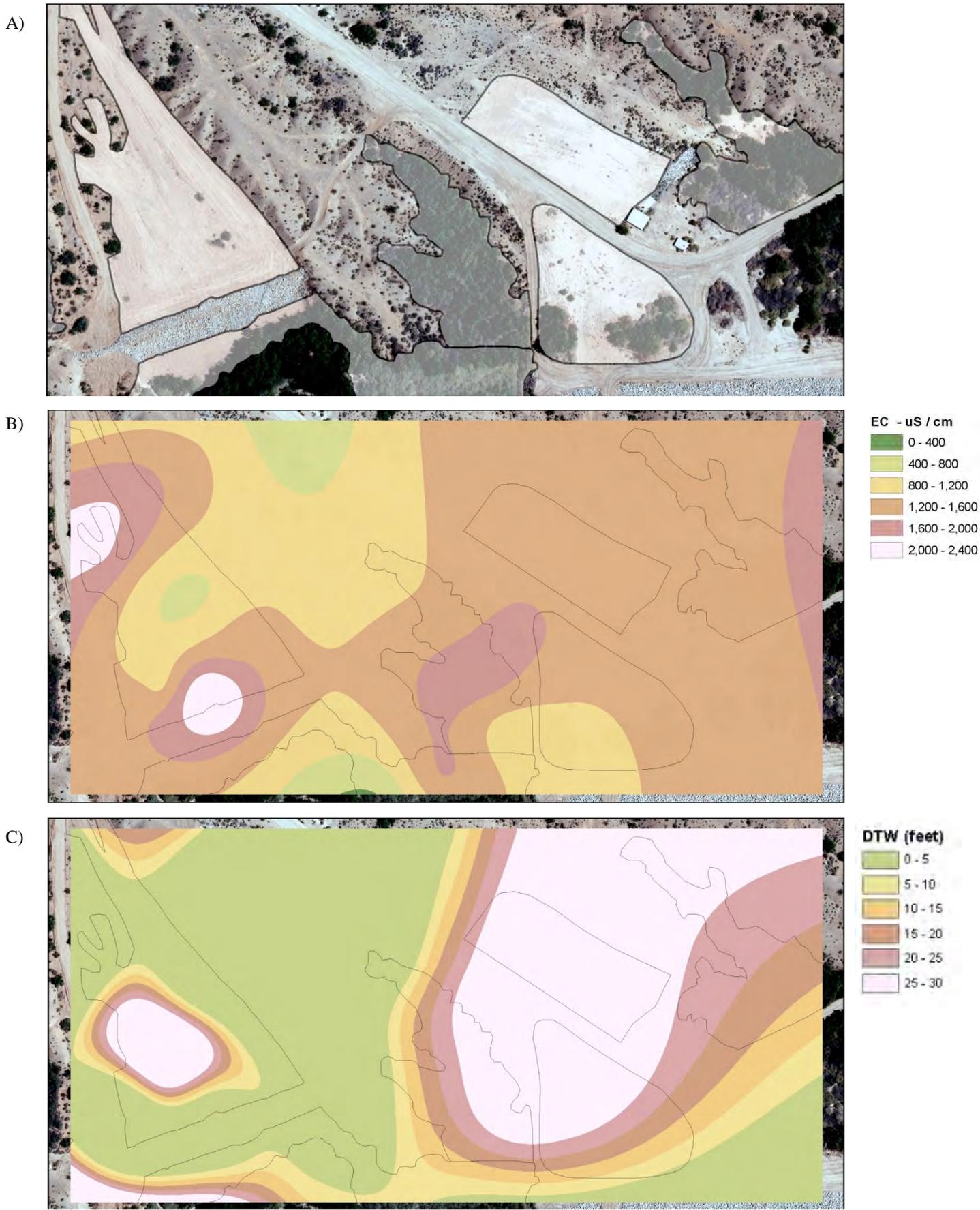


Figure 3: Soil analysis areas within the Cottonwood Cell North planting area: (A) outlined areas, (B) electrical conductivity, and (C) depth to water.

	Total # Plants ¹	Plants Per Acre	Species							
			Honey Mesquite (Prosopis glandulosa)	Screwbean Mesquite (Prosopis pubescens)	Indigo Bush (Psoralea fremontii)	Globemallow (Sphaeralcea ambigua)	Cheesebush (Hymenoclea salsola)	Desert Saltbush (Atriplex polycarpa)	Cottonwood (Populus fremontii)	
Polygon 1	200	93.0								200
Polygon 2	1250	592.4	250	250	250	250	250			
Polygon 3	600	571.4	120	120	120	120	120			
Polygon 4	250	221.2							250	
Polygon 5	250	268.8							250	
Polygon 6	650	580.4	130	130	130	130	130			
TOTAL	3200	376.9	500	500	500	500	500	500	500	200

¹All plants will be 5-gallon potted plants

Table 1: Cottonwood Cell North planting distribution by species and polygon number.

3.1 Riparian Planting Area

The riparian planting area (Polygon 1; Figure 2) has low soil salinity and shallow depth to water. Cottonwood trees (*Populus fremontii*) will be planted in this area. The Cottonwood Cell sites, adjacent to the planting area (Figure 4), were planned as a nursery and as a result the tree plantings were spaced closer than would be found in a natural setting. The plantings within this new planting area will be spaced 10 to 15 feet on center which will mimic natural distribution of cottonwood trees and allow them to reach maximum size. A total of 200 trees will be planted in the 2.15 acres of riparian area. This spacing and distribution has been shown to be successful at other restoration sites, such as Site 111 to the west of this planting area.



Figure 4: Cottonwood Cell North Polygon 1 after salt cedar removal.

3.2 Upland Planting Areas

All of the upland areas (Polygons 2-6; Figure 2) have depth to water and salinity concentrations that will likely provide a good planting substrate for typical non-wetland plants that have been planted in previous plantings along the Wash. Polygon 2 (Figure 2) was dominated by cat-claw acacia, while Polygons 3 and 6 were dominated by salt cedar prior to clearing in late 2011 (Figure 5). These three areas will be planted primarily with native mesquites. A mixture of honey mesquite (*Prosopis glandulosa* var. *torreyana*) and screwbean mesquite (*Prosopis pubescens*) will provide the largest component of the new plantings. Due to the slight differences in water requirements of these trees, honey mesquites will be placed in the upper reaches of the desert washes, and screwbean mesquites will be placed closer to the Wash channel. In addition to these trees, a mixture of three shrubs will help provide a diversity of plant types mimicking nearby natural areas: indigo bush (*Psoralea fremontii*), globemallow (*Sphaeralcea ambigua*), and cheesebush (*Hymenoclea salsola*). A total of 500 individual plants of each of these five species will be planted and equally distributed across the 4.5 acre area.

The remaining two upland planting areas are in the center of the site on opposite sides of a road. These areas have had additional soil deposited on top of the natural soil as soil stockpiles. In addition, they are adjacent to concrete vaults. To ensure that these areas are still able to be accessed by SNWA personnel, no trees will be planted. Instead, the areas will be exclusively planted with desert saltbush (*Atriplex polycarpa*). This species is often found in monocultures in surrounding native habitats. A total of 500 individual plants will be planted in these two areas that make up approximately 1.5 acres.



Figure 5: Cottonwood Cell North Polygon 3 after salt cedar removal.

4.0 PERMIT COMPLIANCE

SNWA was issued a stormwater permit by the Nevada Division of Environmental Protection for Polygon 5, one of the two areas being planted with desert saltbush. The revegetation requirement in order to close these permits is to establish vegetation at 70% of the pre-existing total cover. Detailed monitoring was not done prior to its use as a soil stockpile, however aerial imagery shows that approximately 25% of the area had vegetative cover. Assuming it was all native vegetation, the requirement would be to establish 17.5% cover. It is expected that the plant density at the time of planting will ensure permit closure in one growing season as well as far exceeding the permit requirements.