

June 16, 2004

Office of the Chief  
Environmental Resources Branch

Dear Interested Party:

Enclosed for your review and comment is a copy of the Draft Supplemental Environmental Assessment (DSEA) documenting changes in the location of the footprints of the F-4 Debris Basin, changes in the alignment of the F-4 Channel, and the location of the long term disposal site. The changes include relocation of the channel, along Fort Apache Road, as a result of residential development occurring along the originally proposed alignment.

The DSEA is a joint Corps of Engineers, Bureau of Land Management (BLM) document, and will be used by the BLM as the environmental document for the real estate grant to Clark County for the portions of the project that are to be constructed on BLM property.

Should you have any comments on the proposed project or the DSEA, please respond within thirty days (30) days to :

Colonel Richard G. Thompson  
District Engineer  
U.S. Army Corps of Engineers  
Los Angeles District  
Attn: Mr. Alex Watt (CESPL-PD-RL)  
P.O. Box 532711  
Los Angeles, California 90053-2325

If you have any questions regarding the proposed project, please contact Mr. Alex Watt, Environmental Coordinator, at (213) 452-3860.

Thank you for your attention to this document.

Sincerely,

Ruth B. Villalobos  
Chief, Planning Division

Enclosure

CF:  
CESPL-PD  
CESPL-PD-R  
SULZER  
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U. S. ARMY CORPS OF ENGINEERS  
LOS ANGELES DISTRICT

**SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT**

**F4 CHANNEL DEBRIS BASIN  
AND  
LONG-TERM STORAGE**

**Las Vegas Wash and Tributaries  
(Tropicana and Flamingo Washes)  
Clark County, Nevada**

**June 2004**

## FINDING OF NO SIGNIFICANT IMPACT

### F-4 CHANNEL DEBRIS BASIN AND LONG-TERM STORAGE

Las Vegas Wash and Tributaries  
(Tropicana and Flamingo Washes)  
Clark County, Nevada

I have reviewed the attached final Supplemental Environmental Assessment (SEA) that has been prepared to document design changes in the proposed F-4 Debris Basin and Channel, and within the Flamingo Detention Basin on the Las Vegas Wash and Tributaries, Clark County, Nevada.

This SEA documents proposed activities scheduled from September 2004 to December 2005.

The F-4 Debris Basin and F-4 Channel would be constructed essentially as presented in the FR/EIS, except that the basin and channel alignment footprint have been modified. More precise mapping conducted during design resulted in resizing the subject drainage area from 13.7 square kilometers (5.29 Square miles) to 14.3 square kilometers (5.54 square miles). This required recalculation of computed peak discharge from 29,000 cfs to 31,000 cfs. The debris estimate was not recomputed as it was judged that the difference would be negligible. Although the F-4 Channel alignment has changed slightly from the Feasibility Report, the change was so minor that the hydrology was not revised. The recommended F-4 Detention Basin and Channel are similar in concept and function and are not substantially different in location than described in the Feasibility Report. Information documented in the FEIS and previously prepared EA/FONSI's remains current except as noted.

The F-4 Dam Outlet and Channel design changed from a full-length trapezoidal channel to a combination of a trapezoidal and covered channel. When F-4 Dam was modified in 1996 excess material was placed at the base of the south side of the dam. These materials are to be moved to the disposal site 0.8 km (0.5 miles) away located on Bureau of Land Management managed lands.

The Flamingo Detention Basin final grading is still required as is landscaping around the basin. The current bottom of the basin will require final grading to ensure that the slope of the basin floor is as designed, with a hardened low flow channel being constructed to convey the low flows from the inlet area across the bottom of the basin to the outlet. The mounds of materials left from the leased mining operations will be removed to allow the correct draining of the basin.

The present inlet to the basin has resulted in the creation of a pond with wetland vegetation surrounding it. The County will be investigating the possibility of creating wetlands in this area, providing a Safe Harbors Agreement can be initiated for the wetland. There will also be

landscaping around the circumference of the basin, and topsoil from the lower reach of the F-4 Channel may be used to help promote plant growth around the basin.

Cultural resources, biological resources (including threatened species) and air quality may be potentially affected by the proposed project. Potential adverse environmental impacts have been avoided or minimized to negligible levels through the implementation of environmental constraints and special conditions that are in the attached SEA. In accordance with 40 CFR 1508.13, information in all previously prepared environmental documents for the Las Vegas Wash and Tributaries project, about project description and background, compliance with applicable regulations, and project benefits, impacts and mitigation measures is incorporated herein by reference.

This project is in compliance with all applicable laws, including sections 401 and 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, the Endangered Species Act, the Fish and Wildlife Coordination Act, and the Clean Air Act.

Informal coordination with the U. S. Fish and Wildlife Service will continue throughout this project to ensure that threatened, endangered, and sensitive species are not affected. Coordination with the Clark County Health Department and Clark County Flood Control will also be sustained.

I have considered the available information contained in the SEA and it is my determination that potential impacts resulting from the proposed Las Vegas Rehabilitation Project will not have a significant adverse effect upon the existing environment or the quality of the human environment. Preparation of an Environmental Impact Statement (EIS) therefore is not required.

My decision is to recommend implementation of this project as listed in the Supplemental Environmental Assessment.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Richard G. Thompson  
Colonel, US Army  
District Engineer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Sharon DiPinto  
Assistant Field Manager, Division of Lands  
Bureau of Land Management

# SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

## F-4 CHANNEL DEBRIS BASIN AND LONG TERM STORAGE

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# SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

## F-4 CHANNEL DEBRIS BASIN and LONG-TERM STORAGE

### CHAPTER 1 - LOCATION

#### 1.01 General

The proposed project study area is located in Clark County in southern Nevada, in the southwestern and central portions of the greater Las Vegas basin. The F-4 Debris Basin will be located west of the intersection of Fort Apache and Mesa Verde Lane, approximately 20 kilometers (km) (12 miles) southwest of downtown Las Vegas. The F-4 Channel conveys flows from the outlet of the F-4 Debris Basin north along Fort Apache to a location between Sunset Road and Patrick lane where the channel will turn to the north east conveying the flows towards the confluence of the F-1 and Upper Flamingo detention basin. Plate 1 shows the project location, and the F-4 Debris Basin and Channel Alignment (Plate 2).

### CHAPTER 2 - PROJECT BACKGROUND

#### 2.01 General

This Supplemental Environmental Assessment (SEA) amends the U.S. Army Corps of Engineers Feasibility Report and Final Environmental Impact Statement (FR/FEIS) for Las Vegas Wash and Tributaries, Tropicana and Flamingo Washes, Nevada, dated October 1991. In addition, Supplemental Environmental Assessments (SEA's) and Findings of No Significant Impact (FONSI's) have been prepared, as noted in the following table

The changes that have been made to this portion of the overall project, as originally proposed in the Feasibility Report and EA/FONSI's are to the F-4 Channel alignment, the F-4 Debris Basin placement, and a long-term disposal area. These recommended modifications are similar in concept and function and are not substantially different in location than as proposed in the Feasibility design. Information documented in the FEIS and previously prepared EA/FONSI's remains current, except as noted.

Since the EIS was released there have been changes in the alignment of the F-4 Channel, due to the real estate costs and the avoidance of public and private utilities along Fort Apache Road. Plate 3 shows the berm and the construction footprint, and Plate 4 shows the transition inlet structure and associated construction footprint.

Within the Flamingo Basin, grading will occur to bring the floor of the basin to the correct alignment, and around the basin.

**SUMMARY OF ENVIRONMENTAL ASSESSMENTS/FINDINGS OF NO  
SIGNIFICANT IMPACT PREVIOUSLY PREPARED OR UNDER  
PREPARATION**

Project Feature	Title of EA/FONSI	Date
Red Rock Detention Basin	Alternative Disposal Sites	January 1994
Red Rock Detention Basin	Red Rock Dam Modifications and Summerlin Stockpile Disposal Site	February 1995
Red Rock Detention Basin	Desert Sportsman's Disposal Site	October 1995
Las Vegas Wash (Tropicana and Flamingo Washes) Project	Recreation Report	June 1996
Tropicana Detention Basin	Tropicana Detention Basin and Outlet Channel	June 1996
Tropicana Detention Basin	Optional Disposal Site	July 1996
Flamingo Diversion Channel and Lower Blue Diamond Channel	Flamingo Diversion Channel and Lower Blue Diamond Channel	September 1996
Blue Diamond Beltway Channel	Blue Diamond Beltway Channel (Sections 7A and 7B) and Upper Blue Diamond Channel	September 1997
Red Rock Beltway Channel	Upper Red Rock Channel Red Rock Beltway Channel and Lower Red Rock Complex	October 1997
Blue Diamond Detention Basin	Blue Diamond Detention Basin	March 1998
Lower Red Rock Complex	Disposal Site and Haul Roads	March 1999
Flamingo Diversion Channel	Lower Flamingo Diversion Channel	October 2000
Red Rock Outlet Channel and R-4 Detention Basin and Channel	Red Rock Outlet Channel and R-4 Detention Basin and Channel	December 2000
Red Rock Detention Basin	Red Rock Basin Scour Protection	December 2000
R-4 Detention Basin and R-4 Channel Haul Road	R-4 Detention Basin and R-4 Channel Haul Road Alignment	April 2001
F-1 Channel	F-1 Channel, Hualapai Way to the Beltway	March 2002
F-1 & F-2 Basins and Channels	F-1 & F-2 Basins and Channels	August 2002
Blue Diamond Channel	Upper Blue Diamond Channel	September 2002

## **CHAPTER 3 - NEED FOR PROPOSED MODIFICATION**

### 3.01 General

The Las Vegas Valley is one of the most rapidly expanding urban areas in the country. The project area, west of the city, is undergoing accelerated development and is expected to fully develop within the foreseeable future, even without a flood damage reduction project. Most of the existing urbanized areas, as well as developing areas, lie within a basin that is highly prone to flooding. Flash floods caused by severe summer thunderstorms cause severe damage to commercial developments, which in this case include casinos, residential areas, and public facilities such as roads and utilities. Studies conducted by the U. S. Army Corps of Engineers (Corps) have indicated that only a comprehensive combined drainage and detention system would provide appropriate protection to the alluvial fan (the project area) as well as to commercial and residential developments further downstream.

Since preparation of the FR/FEIS and EA/FONSI's, the location and design of the F-4 Debris Basin and Channel have been refined. They are not substantially different from the locations described in the feasibility report. Construction of the debris basin would include excavation and grading within the basin site and construction of an embankment with excess material from the basin. The channel will be entrenched, as much as feasible, for its entire length to allow side flows to enter over channel walls. The channel invert slopes have been configured to maintain stable flow conditions.

### 3.02 Operations and Maintenance

Operations and Maintenance discussed in the FR/FEIS includes work associated with inspection of project features, removal of sediment and debris, repair of eroded areas and damaged structures. Air quality discussions and projections in association with Operations and Maintenance have been included in this SEA.

## **CHAPTER 4 - PROJECT DESCRIPTION**

### 4.01 Overall Flood Control Project

The description remains the same as that for the recommended plan that was described and evaluated in the *FR/FEIS for Las Vegas Wash and Tributaries, Tropicana and Flamingo Washes, Nevada, dated October 1991*. The plan comprises a comprehensive system of detention basins, debris basins, lateral collector channels and primary channels. The system is designed to intercept and divert flood flows in the project area into detention basins, from which flows would be released at non-damaging rates downstream. The Corps' proposed plan is the National Economic Development (NED) plan and would provide 100-year flood protection to the area.

### 4.02 Authorized Project

The F-4 Debris Basin and Channel as authorized were to be located in the drainage labeled F-4,

and along Fort Apache Road as shown on Plate 1 of this SEA. The embankment would be constructed of excess material excavated from the basin to create an earth fill embankment with a maximum height of 9.1 m (30 ft) and a length of about 487.7 m (1,600 ft). A spillway would be constructed through the embankment and would be discharged into the downstream F-4 Channel. A secondary collection system, approximately 1.2 hectares (3 acres) in size, will collect flows from the south that flow north between Fort Apache Road and the proposed F-4 Basin. This system will carry the flows north to enter the F4 Channel between the Basin and Fort Apache Road. The F-4 Channel would be entrenched for its entire length to allow side inflows to enter over the channel walls. A paved maintenance road would be constructed along the eastern edge of the channel. At a minimum, the channel would convey the maximum discharge of the 100-year flood plus inflow along the channel alignment.

#### 4.03 Changes to the Feasibility Report Plan and the Authorized Project

The F-4 Debris Basin and F-4 Channel would be constructed essentially as presented in the FR/EIS, except that the basin and channel alignment footprint have been modified and a long-term stockpile storage area has been identified. More precise mapping conducted during design resulted in determining the subject drainage area at 3.4 square kilometers (1.30 square miles). The computed peak discharge from the basin is 1,900 cfs, which will increase as a result of side inflows to a maximum of 5,800 cfs at the downstream end of the channel. The debris estimate was not recomputed as it was judged that the difference would be negligible.

The F-4 dam embankment would be roughly crescent shaped and would consist of compacted fill. It would be 487.7 m (1,600 ft) long with a height of 9.1m (30ft). It would be constructed with materials obtained from the basin excavation required upstream of the dam, and would be protected on the upstream side with soil cement, and on the downstream side with riprap. The dam would have a 5.5 m (18 ft) wide crest, which would function as a maintenance road. A spillway would be constructed through the north end of the dam embankment. The alignment of the spillway centerline is perpendicular to the axis of the dam embankment. The spillway crest shape would be elliptical with a vertical upstream face (ogee) constructed of reinforced concrete. Also included is a small secondary collection area located to the east of the dam embankment and south of the outfall facilities. The area to the south of the secondary collection area will be used for construction staging area and equipment storage. Total anticipated disturbance for the dam embankment and related facilities is approximately 33 hectares (82.5 acres) of which approximately 4 hectares (10 acres) are previously disturbed. Therefore, a total of approximately 29 hectares (72.5 acres) of new disturbance is expected.

The F-4 Channel alignment has changed slightly from the Feasibility Report, in that the channel will now cross Fort Apache and proceed north on the east side of the roadway as far as Eldorado Lane where the channel will cross to the west side of Fort Apache, and then continue north to Post Road. From this location the channel will proceed in a northeasterly direction to its confluence with the F-1 Channel. The facilities will consist of an open channel lined with reinforced concrete, approximately 2.7 miles long, 10-25 feet wide and 9.2 to 12.5 feet deep with permanent fencing on both sides. Additional activities/ facilities associated with the channel facilities that will occur within the requested ROW include access roads, slope stabilization/ cut and fill activities, and the installation of drain pipes as necessary, in order to convey water into

the channel along the alignment. Total anticipated disturbance for the channel and associated facilities is approximately 10 hectares (25 acres) of which approximately 4 hectares (11 acres) are already disturbed. Therefore, a total of approximately 6 hectares (14 acres) of new disturbance is expected.

Regular inspection and repair would occur on the F-4 structures. Sediment removal is expected to be needed each year and is based on flood event predictions. The one year, and one hundred year event predictions for the F-4 Basin are as follows: On a yearly basis it is estimated that 1,225 cubic meters (1,600 cubic yards) of sediment will be deposited into the basin, with the one hundred (100) year event depositing 19,900 cubic meters (26,000 cubic yards) of sediment into the basin.

A storage area for the stock piling of sediment and debris deposited in the flood control facilities in the Las Vegas Wash, Tropicana Wash and Flamingo Wash system, including the F4 facilities will be located in the western portion of the proposed project area. Periodic cleanout of the basins after storm events is required for maximum efficiency and safety of the facilities. Since BLM retains the mineral rights to sediment deposited in the basins on BLM land, a stockpile area is needed for the orderly disposal of those materials. The storage area will have the capacity to hold 415,000 cubic meters (540,000 cubic yards) of sediment and will cover 21.34 acres. The storage site will be located directly to the west of the F4 basin, and will be accessed along West Windmill Lane. Prior to disposal site being used, West Windmill Lane will be paved.

The recommended F-4 Debris Basin and Channel are similar in concept and function and are not substantially different in location than described in the Feasibility Report. Information documented in the FEIS and previously prepared EA/FONSI's remains current except as noted in Chapters 7 and 8 of this SEA.

The Flamingo Detention Basin final grading is still required as is landscaping around the basin. The current bottom of the basin will require final grading to ensure that the slope of the basin floor is as designed, with the excavations and mounds left from the leased mining operations leveled out to allow the correct draining from the basin. A total of approximately 200,000 cubic meters for sediment need to be removed from the Flamingo Detention Basin. Some of this material will be required to complete the embankment of the F-4 Basin. The remaining material from Flamingo Basin will be used in the construction of the Beltway segments between Tropicana and Buffalo.

The present inlet to the basin has resulted in the creation of a pond with wetland vegetation surrounding it. The County will be investigating the possibility of creating wetlands in this area, providing a Safe Harbors Agreement can be initiated for the wetland. This would allow maintenance on the wetland to be performed as required, while allowing endangered species to use the area without additional mitigation being required. A hardened low flow channel will be constructed from the proposed wetlands across the basin to the outlet. Landscaping will be planted around the circumference of the basin.

#### 4.04 Location of Proposed Action

- T. 22 S., R. 60 E., M.D.M.
- Sec. 05: W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , excepting therefrom the West 50'  
Portion of Assessor's Parcel No.: 176-05-201-001
- Sec. 07: NE $\frac{1}{4}$ SE $\frac{1}{4}$ , excepting therefrom the East 100'  
W $\frac{1}{2}$ SE $\frac{1}{4}$   
SE $\frac{1}{4}$ SE $\frac{1}{4}$ , excepting therefrom the East 50'  
Portion of APN: 176-07-701-001
- Sec. 08: W $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$   
APN: 176-08-201-014  
W $\frac{1}{2}$ W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$   
Portion of APN: 176-08-301-002

approximately 73.74 hectares (182.5 acres)

## CHAPTER 5 - CONFORMANCE WITH LAND USE PLAN

### 5.01 General

This proposed action is subject to the Las Vegas Resource Management Plan approved October 5, 1998. The plan has been reviewed and it has been determined that the proposed action is in conformance objective RW-1-d and RW-1-h of the RMP as required by 43 CFR 1610.5-3. The proposed action is in full compliance with the Clark County Land Use Plans and the Regional Flood Control District's 10 Year Master Plan.

## CHAPTER 6 - ALTERNATIVES CONSIDERED

### 6.01 Alternatives Considered

Numerous alternatives were considered and eliminated prior to completion of the Feasibility Report and FEIS and numerous alignments of the channels were considered subsequent to completion of the FR/FEIS. Most of the alternatives were not economically justified. No further alternatives are being studied as part of this action.

### 6.02 No Action

The No Action alternative if selected would result in the F-4 Debris Basin and Channel being constructed as originally proposed in the 1991 FR/FEIS, which is the Congressionally Authorized Project, and as described in Section 4.02. The No Action Alternative is not considered to be the least environmentally damaging, and is not considered to be the most economically acceptable alternative due to the large increase in real estate values that has occurred in the Las Vegas area over the last few years.

## CHAPTER 7 - AFFECTED ENVIRONMENT

<i><u>Critical Element Affected</u></i>	<i>Yes</i>	<i>No</i>	<i><u>Critical Element Affected</u></i>	<i>Yes</i>	<i>No</i>
Air Quality	X		T&E Species	X	
ACECs		X	Wastes, Hazard/Solid		X
Cultural Resources		X	Water Quality		X
Farmlands, Prime/Unique		X	Wetlands/Riparian Zone		X
Floodplains		X	Wild & Scenic Rivers		X
Nat. Amer. Re. Concerns		X	Wilderness		X
Noxious Weeds	X		Migratory Birds	X	
Environmental Justice		X			

### 7.01 General

This section contains discussions of environmental resources that would be affected by construction of the proposed F-4 Debris Basin and Channel, the creation of the long-term storage site, and by the final grading of Flamingo Basin. This SEA amends the 1991 FR/FEIS, which for the existing environment is still current. As noted in Chapter 4, above, the only changes from the project as originally proposed in the FR/FEIS are those in the location of the basin and channel. Only those resources, for which there may be a change in impact from that described in the 1991 FR/FEIS are described in the following paragraphs.

### 7.02 Land Use

Predominant land use within the project area is open vacant land, with some rural desert homesteads, newly built private homes, apartment complexes, Southern Hill Hospital, and rapidly expanding industrial and commercial developments. Immediately to the east of the project area extends the Interstate 15 major commercial/industrial corridor and hotel/casino strip. Land within the project area is currently undergoing rapid development and is ultimately expected to be fully developed, with predominately residential developments.

This project lies partial within the extreme southwestern portion of the Cooperative Management Area (CMA) boundary (Appendix F). The configuration of certain parcels presently owned by the Department of Aviation within the CMA boundaries have minor changes due to land exchanges or assemblages, but the CMA boundaries remain the same. The CMA map (Appendix F) was originally created in March 1999 at the time patents for the subject parcels were issued by the BLM.

Land immediately adjacent to the F-4 Debris Basin and Channel, and the long-term disposal site is currently undergoing development. The area being considered as a disposal site for the excess Flamingo Basin material is located within the Beltway footprint between Tropicana and Sunset.

### 7.03 Vegetation and Wildlife

Except as otherwise noted, information on biological resources is based on the *Final Fish and Wildlife Coordination Act Report (Final CAR)*, dated October 1991, from the U. S. Fish and Wildlife Service (FWS) and previous Corps environmental evaluations prepared for the project; one in 1985, and a supplement prepared in 1988. The Final CAR may be found in Appendix B of the EIS. Complete plant and animal species lists are provided in Appendixes A through D of the Final CAR.

#### 7.03a. Sensitive Wildlife Species

Sensitive wildlife species were discussed in the 1991 FR/FEIS. The only species that would be potentially affected by the proposed change is the desert tortoise. No other sensitive wildlife species are expected to occur within the project area. A Formal Consultation, under Section 7 of the Endangered Species Act, was completed for the desert tortoise for the overall project. See the FEIS, Appendices D and E for the Biological Assessment and Biological Opinion, respectively. Additional information may be found in the EIS, Chapter Three.

The desert tortoise (*Gopherus agassizii*) is a Federally listed Threatened species that historically occupied a variety of desert plant communities in southeastern California, southern Nevada, western and southern Arizona, southwestern Utah, and through Sonora and northern Sinaloa, Mexico. Although it remains in most of these areas at the present time, populations have become fragmented and appear to be declining over most of its range. It is currently considered a rare species by the State of Nevada. The desert tortoise or its sign was found in the majority of the Las Vegas Valley area west of urbanized Las Vegas, and within the proposed F-4 Debris Basin and Channel area (see the Final CAR, *U.S. Army Corps of Engineers Feasibility Report and Final Environmental Impact Statement (FR/FEIS) for Las Vegas Wash and Tributaries, Tropicana and Flamingo Washes, Nevada, dated October 1991*, Appendix B). Within the F-4 Debris Basin there is approximately 18.6 hectares (46 acres) of tortoise habitat that will be disturbed. Within the footprint of the F-4 Channel, there are approximately 6 hectares (15 acres) of habitat that will be disturbed. The long-term disposal area will disturb 11 hectares (26 acres) of tortoise habitat, which includes the new road.

The Gila monster (*Heloderma suspectum*) is a Nevada BLM sensitive species, which has been documented in the vicinity of the proposed project, including the areas of the previously constructed Red Rock and Blue Diamond detention basins. The Gila monster is rarely observed relative to other species, spending approximately ninety percent of its life underground. Habitat requirements center on desert wash, spring and riparian habitats, which interdigitate primarily with complex rocky landscapes of upland desert scrub. This overlaps the habitat requirements for the desert tortoise. The Gila monsters use deep crevices and caves on rocky slopes for summer and winter refuge. When they are active they use other animal burrows and shallow refuges on gentle slopes. There is little information on distribution and abundance of the species within Nevada.

Executive Order issued January 11, 2001 further defines the responsibilities of the Federal Agencies to protect migratory birds; Under the Migratory Bird Treaty Act of 1918 and

subsequent amendments (16 U.S.C. 703-711) state that it is unlawful to take, kill, or possess migratory birds. A list of those protected birds are in 50 C.F.R. 10.13.

There are no species of concern within the Flamingo Detention basin as this area has been used as a quarry for several years and all native habitat within the basin footprint has been removed. The Beltway disposal site is also void of species of concern as this area has been cleared to construct the beltway.

#### 7.03b. Salvage of Cacti and Yucca

The State of Nevada Division of Forestry regulates salvage of desert vegetation in Nevada. The Bureau of Land Management (BLM) coordinates plant salvage on public lands within the state. BLM requires salvaging of barrel cactus (*Ferocactus cylindraceus*), hedgehog cactus (*Echinocereus trigochidiatus*), cottontop cactus (*Echinocereus polycephalus*), other cactus over one foot tall or one foot wide, and all yucca over one foot tall. The cacti and yucca salvaged from the F-4 Debris Basin will be used to revegetate the F-4 Debris Basin dam face and the area adjacent to the F-4 Outlet Channel.

#### 7.04 Cultural Resources

The Corps completed a records and literature search in the preliminary stages of project planning in 1986. In 1990, a Corps archeologist conducted a field evaluation. No sites were found within the F-4 Debris Basin and Channel project areas. Because of the highly disturbed nature of the area, no cultural sites are expected to occur within the project area. Additional information may be found in the Final EIS, Chapter 3. The COE will make all contacts with the SHPO.

Previous coordination with the Las Vegas District BLM archeologist, Stan Rolf, indicated that no survey would be necessary since the site has been highly degraded. The entire Las Vegas Valley has been surveyed multiple times and the majority of the surveys were negative. The BLM prepared a document, Las Vegas District Class I Cultural Resource Report 5-2121, *Proposal to Limit Archeological Survey in Las Vegas Valley, Southern Nevada*, by Keith Myhrer, Area Archeologist, April 1991, as amended August 1996 by Stan Rolf, to justify the discontinuation of programmatic surveys of parcels less than two hundred acres in size. The Nevada State Office of Historic Preservation, by letter dated May 15, 1991, agreed.

#### 7.04b. Traditional Cultural Properties

The Bureau of Land Management's Resource Management Plan identifies a Traditional Cultural Property (TCP) as a way to evaluate intangible properties such as ceremonial areas. A Traditional Cultural Properties is defined as a more specific location, in contrast to the general nature of a Traditional Lifeway Area, (TLA) where a community has traditionally conducted exclusive or special activities, or which has a unique value in its spiritual or religious world.

#### 7.05 Socioeconomic

Growth in the Las Vegas Valley area of Clark County, Nevada is occurring at a phenomenal rate.

Most residential land in the valley is purchased in large parcels for subdivision development. Commercial properties are generally located within "strip developments" along main streets, and development of industrial lands is generally limited to industrial parks. Development is occurring throughout the metropolitan portion of the valley.

#### 7.06 Minerals

The public land occupied by components of the F-4 Project are 170.63 acres comprising the entire Southeast Quarter (SE ¼) of Section 7 in Township 22 South of Range 60 East and a strip of about 11.58 acres running north and south parallel to Fort Apache Road in adjoining Section 8, which matches the BLM application that are included the BLM grant application. The BLM's Geographic Index of Mining Claims does not indicate any active mining claims overlapping the required 11.58 acres of public land in Section 8. On the other hand, the required 170.63-acre parcel comprising the Southeast Quarter (SE ¼) of Section 7 is entirely overlapped by four unpatented placer mining claims. Each of these four claims includes a total of 40 acres. They are called the "No 9A" (the NE¼ SE¼), the "No 10A" (the NW¼ SE¼), the "No 15A" (the SW¼ SE¼) and the "No 16A" (the SE¼ SE¼).

According to their Certificates of Location of record in Clark County, these four mining claims were staked or "located" by "Mountain Vista Mines," Carmelo Arena and Michael A. Restivo on March 21, 1994. The serial numbers assigned to them by the BLM are, respectively, NMC 697257, 697258, 697263 and 697264. No. 9A and No. 16A overlap the Project's structural components (the embankment and the western end of the outlet channel where it leaves the embankment) plus the secondary collection area, the construction staging area, and the portion of the impoundment basin that must be excavated, all in the East Half of the Southeast Quarter (E½ SE¼) of Section 7. No. 10A and No. 15A overlap the Project's long-term disposal site and the portion of its impoundment basin that does not require excavation because it is outside of the excavation area but inside the "maximum temporary water impoundment line," both in the West Half of the Southeast Quarter (W½ SE¼) of Section 7.

#### 7.07 Critical Elements of the Environment

The following elements are subject to requirements specified in statute, regulation or executive order and must be considered. The elements of Critical Environmental Concern are Farm Lands (prime or unique), Floodplains, Wastes, Hazardous or Solid, Water Quality, Wetlands/Riparian areas, Wilderness, and Noxious Weeds.

#### 7.08 Air Quality

7.08 Climate conditions, and the composition and concentration of pollutants are the prime determinant for air quality. The climate of Las Vegas is usually mild, although high winds general may occur during the late fall months (October – December). Temperatures range between 9 and 38 degrees Celsius (49 and 100 degrees, Fahrenheit). Fog occurs at the beginning of the year, during January through March. Brown haze over the city exists primarily from dust or particulate (PM10). Rainfall rarely occurs, averaging about 12 cm (4.8 inches) per year. The dry season extends from April through October. Typical pollutant sources include exhaust from

vehicles, smoke from wood burning fireplaces, dust from construction activities and dust picked up by the wind. The air pollutants of concern include: carbon monoxide, particulate matter less than 10 microns in size, visible air quality, ammonia, ozone, and nitrogen oxide.

The project is within the jurisdiction of the Clark County Department of Air Quality Management (DAQM). The DAQM has the authority to regulate stationary sources of air pollution in Clark County with U.S. Environmental Protection Agency (USEPA) oversight.

In order to regulate and enforce the Clark County Air Quality Standards, the DAQM monitors ambient concentrations of criteria air pollutants. These pollutants include: particulate matter that is less than ten microns in diameter (PM<sub>10</sub>); carbon monoxide (CO); ozone (O<sub>3</sub>); nitrogen oxides (NO and NO<sub>2</sub>); sulfur dioxide (SO<sub>2</sub>); chlorine (Cl<sub>2</sub>); ammonia (NH<sub>3</sub>); hydrogen chloride (HCl) and hydrogen sulfide (H<sub>2</sub>S). Of these pollutants only PM<sub>10</sub> and carbon monoxide currently exceed federal standards for emissions in the Las Vegas Valley.

Since the proposed action will result in emissions of PM<sub>10</sub>, a DAQM permit will be obtained in order to ensure that the project is in compliance with any approved/pending State Implementation Plan. However, since the emissions of carbon monoxide will be from mobile sources such as trucks and construction equipment, a permit for carbon monoxide is not expected to be necessary.

#### 7.09 Operations and Maintenance, and Long-term Storage

Regular inspection and repair would occur on the F-4 structures. Sediment removal is expected to be needed each year and is based on flood event predictions. The one year and one hundred year event predictions for the F-4 Basin are as follows: On a yearly basis it is estimated that 1,225 cubic meters (1,600 cubic yards) of sediment will be deposited into the basin, with the one hundred (100) year event depositing 19,900 cubic meters (26,000 cubic yards) of sediment into the basin.

The long-term storage requirement for the overall project needs an area capable of holding approximately 415,000 cubic meters (540,000 cubic yards) of sediment. This material will be removed from basins and transported to a long-term disposal site located west of the F-4 basin. This site covers a total of 11 hectares (26 acres), and will be accessed by travel along Fort Apache, and then west on West Windmill Lane.

#### 7.10 Noise

The proposed project will require the operation of machinery that produces levels of noise that are in excess of ambient noise levels. The noise will be similar to the levels currently being produced as a result of other construction occurring in the local area.

#### 7.11 Environmental Justice

The F-4 Debris Basin and Channel were evaluated and there are no disproportionately high numbers of minority or low-income populations within the area of the proposed project.

## CHAPTER 8 - ENVIRONMENTAL EFFECTS

### 8.01 General

As noted previously, this supplemental environmental assessment (SEA) amends the U. S. Army Corps of Engineers 1991 FR/FEIS for Las Vegas Wash and Tributaries, Tropicana and Flamingo Washes, Nevada, dated October 1991. Relatively few changes have been made to the project as originally proposed in the Feasibility Report. Information that was documented in the FEIS is still current unless otherwise noted. All environmental commitments (FEIS, Table 10) would continue to be complied with. Since preparation of the FR/FEIS, and the other EA/FONSI's noted above (paragraph 2.01), refinements to the precise location of the F-4 Debris Basin, F-4 Channel and long-term storage areas have been made. Analyses of the impacts associated with these changes are provided in the following paragraphs.

### 8.02 Land Use

Construction of the proposed F-4 Debris Basin and Channel would have no additional effect on land use. It would transfer the land use impacts, as identified in the FR/FEIS, to the revised location of the dam. Other impacts on land use remain as documented in the FR/FEIS.

The development of the long-term disposal site will remove an additional desert habitat and change the use of that land from open desert to a disposal site. The area immediately to the south of the proposed disposal site is currently being developed for residential use. To the west and north of the site, the land will remain as open desert. The development of the disposal site will not have an impact on land uses in the local area.

### 8.03 Vegetation and Wildlife

8.03 Because of the highly disturbed nature of the FR/FEIS location of the proposed F-4 Debris Basin and Channel as well as at the revised location, the impacts to vegetation and wildlife are considered to be comparable between the sites, as noted below.

Replanting of the Yucca and cacti will occur on the slope of the basin embankment, and on the other temporarily disturbed areas. These areas will be supplied with soil amendments as required, irrigated, and weeded to ensure that noxious weeds do not become established within the project boundaries.

Construction of the proposed F-4 Debris Basin, Channel and long-term disposal area would permanently impact between 41 and 48 hectares (101-120 acres) of desert tortoise habitat.

Payments into the tortoise mitigation fund are required to be made prior to construction as required by the Biological Opinion. The Corps in coordination with the FWS has determined the total payment required for tortoise mitigation based on the acreages determined in the EIS, and the total balance required for the overall project was transferred into the tortoise mitigation fund on 15 September 2000.

If the use of explosives is needed to break up hard rock (caliche) on the project site, the

following measures would be used to reduce related impacts to desert tortoises. No explosive discharge would be allowed within two hundred feet of an active tortoise burrow. If multiple discharges were needed, they would be sequenced to reduce sonic impacts and ground vibrations. Vibration monitoring equipment would measure and record vibrations from the discharges. A qualified desert tortoise biologist would be on site during the discharge operations. Because tortoises would already have been relocated, the use of explosives should not have an effect on the desert tortoise.

The Nevada Division of Wildlife (NDOW) is investigating the status and distribution of the Gila monster, and should be notified whenever a Gila monster is encountered or observed, and under what circumstances.

If there is potential for, or if we expect to find breeding habitat for migratory birds, plan habitat-altering projects outside breeding season generally March 15-July 30<sup>th</sup> for most species in the majority of our management area. Breeding occurs longer on riparian areas and later in higher elevations. If a project that may alter any breeding habitat has to occur during the breeding season then survey for nests prior to implementation and if a nest is found avoid the nest till birds fledge.

#### 8.04 Cultural Resources

8.04 Section 106 of the National Historic Preservation Act of 1966 requires that Federal agencies take into account the effect of their undertakings on historic properties.

The size and location of the F-4 Debris Basin and Channel area meet the stipulations for Section 106 exemption outlined in CR 5-2121. No known TCP's occur within the area of the Proposed Action. Other impacts to cultural resources would be the same as those documented in the FR/FEIS.

#### 8.05 Socioeconomic

There is no change in this element as originally evaluated in the FR/FEIS.

#### 8.06 Minerals

8.06 Currently, the mining claims are under judicial review, hence the out come is not known but will continue to be an impediment to BLM issuance of the right-of-way for the F-4 Project, because they were staked after passage during 1955 of Public Law 89-167, sometimes called the "Multiple Surface Use Act" and now codified at 30 U.S.C. §§ 601-615. Relative to mining claims staked after 1955, 30 U.S.C. § 611 confirms that they carry no rights to sand and gravel or other common varieties of mineral materials and 30 U.S.C. § 612 gives the United States the right to manage their surface resources. Consequently, the BLM commonly issues rights-of-way crossing unpatented mining claims staked after 1955 "subject to valid existing rights."

#### 8.07 Critical Elements of the Environment

No impacts to Critical Elements are expected to occur in the F-4 Debris Basin and Channel sites.

## 8.08 Air Quality

In general the impacts associated with air quality are anticipated to be minor, temporary and short term in nature. Increased emissions of PM<sub>10</sub> will likely occur as a result of soil disturbance associated with vegetation removal, construction activities, and movement of construction equipment. However, the use of water during construction activities and the subsequent application of acceptable soil stabilizing techniques will reduce the potential emissions. Anticipated PM<sub>10</sub> emissions associated with the right-of-way are provided below:

***For the portion of the project that will require excavation, along the channel alignment, the proposed action will affect 6 acres for a total of 16 months.*** Total PM<sub>10</sub> (tons) for proposed action (3 tons) = (number of acres constructed upon per month (0.375 acres per month) x 0.42 x (total number of months of construction (16 months)).

***For the portion of the project that will entail grading, both along the channel and within the basin footprint, the proposed action will affect 48 acres within the basin and along the channels, and 22 acres for the long-term disposal site for a total of 20 months.*** Total PM<sub>10</sub> (tons) for proposed action (18 tons) = (number of acres constructed upon per month (3.5 acres per month) X 0.265 x (total number of months of construction (20 months)).

A total number of 21 tons of PM<sub>10</sub> emissions will be released for the duration of this proposed action.

Final grading of the Flamingo Basin and disposal of the sediment at the beltway site will not result in an increase in air borne emissions over those described in the 1991 FR/EIS.

The contractor would be required by the County to apply for a Dust Permit and a Various Locations Permit if crushing and screening equipment were used to process the material. It is estimated that this processing would exceed the air quality threshold and that the County may require publishing a public notice in the newspaper, paving roads, permanently removing other sources of pollution and/or purchasing Air Quality Credits. The contractor must comply with the following emission reduction criteria.

- 1) Minimize land disturbance
- 2) Use water trucks to minimize dust
- 3) Cover trucks when hauling dirt
- 4) Use windbreaks to prevent accidental dust pollution
- 5) Limit vehicular speeds on-site to 15 mph or less
- 6) Cover and moisten soil stockpiled for more than two days
- 7) Use heavy-duty diesel-powered construction equipment manufactured after 1996 wherever feasible
- 8) Apply water and use dust palliatives on traveled unpaved roads
- 9) Minimize unnecessary vehicular and machinery activities
- 10) Minimize dirt track-out by washing or cleaning trucks before they leave the project site
- 11) Revegetate any unused disturbed land

- 12) Remove unused material
- 13) Remove dirt piles
- 14) Minimize construction worker trips by requiring carpooling and by providing lunch onsite
- 15) Most equipment idling will be kept no longer than 15 minutes
- 16) All construction equipment will be required to have mufflers in accordance with the equipment manufacturer's specifications. The exhaust system of all vehicles must also be maintained in good operating condition, free from leaks and holes

#### 8.09 Operations and Maintenance, and Long-term Storage

8.09 Sediment deposited in the project detention and debris basins will be removed after flood events and transported to the long-term disposal site which will be located on the upland area adjacent and to the west of the F-4 Basin.

Air quality was evaluated using current conditions, estimates and criteria. The yearly and ten year event estimates have been calculated and are within the air quality thresholds designated in Clark County's Attainment Plan. Processing the material and moving it to the proposed disposal site will require a Dust Permit and a Various Locations Permit from the Clark County Department of Air Quality.

Maintenance activities associated with hundred year events are estimated to fall outside the air quality thresholds designated in Clark County's Attainment Plan. Before deposited materials can be processed and/or removed, Clark County Department of Air Quality regulations will have to be met. These regulations may require publishing a public notice in the newspaper, paving roads, permanently removing other sources of pollution and/or purchasing Air Quality Credits.

#### 8.10 Noise

The location of the F-4 construction will not impact any residences due to the distance of the construction to existing residential areas. As construction will be limited to the hours of 6:30am to 7:00pm Monday through Friday, and 8:00am to 7:00pm on Saturdays, with no work on Sundays or federal holidays, the overall noise produced by the proposed action are not considered to be a significant impact.

#### 8.11 Environmental Justice

The F-4 Debris Basin and F-4 Channel were evaluated and no disproportionately high or adverse human health or environmental effects were identified for minority or low-income populations.

### **CHAPTER 9 – MITIGATION**

#### 9.01 General

The following actions will be taken to ensure that the impacts associated with the proposed actions remain insignificant.

1. Efforts shall be taken to minimize impacts to vegetation during all phases of activities within the right-of-way. This may include pre-disturbance surveys to identify vegetation suitable for salvage and to ensure that protected or sensitive plant species are properly mitigated for. Whenever possible topsoil will be stockpiled and utilized in post construction reclamation efforts. Weed control measures will be utilized on all disturbed areas within the right-of-way.
2. Efforts shall be taken to preserve surface and subsurface cultural and paleontological resources that may be encountered within the right-of-way.
3. All activities within the right-of-way shall be in conformance with all applicable Federal and State air and water quality laws.
4. All activities within the right-of-way shall be in compliance with the terms and conditions of Biological Opinion File No. 1-5-96-F-23R.2.
5. Efforts will be taken to minimize impact to wildlife during all phases of activities within the right-of-way.
6. No hazardous materials may be stored, transported or used within the Right-of-Way. Should hazardous materials be spilled or deposited within the Right-of-Way by the Holder, its agents or a third party, the Authorized Agent for the BLM Las Vegas Field office shall be immediately notified. Any clean up or reporting requirements will be completed in compliance with all applicable State and Federal laws and regulations.
7. The boundaries of the right-of-way shall be clearly marked at all times and no disturbance shall occur outside its boundaries. The right-of-way shall be maintained in a safe and sanitary manner at all times. Efforts shall be taken to avoid impacts to other valid existing rights, and survey markers which occur within or adjacent to the right-of-way. Upon completion of construction "as built plans" shall be submitted to the BLM in the appropriate format.
8. Efforts shall be taken to avoid impacts to migratory bird nests during the appropriate breeding season.

## **CHAPTER 10 - COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS**

### **10.01 Relationship of Plans to Environmental Protection Statutes and Other Environmental Requirements**

Compliance with applicable laws, regulations, and Executive Orders is outlined below.

- a. National Historic Preservation Act of 1966, as Amended - The project is in compliance. There is no change in compliance from the FEIS.
- b. Fish and Wildlife Coordination Act - The project is in compliance. There is no change in compliance from the FEIS.

- c. Endangered Species Act, as Amended - The project is in compliance. The project would not affect the continued existence of any Endangered or Threatened species. There is no change in compliance from the FEIS.
- d. National Environmental Policy Act. - The project is in compliance. This Supplemental Environmental Assessment has been prepared in accordance with the National Environmental Policy Act.
- e. Clean Air Act - The project is in compliance. The contractor would be responsible for complying with all applicable Federal, State, and local laws and regulations concerning air quality.
- f. Clean Water Act, as Amended - The project entails discharge of dredged or fill material into waters of the United States. Information on the project's compliance may be found in the FEIS.
- g. Farmland Protection Policy Act. – There is no change from the original FEIS.
- h. Federal Water Project Recreation Act – There is no change from the original FEIS.
- i. Noxious Weed Act. – No impact is expected to occur.
- j. Rivers and Harbors Act. – There is no change from the original FEIS.
- k. Executive Order 11988, Floodplain Management – There is no change from the original FEIS.
- l. Executive Order 11990, Protection of Wetlands – There is no change from the original FEIS.
- m. Executive Order 12898, Environmental Justice – There is no impact is expected to occur.

10.02 Environmental Protection Statutes and Other Environmental Requirements Found to be Not Applicable

The following laws and Executive Orders were found to be not applicable to this project:

- Coastal Zone Management Act
- Estuary Protection Act
- Marine Protection, Research, and Sanctuaries Act
- Resource Conservation and Recovery Act
- Watershed Protection and Flood Prevention Act
- Wild and Scenic Rivers Act
- Wilderness Act

## CHAPTER 11 - COORDINATION

### 11.01 General

Formal coordination with the following agencies has taken place: U.S. Bureau of Land Management; U.S. Bureau of Reclamation; U.S. Fish and Wildlife Service; U.S. Forest Service; U.S. National Park Service; U.S. Geological Survey; U.S. Natural Resources Conservation Service; Nevada Division of Environmental Protection; Nevada Department of Transportation; Nevada Division of Wildlife; Nevada Division of Water Resources; Nevada State Historic Preservation Officer; Clark County; City of Las Vegas; Sierra Club; and, TORT Group.

## CHAPTER 12 - LIST OF PREPARERS

### 12.01 List of Preparers

The following people were primarily responsible for preparing or reviewing this assessment:

#### Preparers

Alexander Watt	Environmental Coordinator
Kevin Inada P.E.	Project Manager
Hiroaki “Bob” Uchida P. E.	Engineering Manager
John Moeur, Ph.D.	Biologist
Pamela Maxwell	Archaeologist

#### Reviewers

Nedenia Kennedy, Ph.D.	Chief, Environmental Policy Group
Lois Goodman	Biological Sciences Coordinator
Joy Jaiswal	Acting Chief, Environmental Resources Branch

## **Plates**

- 1. Project Location**
- 2. Channel Alignment**
- 3. F4 Basin Footprint**
- 4. Long-term Disposal site**

**Appendix A**  
**Record of Non-Applicability**

## APPENDIX A

### RECORD OF NON-APPLICABILITY For UPPER BLUE DIAMOND CHANNEL Las Vegas, Nevada

The Upper Blue Diamond Channel has been redesigned from the original design valued in the original plan documented in the Corps of Engineers Feasibility Report and Final Environmental Impact Statement for Las Vegas Wash and Tributaries, Tropicana and Flamingo Washes, Nevada, dated October 1991. The proposed changes in design is to maintain the channel in a natural condition between Blue Diamond Dam and Durango, except for two small areas where channel protection is required to keep flows within the existing channel.

In order to determine conformity of General Federal Actions to State or Federal Implementation Plans, the Clean Air Act (CAA) as amended in 1990, Section 176(c), specifies that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an air quality implementation plan. Conformity is defined in Section 176(c) of the CAA as conformity to the State Implementation Plan (SIP). The purpose of the SIP is to eliminate or reduce the severity and number of violations of the National Ambient Air Quality Standards (NAAQS). While achieving expeditious attainment of such standards, the activities will not:

1. Cause or contribute to any new violation of any standard in any area;
2. Increase the frequency or severity of any existing violation of any standard in any area;
3. Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

Air Quality standards in the area of the Upper Blue Diamond Channel are under the jurisdiction of the Clark County Department of Air Quality Management, which has taken over this responsibility from the Clark County District Board of Health. This Department is responsible for promoting and protecting air quality for the county residents through implementation of Air Pollution Control Regulations. In 1996, the Clark County District Board of Health (CCDBH) measured pollutant concentrations from all monitoring stations within their jurisdiction. Pollutant concentrations exceeded federal and state standards for carbon monoxide, and particulate matter (PM<sub>10</sub>). The Environmental Protection Agency has reclassified Las Vegas Valley air quality as serious. The designation requires that air quality in Las Vegas Valley reach the health standard for carbon monoxide by December 31, 2000 and dust mitigation measures are required for all discretionary construction activities in order to reduce the PM<sub>10</sub> concentration.

Estimation of air quality impacts was performed under the guidance of the Clark County Department of Air Quality Management using methods which were prescribed in the 1992 CCDBH guidelines. Based on the air quality analysis described in the Supplemental

Environmental Assessment, it has been determined that the proposed project is exempt from demonstrating conformity to State or Federal Implementation Plans. The total emissions of each criteria pollutant would be mitigated below *de minimus* levels as prescribed in 40 CFR 93.153(b). As a result, this project conforms to the Federal Clean Air Act as amended in 1990.

For additional information, please contact Alex Watt, Environmental Coordinator, U. S. Army, Corps of Engineers at (213) 452-3860.

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Date

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Richard G. Thompson  
Colonel, US Army  
District Engineer

**Appendix B**  
**Project Mailing List**

Office of County Manager  
500 S. Grand Central Parkway  
Las Vegas, NV 89106-4506

U. S. Bureau of Reclamation  
P. O. Box 61470  
Boulder City, NV 89006-1470

Office of Mayor  
City of Las Vegas  
400 E. Stewart Avenue  
Las Vegas, NV 89101-2927

Planning Department  
City of Las Vegas  
400 E. Stewart Avenue  
Las Vegas, NV 89101-2927

Clark County Commissioners  
500 S. Grand Central Parkway  
Las Vegas, NV 89106-4506

Clark County Comprehensive Planning  
500 S. Grand Central Parkway  
Las Vegas, NV 89106-4506

Cynthia T. Matinez  
Assistant Field Supervisor  
U. S. Fish & Wildlife Service  
1500 Decatur Blvd, #01  
Las Vegas, NV 89108-1218

Dave Brickey  
Sierra Club, Las Vegas Group  
P. O. Box 19777  
Las Vegas, NV 89132-0777

Planning & Development  
City of Las Vegas  
400 E. Stewart Avenue  
Las Vegas, NV 89101-2927

Clark County Planning Commission  
500 S. Grand Central Parkway  
Las Vegas, NV 89106-4506

Las Vegas Ranger District  
U. S. Forest Service  
2881 S. Valley View, Suite 16  
Las Vegas, NV 89102-0152

David Cowperthwaite  
Nevada Division of Environmental Protection  
333 W. Nye Lane, Room 138  
Carson City, NV 89706-3801

U. S. Geologic Survey  
160 N. Stephanie Street  
Henderson, NV 89074-8829

Natural Resource Conservation Service  
2357A Renaissance Drive  
Las Vegas, NV 89119-6150

Clark County Parks & Recreation  
500 S. Grand Central Parkway  
Las Vegas, NV 89106-4506

Nevada State Historic Preservation Office  
101 South Stewart St.  
Carson City, NV 89701

Nevada Division of Water Resources  
555 E. Washington Avenue  
Suite 4200  
Las Vegas, NV 89101-1083

Clark County Regional Flood Control District  
600 S. Grand Central Parkway, Suite 300  
Las Vegas, NV 89101-6534

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U. S. Bureau of Land Management  
4701 N. Torrey Pines Drive  
Las Vegas, NV 89130-2301

Nevada Division of Wildlife  
1100 Valley Road  
Reno, NV 89512-2817

Department of Conservation and Natural Resources  
123 W. Nye Lane

Capitol Complex  
Carson City, NV 89706-0896

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BLM Public Affairs  
4701 Vegas Drive  
Las Vegas NV 89130

**Appendix C**  
**Salvage, Stockpiling and final Transplanting of Cacti**  
**and Yucca via BLM**

## **Salvage, Stockpiling, and Final Transplanting of Cacti and Yucca**

**Salvage:** The salvaging contractor shall identify on site with flagging tape all cacti and yucca that are subject for removal and will mark the north orientation for any barrel cactus. The following plants will be salvaged: 1) all yucca, 2) barrel cactus, 3) hedgehog, 4) cottontops, 5) and beavertail cactus over one foot wide. Other small cacti (less than one foot tall) do not need to be salvaged. Cholla do **not** need to be salvaged, including silver cholla, staghorn cholla, and beavertail less than one foot tall or less than one foot wide. During the survey, all yucca clusters shall be counted as separate plants. Since the material will not be used immediately, it needs to be stockpiled in a location that can be protected (fenced). Cacti and yucca are very shallow-rooted.

- Cacti should be dug by hand and carefully removed in order to not damage roots.
- Yucca must be salvaged with heavy equipment (eg, front end loader). The material must be carefully extracted to not damage any of the roots, stems, or lower part of the plant. The material must be transplanted to a stockpiling area immediately.

**Stockpiling:** The salvage can be transferred to prepared 3-foot wide, 18-inches deep stockpiling trenches of any desired length. If using multiple, parallel trenches, they should be far enough apart to allow heavy equipment access to each trench. Trenches shall be watered thoroughly prior to transplanting material. In planting cacti and yucca, they should be placed in the trench and planted with native soil. Care should be taken to properly tamp down and compact all soil around roots of plants to remove all air pockets. A depression around each plant should be formed to hold water. After cacti are transplanted, they shall be watered thoroughly one time. A one time watering approximately fifteen (15) days after planting shall occur to remove or minimize any air pockets and assure proper soil compaction. Yucca will be placed in the trenches and the soil tamped by hand around the base of the plant so that there are no air pockets. To reduce watering, DriWater can be applied to each yucca. DriWater is a gelatinous polymer that slowly breaks down to water over time. DriWater comes in biodegradable cartons and is applied by cutting the top of the carton and placing it upsidetdown around the plant to be watered. The area around the plant must be thoroughly wet to activate the DriWater. The DriWater is applied around the base of the plant at a rate of one quart for every foot in plant height. DriWater cartons are to be buried completely. At the surface, a watering well will be formed around the plant. Afterward, the plant will be watered thoroughly again. A 9-inch soil moisture probe (which can be obtained from any commercial plant nursery) will be used after 2 weeks to assess the moisture of the soil to see if further watering is needed. If the probe reads “dry” on the moisture scale, then a second watering will be done.

**Final Planting at Landscape Sites:** All salvaged plant material shall be replanted in a natural pattern. Large yucca will be carefully removed from the stockpiling area, taking care to not damage stems, roots, or the base of the plant. A hole at least two feet deep and three feet wide shall be prepared for each single stem yucca. Multiple stem plantings will be accordingly larger to accommodate the stem size. The hole will be filled with water and allowed to drain once. Then the hole will be filled with water again and then back-filled with soil to form a muddy matrix to about 18 inches from the surface. The yucca will then be planted and the soil tamped around the plant so that there are no air pockets. DriWater will be applied around the plant at a rate of one quart for every foot in height. DriWater cartons are to be buried completely. At the

surface, a watering well will be formed around the plant. Afterward, the plant will be watered thoroughly again. A 9-inch soil moisture probe (which can be obtained from any commercial plant nursery) will be used after 2 weeks to assess the moisture of the soil to see if further watering is needed. If the probe reads “dry” on the moisture scale, then a second watering will be done. Mojave yuccas will be re-planted in groups of three or more for a natural effect. All small cacti shall be watered thoroughly one time upon being transplanted into the field. Transplanting and maintenance of plant material will be done such that 80 percent survivorship after two years is achieved.

**Appendix D**  
**Flood Control Master Plan Update of the Las Vegas Valley**

**Appendix E**  
**Plant Counts**

**Appendix F**  
**Cooperative Management Area (CMA)**