



## City Council Staff Report

Date: March 25, 2009 CONSENT CALENDAR

Subject: APPROVAL OF MEMORANDUM OF UNDERSTANDING RELATING TO EAGLE CANYON DAM

From: David H. Ready, City Manager

Initiated by: Public Works and Engineering Department

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### SUMMARY

The Eagle Canyon Dam project is a top priority project for the Riverside County Flood Control & Water Conservation District ("RCFC") and the City of Cathedral City, and is identified on the Master Plan of Drainage for the Palm Springs Area administered by RCFC. RCFC has been unable to move forward with the Eagle Canyon Dam project due to the fact that the site of the flood control facilities is located in an area historically used for illegal dumping. Cathedral City has prepared a Memorandum of Understanding ("MOU") between Cathedral City, Palm Springs, the Agua Caliente Band of Cahuilla Indians ("ACBCI"), and RCFC regarding the Eagle Canyon Dam project. The purpose of the MOU is to demonstrate to the state and federal government that this project is a top priority for the agencies involved, and will be useful in pursuit of available grants for clean-up of the project site.

### RECOMMENDATION:

- 1) Approve the Memorandum of Understanding relating to Eagle Canyon Dam; and
- 2) Authorize the City Manager to execute all necessary documents.

### STAFF ANALYSIS:

The Eagle Canyon Dam project is one of three primary flood control facilities located in the southeastern portion of the City, which are identified as:

- Line 41
- Eagle Canyon Dam
- Line 43

There is a significant portion of the cities of Palm Springs and Cathedral City located in a 100-year flood plain, downstream of the foothills located south of E. Palm Canyon Drive and east of the Palm Canyon Wash. Construction of Line 41, the Eagle Canyon Dam, and Line 43 in Cathedral City would protect these properties from flooding and remove the floodplain designation from those areas. However, the cost of these flood control facilities is in excess of \$25 Million.

The Eagle Canyon Dam project primarily only benefits the city of Cathedral City, as Eagle Canyon outlets into Cathedral City behind the shopping center and commercial area on Canyon Plaza Drive (see Attachment 1). However, the actual site of the Eagle Canyon Dam project is located within the City of Palm Springs, on Tribal allotted land. The project as currently planned would include construction of an earthen dam spanning the width of Eagle Canyon, up to a height of 25 feet which would retain the stormwater runoff behind the dam as a retention basin capable of accommodating 40 acre feet (1.7 million cubic feet) of debris storage and 115 acre feet (5 million cubic feet) of flood storage on approximately 8.4 acres.

RCFC ultimately is the agency responsible for administering the Master Plan of Drainage on which these flood control facilities are identified, and the cities of Palm Springs and Cathedral City have continued to coordinate with RCFC on the planning and design of these flood control facilities. RCFC actually completed the planning and design of the Eagle Canyon Dam project in the 1980's, but the project has been indefinitely postponed due to the fact that the project site is located on lands that were historically used as a shooting range and illegal dumping ground, creating a hazardous waste site.

Cathedral City has had an evaluation of environmental cleanup costs prepared by Earth Systems Southwest (see Attachment 2, Exhibit "B"). The evaluation provides a detailed analysis of the existing site conditions, and estimated the costs for cleanup at \$1,250,000 to \$1,500,000. It is the intention of all parties involved to seek state and federal grants to cover the cleanup costs; ACBCI has recently submitted a Fiscal Year 2010 funding request to Congresswoman Bono-Mack's office for \$1,500,000 to cover the cleanup costs.

Cathedral City initiated preparation of the MOU to demonstrate to state and federal agencies the cooperative nature in which the cities, RCFC and ACBCI are working with regard to the Eagle Canyon Dam project. The project truly is a cooperative venture, with the physical site located in Palm Springs, on Tribal allotted lands, benefiting Cathedral City properties, and being administered by RCFC. The MOU outlines obligations of each agency, with RCFC being the lead agency for the Eagle Canyon Dam project, acquiring the property (after completion of cleanup), completing design and administering construction of the project; the cities of Palm Springs and Cathedral City will be obligated to lobbying for grant funding and to pursue other revenue sources for the project, and to equally share 50% of the cleanup costs not covered by grants or other revenue sources; and the ACBCI will provide in-kind project management

services, lobby for grant funding, and facilitate BIA coordination for the project. The ACBCI has not committed to sharing in the cleanup costs as the property involved is held in trust for an individual allottee, and is not Tribal Trust property. The Tribal Council providing funding for cleanup of the allottee's property would be equivalent to the City providing public funds to cleanup a privately owned property, although the City has the authority to lien properties its costs for nuisance abatement, the Tribe does not have a similar authority.

Given that the City does not currently have funds budgeted for cleanup of the Eagle Canyon Dam site, staff required that the following statement be included in the recital obligating the City to share in the cleanup costs:

*The obligation listed herein to pay up to one half the cost of the Cleanup shall only occur upon completion of all efforts to obtain State and Federal grants to offset Cleanup costs, and only after required funds for up to one-half the cost of the Cleanup (less any State and Federal grants) are budgeted and available for use in accordance with this MOU.*

It is recommended that the City Council approve the MOU, to demonstrate to state and federal agencies the City's cooperation with Cathedral City, RCFC and ACBCI on the Eagle Canyon Dam project as a way to seek grants and other revenue sources to cover cleanup costs of the site.

FISCAL IMPACT:

The MOU does not obligate the City to any costs; sharing the costs of clean-up with Cathedral City will require a separate agreement.



\_\_\_\_\_  
David J. Barakian  
Director of Public Works/City Engineer



\_\_\_\_\_  
Thomas J. Wilson  
Assistant City Manager



\_\_\_\_\_  
David H. Ready, City Manager

ATTACHMENTS:

1. Eagle Canyon Dam Site
2. MOU

ATTACHMENT 1  
EAGLE CANYON DAM SITE



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ATTACHMENT 2  
MEMORANDUM OF UNDERSTANDING

**MEMORANDUM OF UNDERSTANDING  
EAGLE CANYON DAM**

This Memorandum of Understanding ("MOU") is entered into by the Riverside County Flood Control and Water Conservation District ("RCFCWCD"), the City of Cathedral City ("Cathedral City"), the City of Palm Springs ("Palm Springs"), and the Agua Caliente Band of Cahuilla Indians ("ACBCI"), on \_\_\_\_\_, 2009.

RECITALS

WHEREAS, the Parties recognize that the topography and natural water flow in or near their respective jurisdictions could result in the loss of life and/or property from flooding (the "Condition"); and

WHEREAS, the Parties have identified a System of flood control (the "System") which would greatly alleviate the Condition, thereby reducing the risk of loss of property and lives opening up opportunities for economic development; and

WHEREAS, the System is made up of improvements in RCFCWCD Zone 6 Eagle Canyon area, including construction of a dam, (the "Dam"), Lines 41 and 43, and improvements around Line 41, generally shown on Exhibit "A" attached hereto and made a part hereof; and

WHEREAS, the Parties desire to work together to implement the System for their mutual benefit.

NOW, THEREFORE, the Parties, in recognition of the benefits to each, agree to the following:

TERMS

Section 1. Incorporation of Recitals.

The above recitals are incorporated herein by reference.

Section 2. Effect of MOU.

This MOU specifies the Parties' respective roles in implementing the System. The Parties recognize that the cost of the System will be substantial and that all sources of funding are not presently known. This MOU is an expression of the Parties' intent to pursue locating and securing funding and in implementing the System. It is not a binding contract to perform the various tasks assigned to each. Parties understand and agree that subsequent detailed agreements will be needed to formally obligate Parties.

Section 3. RCFCWCD Obligations

RCFCWCD will be responsible for the following:

- a. It will assume responsibility for and act as lead agency in all environmental

assessments for the Dam under both the National Environmental Policy Act and the California Environmental Quality Act.

- b. It will undertake any tests or studies required for design and construction of the Dam.
- c. It will acquire the necessary land for the Dam.
- d. It will be responsible for designing the Dam and obtaining all necessary permits and approvals from affected jurisdictions, including, but not limited to, the State Department of Water Resources, Division of Safety of Dams.
- e. It will conduct the public bidding process for all improvements, which are a part of the Dam, and oversee construction and necessary testing.
- f. It will pay for the Dam's design, construction, testing and inspection.
- g. Upon completion, it will operate and maintain the Dam and Lines 41 and 43.
- h. It will use District lobbying services cooperatively to seek funding and will pursue other sources to help pay for the System.

#### Section 4. Cathedral City Obligations.

Cathedral City will be responsible for the following:

- a. It will pay up to one-half the cost of surface and underground cleanup of debris and hazardous materials in the vicinity of Eagle Canyon Dam (the "Cleanup"), shown on Exhibit "B" attached hereto and made a part hereof. The obligation listed herein to pay up to one half the cost of the Cleanup shall only occur upon completion of all efforts to obtain State and Federal grants to offset Cleanup costs, and only after required funds for up to one-half the cost of the Cleanup (less any State and Federal grants) are budgeted and available for use in accordance with this MOU.
- b. It will advance funds to RCFCWCD Zone 6 for the design of Line 43 and its related improvements, as shown on Exhibit "A".
- c. It will use Cathedral City lobbying services cooperatively to seek funding and will pursue other sources to help pay for the System.

#### Section 5. Palm Springs Obligations.

Palm Springs will be responsible for the following:

- a. It will pay up to one-half the cost of surface and underground cleanup of debris and hazardous materials in the vicinity of Eagle Canyon Dam (the "Cleanup"), shown on Exhibit "B". The obligation listed herein to pay up to one-half the cost



of the Cleanup shall only occur upon completion of all efforts to obtain State and Federal grants to offset Cleanup costs, and only after required funds for up to one-half the cost of the Cleanup (less any State and Federal grants) are budgeted and available for use in accordance with this MOU.

- b. It has pledged \$1 million to RCFCWCD Zone 6 to help pay for the extension of Line 41 and its related improvements, as shown on Exhibit "A".
- c. It will use Palm Springs City lobbying services cooperatively to seek funding and will pursue other sources to help pay for the System.

Section 6. ACBCI Obligations.

ACBCI will be responsible for the following:

- a. It will pay, facilitate funding through the Bureau of Indian Affairs and/or provide in-kind project management services for the surface and underground cleanup of debris and hazardous materials in the vicinity of Eagle Canyon Dam (the "Cleanup") shown on Exhibit "B."
- b. It will assist the Parties in processing of grants of easements, rights of way or land acquisitions, including costs for appraisals, for Trust lands affected by the System.
- c. It will use ACBCI lobbying services cooperatively to seek funding and will pursue other sources to help pay for the System.

Section 7. Financial Obligations and Grants.

- a. Unless otherwise indicated, it is the intent of the Parties that each will be responsible for the cost of its obligations as set forth above.
- b. Each Party will actively seek grants individually and cooperatively from all available sources to partially or wholly offset the costs of its obligations.
- c. Each Party will actively engage with its State and Federal legislators individually and cooperatively to gain support of the System.

Section 8. General Provisions.

- a. The captions used in this MOU are solely for convenience and are not deemed a part of the text.
- b. The Parties agree to cooperate with each other so as to facilitate the performance of any Party's obligations under this MOU.
- c. In performing its obligations, a Party shall utilize such procedures and practices as it deems appropriate, subject only to the general obligation to act reasonably,

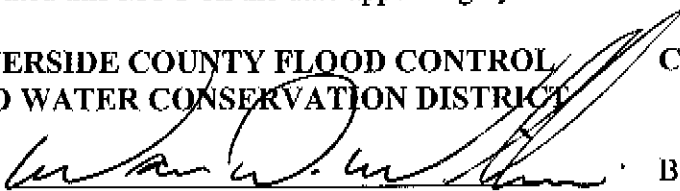
and may engage such consultants or experts as it deems necessary to meet the obligations.

- d. All attached exhibits are incorporated by reference.
- e. This MOU shall have a five-year term and be automatically renewed each year thereafter unless one of the Parties gives notice of its intent, not less than thirty (30) days in advance of an anniversary date, not to renew at said anniversary date, in which case this MOU shall thereafter have no force or effect, unless the surviving Parties agree in writing to continue the MOU without the withdrawing Party.
- f. Each Party agrees to maintain its standard liability and casualty insurance during the performance of its obligations under this MOU. Each Party hereby indemnifies the other Parties from any loss or damage of any kind, which arises from the first Party's negligence or omission to carry out any obligations or actions in connection with this MOU or the System.
- g. This MOU may be executed in counterparts which taken together constitute a complete agreement. The Parties agree that signatures received by facsimile transmission shall be deemed to be original signatures for all purposes.
- h. The laws of the State of California shall govern the interpretation and enforcement of this MOU.

IN WITNESS WHEREOF, an authorized representative of each Party has duly executed this MOU on the date appearing by his or her name.

**RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**

**CITY OF CATHEDRAL CITY**

By: 

By: \_\_\_\_\_

Print Name: Warren D. Williams

Print Name: Kathleen J. DeRosa

Title: General Manager/Chief Engineer

Title: Mayor

Date: 3/4/09

Date: \_\_\_\_\_

**CITY OF PALM SPRINGS**

**AGUA CALIENTE BAND OF CAHUILLA INDIANS**

By: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Print Name: Richard M. Milanovich

Title: \_\_\_\_\_

Title: Chairman, Tribal Council

Date: \_\_\_\_\_

Date: \_\_\_\_\_

EXHIBIT "A"



**EXHIBIT "B"**

**Continued on Next Page**

CITY OF CATHEDRAL CITY  
68-700 AVENIDA LALO GUERERO  
CATHEDRAL CITY, CALIFORNIA 92234

**EVALUATION OF  
ENVIRONMENTAL CLEANUP COSTS  
PROPOSED EAGLE CANYON DAM  
CATHEDRAL CITY, CALIFORNIA**

February 8, 2008

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File No.: 08340-02  
Doc. No.: 07-12-785



# Earth Systems

Southwest

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(760) 345-1588  
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February 8, 2008

File No.: 08340-02  
Doc. No.: 07-12-785

City of Cathedral City  
68-700 Avenida Lalo Guerrero  
Cathedral City, California 92234

Attention: Mr. William O. Bayne, P.E., City Engineer  
Subject: **Evaluation of Environmental Cleanup Costs**  
Project: **Proposed Eagle Canyon Dam**  
Cathedral City, California

Earth Systems Southwest [ESSW] is pleased to submit this report concerning our evaluation of environmental cleanup costs currently present at the proposed Eagle Canyon Dam site located at the base of the Santa Rosa Mountains generally between Canyon Plaza Drive and the former Via Almalfi along the boundary between Cathedral City and Palm Springs, California. This evaluation was conducted to provide a preliminary estimate of the costs involved in cleaning up the site prior to construction of the dam, and is based on prior investigations performed by others and estimates extrapolated from that data. Assumptions were used to develop the estimate, and therefore this estimate should not be considered to be a "firm-fixed fee" or maximum value.

Earth Systems Southwest appreciates the opportunity to assist you with this project. If we can be of further assistance, or if you have any questions, feel free to contact the undersigned at (760) 345-1588.

Sincerely,

**EARTH SYSTEMS SOUTHWEST**

Scot A. Stormo, PG 4826  
Senior Vice President

Craig S. Hill, CE 38234  
President

Letter/sas/ajf

Distribution: 20/City of Cathedral City  
1/RC File  
2/BD File

Attachments: Table 1 – Cost Estimate – Sorting In Place  
Table 2 – Cost Estimate – Staging Yard  
Figure 1 – Site Location  
Figure 2 – Site Layout  
Figure 3 – Site Features  
Figure 1 from Genterra ReMi Survey Report  
Sheet 6 from Genterra Construction Drawing

## 1.0 Introduction

This report presents the results of an evaluation conducted by Earth Systems Southwest [ESSW] to estimate the cost to conduct an environmental cleanup of debris and hazardous materials currently present at the proposed Eagle Canyon Dam site located at the base of the Santa Rosa Mountains generally between Canyon Plaza Drive and the former Via Almalfi along the boundary between Cathedral City and Palm Springs, California. We understand a flood control dam will be constructed across the mouth of the canyon but that the site was formerly used as a gravel pit, dump site, construction storage yard, and shooting range. These prior uses have resulted in the accumulation of fill and debris within the construction footprint. We understand that the City of Cathedral City and other local entities have agreed to be responsible for the cost of conducting the environmental cleanup of the site while the costs to construct the dam will be borne by others. The primary purpose of this report is to identify the incremental increase in costs associated with the environmental cleanup of the site.

For the purposes of this estimate the following definitions were used:

1. Fill consists of earth and other materials placed through the actions of man in either an uncontrolled or controlled manner. If controlled and compacted, it is referred to as "engineered fill." Uncontrolled fill is sometimes referred to as "undocumented fill." Fill can contain debris.
2. Debris consists of non-natural waste materials such as broken concrete and asphalt, glass, lumber, tires, cables, hoses, trash, and other similar materials.
3. Unsuitable materials consist of debris that would not be suitable for use in an engineered fill for any purpose (such as lumber, tires, trash, etc, but not including concrete or asphalt, which can be processed and converted into a usable fill material).
4. Processable material is debris that can be converted into a usable fill material by crushing, sorting, or otherwise processing the material. The suitability of the material for use in constructing a dam is not implied.
5. Hazardous materials and hazardous wastes consist of petroleum, metallic, asbestos, or other materials and wastes that exceed cleanup standards.
6. Environmental Cleanup includes segregation and off-site removal of unsuitable materials, and hazardous materials and wastes.
7. Debris Basin is the area to be constructed immediately upstream of the proposed dam intended to hold debris washed into the reservoir during flood events. It is not associated with the debris currently present at the site.

Prior investigations of the site have estimated that the volume of fill ranges from 65,000 to 90,000 cubic yards. Prior subsurface investigations found that approximately 5 to 10 percent of the fill is material that would be unsuitable for use as engineered fill for any purpose (such as hoses, wood, roofing paper, scrap metal, etc.) while the remainder appeared to be soil, rock, concrete, and asphalt which could be used as an engineered fill with proper processing. We understand that the unsuitable material will need to be disposed of off-site as part of the construction process. The purpose of our scope of services was to estimate the cost to dispose of unsuitable and/or hazardous materials currently located at the site.

The scope of work for this project included the following:

- The development plans were reviewed to identify the footprint of the proposed dam and associated features, and how that footprint relates to the known areas of fill.
- The design engineering firm (Genterra Consultants, Inc. [Genterra]) was contacted regarding their requirements for disposal of the debris materials, and the lateral extent of the development area (from which the debris needs to be removed).
- Technical documents regarding prior investigations were reviewed to estimate the volume of fill within the proposed development area.
- The percent of fill that is comprised of unsuitable materials was estimated from the prior investigation reports.
- Two cost estimates to segregate and dispose of the unsuitable and hazardous materials were prepared, one for each likely removal procedure, based on discussions with contractors familiar with these types of activities.
- This report was prepared to present the findings of this evaluation, including:
  - A discussion of the variables
  - The basis for the volumes
  - Percentages of unsuitable materials
  - Unit costs.

## **2.0 Site Description**

The site consists of an irregular-shaped parcel located along the boundary between the base of the Santa Rosa Mountains to the southwest and the Coachella Valley to the northeast (the site location and layout are depicted in Figures 1, 2, and 3 attached). A stream channel within a steep-sided canyon cuts through the middle of the property from southwest to northeast, and a tributary canyon joins the main canyon from the south in approximately the center of the site. A flood-control dam is proposed to be built where the main canyon debouches into the valley. For the purposes of this report, the western part of the site is defined to be where the canyon is relatively straight, the central part of the site includes the intersection of the tributary canyon and the location of the proposed dam alignment, and the eastern part of the site includes the area east of the proposed dam alignment. Alluvium underlies the canyon to a depth of at least 100 feet under the central part of the site, and is expected to be deeper to the east and shallower to the west. The alluvium "pinches out" as the depth to bedrock decreases in the canyon west of the site.

The site was historically used as a borrow source, with mining of alluvium occurring in both the canyon and along the edge of the mountains in the eastern part of the site. The borrow area in the canyon was subsequently used to dispose of fill consisting primarily of soil, rock, concrete and asphalt, with a small percentage of other debris such as rubber hoses, fencing, roofing tarpaper, wood, tires, and metallic junk. A local contractor indicated the majority of the disposed material was derived from the construction of a road leading into the Santa Rosa Mountains in



the site vicinity (Marantz, 2007). Prior investigations of the fill estimate that approximately 5 to 10 percent of the fill is comprised of debris that would not be suitable for use as engineered fill for any purpose. Genterra indicated that the soil from the fill would not be suitable for use in the structural part of the dam, but may be usable in non-critical areas such as under the approach roadways if properly processed. Genterra estimated a total of 8,500 cubic yards of material could be used in the non-critical areas.

The topography of the site has been modified from natural conditions by the prior borrow and filling activities. The stream channel currently traverses the site along the southern edge of the canyon. Fill and debris piles are located along the northern  $\frac{3}{4}$  of the canyon in the western part of the site. The fill and debris piles become an elevated plateau with a relatively uniform ground surface as you move eastward toward the central portion of the site, due in part to "grading" activities that have flattened-out this area. The "plateau" area ends abruptly in the eastern portion of the site where borrow activities appear to have removed its downhill edge. The plateau area appears to be the former level of the canyon bottom, but is partially underlain by fill.

The boundary between the fill and natural alluvial surface is not obvious, but was reportedly investigated by Genterra as part of their geotechnical investigations. Genterra's ReMi Survey Site Plan shows the fill area as a long lenticular-shaped mass occupying most of the canyon except along the southern edge (where the current stream channel is located). The northern edge of the fill boundary coincides with the contact between the mountainside and flatter areas in the western portion of the site, but extends across the plateau area in an east-west direction in the central portion of this site (we note that this boundary is approximately coincident with the parcel boundary, and may reflect the historical northern extent of the borrow area on the southern parcel). In the eastern part of the site, the fill is interpreted to comprise most, but not all, of the elevated plateau jutting northeastward from the canyon mouth. The remaining northern and eastern edge of the plateau is believed to be alluvium that was not mined and is a remnant of the original ground surface. During a recent site visit, we noted undisturbed alluvium along the southeast edge of the plateau in an area marked on the Genterra map as fill. Therefore, the eastern extent of the fill may be less than depicted on the Genterra map.

In addition to the use of the site as a borrow pit and disposal site, the site has also been used as a storage yard for a construction contractor and as a shooting range. Surficial debris consisting of decrepit machinery, automobiles, concrete, wood, tires, and other construction-related materials has occupied the ground surface throughout much of the eastern part of the site (though the surficial debris was recently removed). The shooting range used the central and western part of the site, and included 5 to 10 stations located along the southern edge of the plateau area from which the participants could shoot at clay targets launched over the stream channel to the south and west. Consequently, abundant fragments of clay targets are located on the hillside south of the stream channel, in the canyon that enters the site from the south, and on the debris piles located in the western portion of the canyon. Fragments of clay targets are not located in the main stream channel, apparently because water-flow in that channel has reworked the channel bottom and removed or buried the fragments. Prior testing found that lead is present at elevated concentrations in some portions of the area. During preliminary visual inspections of the site on November 26 and December 21, 2007, lead shot was not observed on the ground surface in areas containing abundant clay-pigeon fragments.

### 3.0 Volume and Composition of Fill

The volume of fill material and its composition was evaluated from the five prior investigations conducted at the site. These include a 1986 geotechnical investigation by Whaler Associates [Whaler] conducted as part of the initial dam design (Whaler, 1986); a 1992 report by Leighton and Associates [Leighton] regarding the western portion of the fill (Leighton, 1992); a 1998 report by Gradient Engineers [Gradient] regarding the eastern part of the fill (Gradient, 1998); a 2002 report by ESSW that overlapped the entire Leighton investigation area and the western half of the Gradient investigation area and included additional subsurface investigations (ESSW, 2002); and a technical memorandum by Genterra regarding a ReMi<sup>™</sup> Seismic Survey conducted to evaluate the depth of the fill (Genterra, 2007). It should be noted that the Whaler investigation focused on the geotechnical issues at the site; the Leighton, Gradient, and ESSW investigations were concerned primarily with identifying the presence of hazardous materials (but not specifically debris); and the Genterra survey focused on evaluating the thickness of the fill, but not its content. Commentary on the scope, findings and limitations of each of these prior investigations is presented below, by report. Note that information concerning the 1986, 1992 and 1998 reports was obtained from excerpts of those reports provided by the Riverside County Flood Control and Water Conservation District [District] in 2001 as part of a pre-bid package for the ESSW 2002 investigation, and that the Genterra information provided to ESSW consisted of portions of their documents that summarized their findings.

Whaler, 1986 – The Whaler investigation included drilling 4 borings, excavating approximately 10 test pits, and running three seismic survey lines. The summary indicated that fill was identified around the southern and eastern margins of the original unmined alluvial deposit, but that the extent of the fill was not explored. One boring and two test pits purported to encounter alluvium at the ground surface provided a basis for Whaler to project the contact between alluvium and fill to extend along the length of the canyon just south of the midpoint of the flat plateau area. Cross-sections suggest that Whaler interpreted the fill to have been dumped over the edge of the plateau along the active stream channel area, with a maximum projected depth of about 10 to 15 feet. Only one test pit was excavated into the fill. Given the minimal degree of investigation regarding the lateral and vertical extent of fill conducted by Whaler, the limits of the fill depicted by Whaler are considered the least reliable of the five investigations conducted.

Leighton, 1992 – The Leighton investigation included a geophysical survey in the western portion of the site (only) and five borings along the axis of the fill area in the western and central portions of the site. The eastern portion of the site was not evaluated. The geophysical survey found that metallic materials were present in the fill throughout much of the western portion of the site, but was not significant in the stream channel that crosses the southern portion of the site. The borings encountered fill to a maximum depth of 23 feet and an average depth of about 15 feet. Due to the east-west alignment of the borings, the north-south extent of the fill was not evaluated. Leighton depicted the fill as extending northward to the contact between the plateau and the hillside. Chemical testing of samples collected from the borings found elevated concentrations of four metals; aluminum, iron, manganese, and lead. Elevated Total Petroleum Hydrocarbon [TPH] concentrations were also found in some samples. It is our opinion that the chemical testing results are of limited significance because: (1) aluminum, iron and manganese are naturally present at high concentrations; (2) the concentration of lead was not elevated relative to regulatory cleanup standards (a maximum of 29 mg/kg); and, (3) the method used to

test for TPH does not distinguish between different types of hydrocarbons and is capable of detecting asphalt. It is likely that the elevated TPH values are related to the common presence of asphalt in the fill (though other hydrocarbon compounds may also be present). The Leighton report is useful for identifying that the fill extends to a depth of 13 to 23 feet in the central and western portions of the site.

Gradient, 1998 -- The Gradient report evaluated the presence of hazardous materials in the eastern portion of the site, and did not overlap the area investigated by Leighton. The Gradient investigation focused on evaluating the potential for the presence of hazardous materials both in the fill and on the ground surface. Five borings were drilled to a depth of 20 feet and a total of 20 samples were tested, as well as 12 near-surface soil samples from 6 locations, and 8 samples from barrels located on-site (the barrels were likely from the Leighton investigation). Gradient stated that fill extended to the total depth of each boring (20 feet). It should be noted that boring logs were not provided with the report, and the extent of fill reported by gradient is greater than reported by Genterra. It is possible that Gradient identified undisturbed alluvium as fill material in some samples.

The Gradient investigation tested the samples for 8 metals, TPH (using EPA Method 418.1, which does not distinguish between hydrocarbon types), chlorinated solvents, gas and diesel. Some of the surface samples were collected from obvious stained soil under parked machinery. Consequently, some of the elevated values are merely localized spills from parked machinery and are not considered representative of the overall condition of the fill. Gradient estimated a total of 65 cubic yards of surficial soil required removal due to the presence of elevated hydrocarbon concentrations.

ESSW, 2001 -- The purpose of the ESSW investigation was to evaluate the potential for the presence of hazardous materials in the fill. The ESSW investigation consisted of a geophysical survey using a terrain conductivity meter [TCM] (a type of metal detector), a geophysical survey using ground-penetrating radar [GPR], the excavation of 12 trenches to evaluate the depth and composition of the fill, and the collection of surface samples from the shooting range to test for lead. The TCM and GPR surveys found a total of 5 large buried metallic anomalies in the central and western portions of the site (the eastern portion could not be evaluated using this technique because of the numerous metallic objects located on the ground surface). These metallic anomalies were excavated and found to consist of sheet metal, a photocopier, a swamp cooler, a bed frame, and a small underground storage tank [UST]. The UST appears to have been abandoned in place. Trenches were also excavated in areas where metallic anomalies were not detected by the TCM survey; metallic objects were not found in these trenches suggesting the TCM survey is capable of accurately identifying buried metallic objects. The GPR survey did not find voids or other reflective features suggestive of drums or other USTs. The GPR survey was not capable of distinguishing the depth of the fill due to a lack of contrast between fill and alluvium.

The trenching found that the fill is composed primarily of soil and rock, with a significant portion of concrete and asphalt. Approximately 5 to 10 percent of the fill was observed to consist of trash (hoses, fence, wood, tires, etc.) that would not be suitable for incorporating into an engineered fill for any purpose. Obvious stained soils were not observed in the fill. Chemical testing of the fill did not identify hazardous materials within the fill. Elevated concentrations of lead were found in 4 of the 12 surface soil samples collected from the shooting range area. The

surficial lead was found to extend over an area of about 25,000 square feet, but the sampling density was low and the actual area of affected soil may be less.

The general composition of the fill was observed in the trenches but the geotechnical properties of this material was not a focus of that evaluation, so testing for the suitability of this material as fill was not performed. Undisturbed alluvium was encountered in some of the trenches, and the fill was observed to be 10 to 15 feet thick in the western portion of the site, and 1 to 5 feet thick in the central portion of the site (generally along the alignment of the edge of the fill marked in the Genterra report, see below). Two of the trenches (T-3 and T-7) did not penetrate the full thickness of the fill, so the depths of those trenches indicate the minimum thickness of the fill at those locations. The volume of fill was estimated by generalizing the apparent volume of fill as a simple geometric shape, and calculating the volume of that shape. The volume of fill was estimated in the 2001 report to be 90,000 cubic yards, with a margin of error of +/- 50 percent to take into account the minimal number and wide spacing of the trenches.

Genterra, 2007 -- The Genterra report included a geotechnical evaluation of the site which focused on identifying the thickness of the fill as well as the engineering properties of the underlying alluvium. In subsequent discussions with Genterra, we understand that Genterra subcontracted with another firm to calculate the volume of the fill based on the size and shape identified in their investigation. This method is more rigorous than the method used by ESSW and is more likely to be accurate, but Genterra cautioned that it is still only an estimate. Genterra estimated the total volume of fill to be 65,000 cubic yards. The lateral extent of fill is depicted on Figure 1 of the Genterra ReMi survey report (attached). The lateral extent of the fill in the western part of the site is in general agreement with the prior reports. In the central portion of the site, the northern edge of the fill is depicted as crossing the plateau area where the prior ESSW investigation found the fill to be 1 to 5 feet deep. In the eastern portion of the site, fill is depicted as underlying most of the plateau area (but less than the area shown in the Gradient report). Note that the fill area depicted by Genterra overlaps a few places where alluvium was observed by ESSW in a recent site visit. It is not clear what basis Genterra used for identifying the extent of fill in the plateau area in the eastern portion of the site, and it is possible that fill is less extensive than depicted in that area.

#### **4.0 Removal Requirements and Processes**

Genterra is the design engineer for the dam and it is their responsibility to provide specifications for its construction. Genterra indicated that the fill could not be used in construction of the dam due to the uncertain engineering properties of the material and the critical function of the dam, though about 8,500 cubic yards of fill may be usable in non-critical areas such as the approach ramp and as filter material under the rip-rap cover. An estimated 65,000 cubic yards of fill is present on the site, which far exceeds the amount needed for these non-critical purposes. Therefore, Genterra anticipates the majority of the fill will need to be removed as part of the construction process. Note that removal of the fill due to its' uncertain engineering properties is not considered to be part of the environmental cleanup, which focuses only on the debris that is unsuitable for use in any engineered fill, and hazardous materials and wastes.

The Genterra report provided a summary of the construction process, which envisioned an initial phase to prepare the dam foundation area followed by construction of the dam. Materials used to construct the dam are proposed to be derived primarily from the "debris basin" to be constructed

immediately up-gradient of the dam. Genterra envisioned removal of the fill as part of the initial site preparation process. As described in Genterra's report, the construction process will consist of the following Tasks:

1. Removal of the surface debris and contaminated surface soil;
2. Removal of lead-impacted soil from the shooting range area, with testing and subsequent off-site disposal;
3. Removal of the Underground Storage Tank [UST];
4. Removal of the fill material and off-site disposal;
5. Segregation of hazardous materials encountered in the fill and off-site disposal;
6. Excavation of the dam footprint, with stockpiling of the soil in the western part of the site; and,
7. Construction of the dam.

The process described by Genterra does not require an off-site staging yard if the fill is disposed of en masse. However, the contractor may wish to separate the unsuitable materials from the fill to minimize disposal costs, and process the processable materials to allow the sale and/or use of that material. Two options are available in this regard:

1. Separating the unsuitable materials in-place, and processing the processable materials later, or stockpiling the processed material in close proximity to its' current location;
2. Transporting the fill to a staging yard for sorting, processing, and storage until use/sale.

Option 1 entails either handling the processable materials twice (once to remove the unsuitable material and once to process the material) and/or storing the processed material within the general construction zone of the dam, both of which are undesirable. Option 2 requires that an off-site staging yard be established to sort and store the material. We understand that the former trailer-park property located immediately east of the site may be available for use as a staging yard, and we have assumed the fill would be transported to that location in Option 2. However, the cost estimate for Option 2 does not include the rental cost of using that property for this purpose.

## 5.0 Cost Estimate

We understand that the City of Cathedral City and other local entities are responsible only for the environmental cleanup costs, which are limited to removing the unsuitable materials and hazardous materials and wastes, and do not include disposal of material being rejected because it lacks the engineering properties for use in a dam. The shooting range activities resulted in the lead being deposited on the ground as a consequence of its intended use and therefore the lead-containing soil is not defined as a waste. Materials which are not a waste are not subject to hazardous waste regulations unless the soil is disposed of (at which time the soil has become waste). The sediment in the stream channel appears to be suitable for use in an engineered fill, and therefore costs to remove the lead-impacted soil were not included in the estimate.

Two cost estimates are presented herein, one for separating the unsuitable material in place, and the second for the incremental increase in cost to separate and dispose of the unsuitable materials at a nearby staging yard. The number and type of tasks are the same in both cost estimates; the difference between the two estimates is whether the fill material is relocated as part of the sorting

process. Table 1 presents the cost estimate assuming the unsuitable materials are sorted from the fill in-place (Option 1) while Table 2 presents the cost estimate assuming the fill will be moved to a staging yard for sorting (Option 2).

### Tasks

Descriptions of the Tasks involved in conducting an environmental cleanup of the site are presented below. Tasks that vary depending on whether the fill is sorted in place or moved to a staging yard are so indicated.

**Mobilization** These costs will vary depending on whether a staging yard is used. If the fill is sorted in-place, the mobilization costs are for moving the equipment on and off the site. If a staging yard is used, it includes setting up a yard to sort, process, and store the material.

**Task 1** This involves removing the hydrocarbon impacted soil identified by the Gradient report from the surface of the storage areas. Gradient estimated a total of 65 cubic yards of material warranted removal. The soil will be excavated with a backhoe or loader, loaded onto trucks, and hauled as a regulated waste to a treatment facility for recycling.

**Task 2** The UST identified in the 2002 ESSW report will be removed in accordance with Riverside County Department of Environmental Health protocols.

**Task 3** This task is for removing the unsuitable materials from the fill, and the costs vary depending on whether a staging yard is used.

Option 1, Sorting In Place – An excavator will be used to excavate the fill and sort through it. Materials that are unsuitable for use in an engineered fill will be segregated from the fill, loaded onto trucks, and transported to a Class III landfill for disposal. The remaining material will be placed back in the excavation. It is anticipated that the excavation activities will start at the western end of the site and work eastward, and that sorted material will be placed on the west side of the active excavation area, resulting in a slightly westward shift in the fill material.

Option 2, Staging Yard – The fill material will be excavated and transported to the staging yard. Debris that is unsuitable for use in an engineered fill will be removed and transported to a landfill. It is assumed that the remaining soil, rock, concrete and asphalt will be passed through a grizzly to remove oversized materials; the oversized materials will be passed through a rock crusher to reduce the size of the material to 6-inch minus; and the resulting material will be stockpiled on-site pending use as “processed miscellaneous base” [PMB] either on-site or at an off-site construction project. However, the costs to process these materials in this manner are not included in the cost estimate because they are not part of the environmental cleanup of the site.

Task 4 Hazardous materials – during removal of the fill, the potential presence of hazardous materials will be evaluated by on-site personnel, as specified in Genterra's construction plan. Materials suspected of being hazardous will be stockpiled separately pending the results of laboratory testing of this material. The types of testing performed will be based on the types of hazardous materials suspected to be present. Final disposition of these suspect soils will be based on the results of the laboratory testing. Note that testing and disposal costs are not provided in the cost estimate because hazardous materials were not reliably detected in the soil during the prior investigations (as discussed in the 2002 ESSW report). Costs for an on-site observer to check for the presence of hazardous materials are included, as specified by Genterra.

Project Management involves the coordination of the various contractors by a consultant.

#### Assumptions and Limitations

The cost estimate was developed based on discussions with contractors who routinely perform these types of activities. Important assumptions and limitations include the following:

1. The costs are based on a mixture of "lump-sum" and "time-and-materials" rates, depending on the activity, as shown in the table. The volumes used in this cost estimate are based on the prior investigations.
2. The former trailer park east of the site was assumed to be available for use as a staging yard, including the long-term storage of sorted and crushed material. The cost for renting this area as a staging yard was not included.
3. The cost estimate assumes 10% of the fill is unsuitable material requiring off-site disposal, with a density of 1.5 tons per cubic yard.
4. The cost estimate assumes the volume of fill totals 65,000 cubic yards (based on Genterra report), is easily distinguished from on-site soils, and can be easily handled with conventional excavating equipment.
5. The cost estimate assumes no cost to the project to load, transport, or use the crushed/processed material as processed miscellaneous base at an off-site location.
6. The cost estimate assumes water is readily available for use on-site.
7. Permitting costs are not included.
8. The cost estimate assumes Prevailing Wage will be paid to on-site personnel.
9. A contingency fee of 8.5 to 8.9% was added to the overall project cost to accommodate uncertainty and round the final value to two significant figures.

## 6.0 Summary of Findings

The total cost for the environmental cleanup of the site is \$1,250,000 for sorting in place and \$1,500,000 for using a staging yard, using the assumptions and limitations presented in this report. The cost for sorting in place is relatively complete for that scope of work, but leaves the fill in its current location. The cost for using a staging yard moves the fill out of the footprint of the dam construction area, but does not include the cost of renting the staging yard, processing the non-debris material, or finding a use for the processed material. The costs associated with using a staging yard are intended to be the incremental increase in cost associated with the environmental cleanup activities, and not the whole cost for using a staging yard during construction.

In both cost estimates, the cost for Tasks 1, 3, and 4 will ultimately be dependant on the quantity of material requiring off-site disposal. Costs for disposing of unsuitable debris may be less than shown if the area containing fill does not extend as far eastward as shown in the Genterra report (as observed during a recent site visit by ESSW), or if the unsuitable material is less than 10 percent of the fill. Costs for disposal of hazardous waste will increase if these types of materials are actually found in the fill.

## 7.0 Limitations

This report has been prepared for the exclusive use of City of Cathedral City. The findings presented in this report are opinions based on readily available information obtained to date within the scope of the work authorized by the client. The scope of work for this project was developed to address the needs of the client and may not meet the needs of other users. Any other use of or reliance on the information and opinions contained in this report without the written authorization of ESSW is at the sole risk of the user.

The results contained in this report are based upon the information acquired during the evaluation, and includes information obtained from third parties. ESSW makes no claim as to the accuracy of the information obtained from others. It should be noted variations may exist beyond or between points explored during the course of this and prior investigations, and that changes in conditions can occur in the future due to the works of man, contaminant migration, variations in rainfall, temperature, and/or other factors not apparant at the time of the field investigation. Economic factors may render the estimate provided herein obsolete in a short period of time. No effort was made to predict the effect of inflation or other factors on the cost estimate presented herein.

The services performed by ESSW have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the site vicinity. No warranty is expressed or implied.

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**REFERENCES**

Earth Systems Southwest, *Report of Environmental Testing and Evaluation, Proposed Eagle Canyon Dam, RCFCWCD Project 6-0-0190, Palm Springs/Cathedral City, California*, File No.: 08340-01, Document No.: 01-12-732, dated February 20, 2002.

Genterra Consultants, Inc., *ReMi™ Survey Site Plan, Figure 1*, dated October 2006.

\_\_\_\_\_, *Technical Memorandum, Completion of Additional Seismic Survey, ReMi™ Seismic Survey for Eagle Canyon Dam*, District Project 6-0-0190, GENTERRA Project No. 296-RCF, dated November 2, 2006.

\_\_\_\_\_, *Eagle Canyon Dam and Debris Basin, Dumped Fill Removal Plan*, Project No. 6-0-0190, Drawing No. X-XYZ, Sheet No. 6 of 19, dated February 2007.

\_\_\_\_\_, *Hazardous Waste Remediation Plan for the Proposed Site of Eagle Canyon Dam and Debris Basin, Palm Springs, California*, Project No. 296-RCF, dated February 10, 2007.

\_\_\_\_\_, *Section 5: Excavation*, 296-RCF-EC\_DesignReportText\_110607\_REVDRAFT.doc.

\_\_\_\_\_, *Replies to Questions Submitted by Scot Stormo by E-Mail of Dec. 17, 2007, Eagle Canyon Dam and Debris Basin, Riverside County, CA*, dated December 19, 2007.

Marantz, George, with G&M Construction, personal communications, December 2007 and January 2008.

Riverside County Flood Control and Water Conservation District, letter to ESSW dated May 8, 2001, *Eagle Canyon Dam, Assessment Investigation for Artificial Fill, Suggested Scope of Work*, including summaries of Wahler, Leighton & Associates, and Gradient Engineers reports.

**Table 1**  
**Cost Estimate - Sorting In Place**

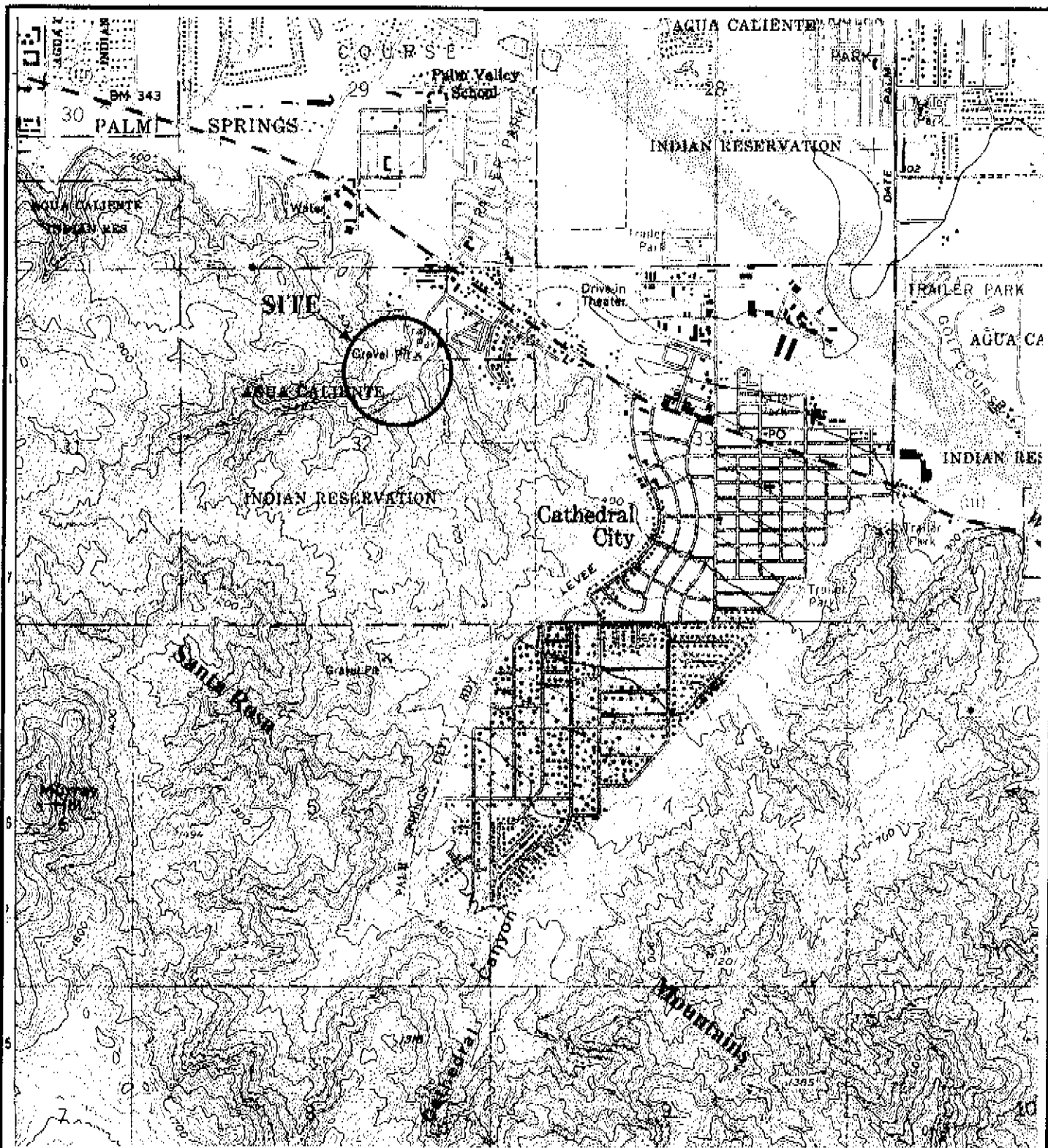
	Footnote	Basis	Units	Per Unit	Subtotal
<b>Mobilization/Demobilization</b>	A	Lump Sum	1	\$5,000	\$5,000
<b>Task 1 Surface Hydrocarbon Removal</b>					
Excavation	B	Days	1	\$5,000	\$3,000
Transportation	B	Tons	100	\$32	\$3,200
Disposal	B	Tons	100	\$55	\$5,500
				<b>Subtotal</b>	<b>\$11,700</b>
<b>Task 2 UST Removal</b>		Estimate	1	\$10,000	\$10,000
<b>Task 3 Unsuitable Debris Removal</b>					
Excavation	C	Yards	65,000	\$4.50	\$292,500
Sorting	C	Yards	65,000	\$2.50	\$162,500
Debris Disposal (tipping fee)	D	Tons	10,000	\$45	\$450,000
Loading and Trucking	D	Tons	10,000	\$15	\$150,000
				<b>Subtotal</b>	<b>\$1,055,000</b>
<b>Task 4 Buried Hazardous Waste (In Fill)</b>					
Onsite Observations for Haz. Waste	E	Days	50	\$1,000	\$50,000
				<b>Subtotal</b>	<b>\$50,000</b>
<b>Project Management</b>		Estimate	1	20000	\$20,000
				<b>Total for Tasks 1 through 4</b>	<b>\$1,151,700</b>
	F			<b>8.5 % Contingency</b>	<b>\$98,300</b>
				<b>Grand Total</b>	<b>\$1,250,000</b>

- Footnotes**
- A Mobilization of Equipment
  - B Assumes 65 cubic yards, cleaned up in one day
  - C Volume based on estimate by Genterra Consultants.
  - D Assumes 10% of fill is debris, and 1.5 tons per cubic yard
  - E Assumes sorting an average of 1,300 cubic yards per day.
  - F Contingency added to accommodate uncertainty and round final value

**Table 2**  
**Cost Estimate - Staging Yard**

	Footnote	Basis	Units	Per Unit	Subtotal
<b>Mobilization/Demobilization</b>	A	Lump Sum	1	\$20,000	\$20,000
Rental of Staging Yard		Not included	0	\$0	\$0
<b>Task 1 Surface Hydrocarbon Removal</b>					
Excavation	B	Days	1	\$3,000	\$3,000
Transportation	B	Tons	100	\$32	\$3,200
Disposal	B	Tons	100	\$55	\$5,500
				<b>Subtotal</b>	<b>\$11,700</b>
<b>Task 2 UST Removal</b>		Estimate	1	\$10,000	\$10,000
<b>Task 3 Unsuitable Debris Removal</b>					
Excavation	C	Yards	65,000	\$4.50	\$292,500
Relocation to Staging Yard	C	Yards	65,000	\$1.75	\$113,750
Sorting	C	Yards	65,000	\$4.00	\$260,000
Debris Disposal (tipping fee)	D	Tons	10,000	\$45	\$450,000
Loading and Trucking	D	Tons	10,000	\$15	\$150,000
Rock Crushing		Not included		\$7.50	\$0
Soil/Rock Disposal		Not included		\$0	\$0
				<b>Subtotal</b>	<b>\$1,266,250</b>
<b>Task 4 Buried Hazardous Waste (In Fill)</b>					
Onsite Observations for Haz. Waste	E	Days	50	\$1,000	\$50,000
				<b>Subtotal</b>	<b>\$50,000</b>
<b>Project Management</b>		Estimate	1	20000	\$20,000
				<b>Total for Tasks 1 through 4</b>	<b>\$1,377,950</b>
	F			<b>8.9 % Contingency</b>	<b>\$122,050</b>
				<b>Grand Total</b>	<b>\$1,500,000</b>

- Footnotes**
- A Includes setting up yard at former trailer park for sorting and temporary storage of material
  - B Assumes 65 cubic yards, cleaned up in one day
  - C Volume based on estimate by Genterra Consultants.
  - D Assumes 10% of fill is debris, and 1.5 tons per cubic yard
  - E Assumes removing an average of 1,300 cubic yards per day.
  - F Contingency added to accommodate uncertainty and round final value



Base Map: USGS 7.5 Minute Quadrangle Map Cathedral City, Calif., dated 1958, photo-revised 1981.



Site Location

Scale: 1" = 2,000'



0 2,000' 4,000'



**Figure 1**  
**Site Location**

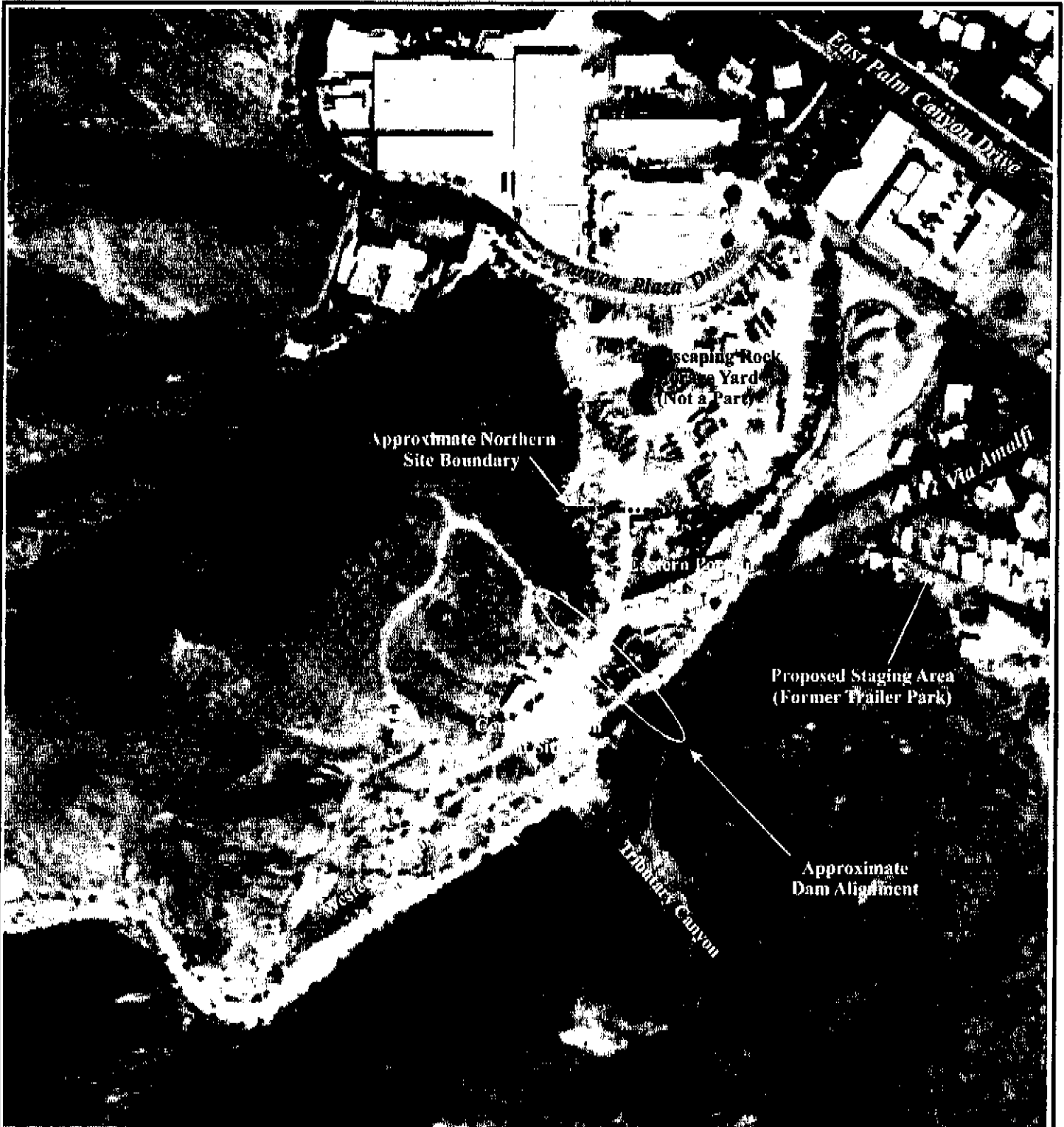
Proposed Eagle Canyon Dam  
Palm Springs and Cathedral City, California



**Earth Systems**  
**Southwest**

02/08/08

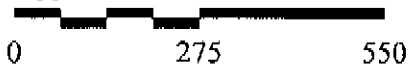
File No.: 08340-02



Reference: Europa Technologies, 2007

**LEGEND**

Approximate Scale: 1" = 275'



**Figure 2  
Site Layout**

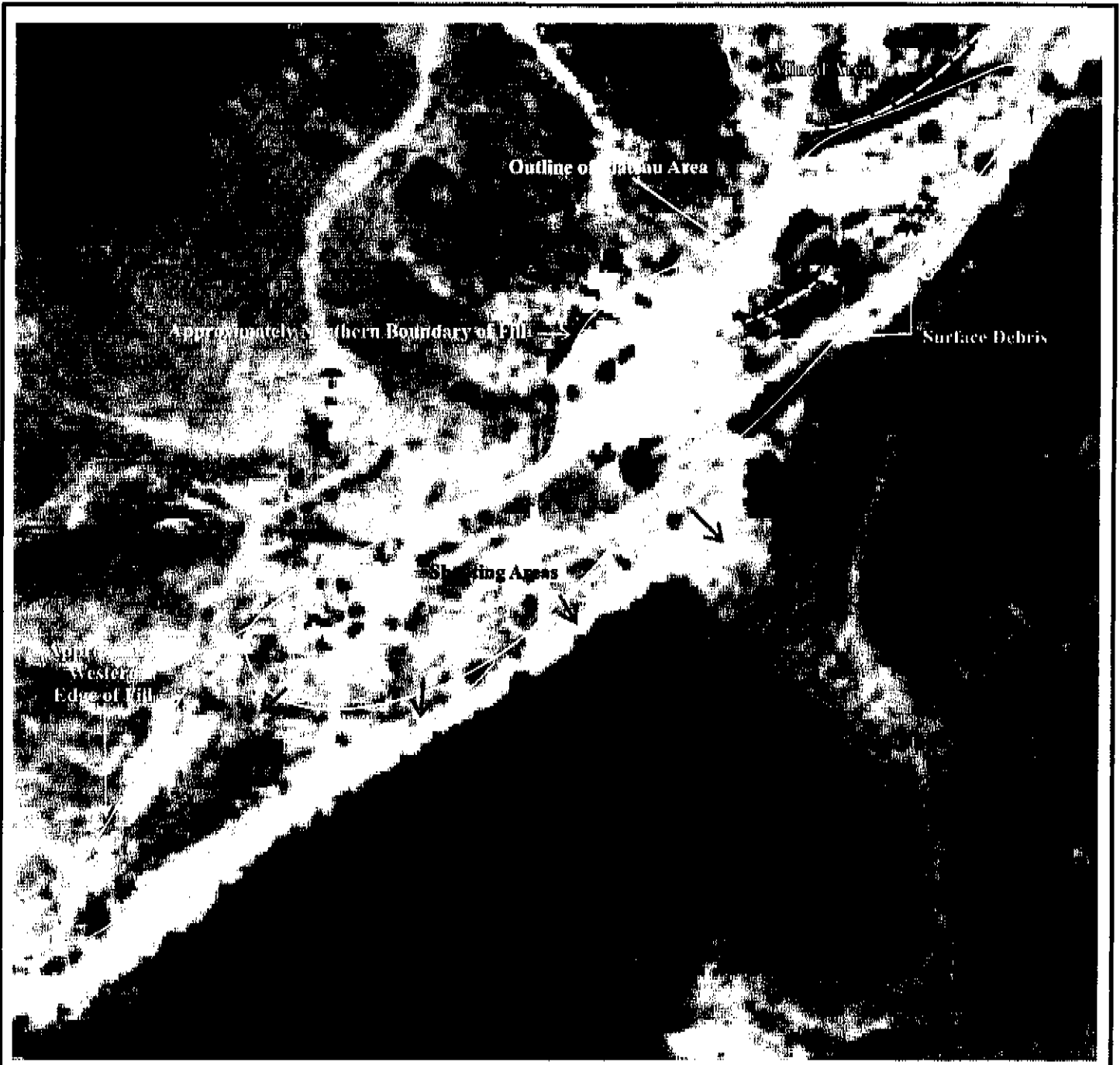
Proposed Eagle Canyon Dam  
Palm Springs and Cathedral City, California



**Earth Systems  
Southwest**

02/08/08

File No.: 08340-02



Reference: Europa Technologies, 2007

**LEGEND**

Approximate Scale: 1" = 150'



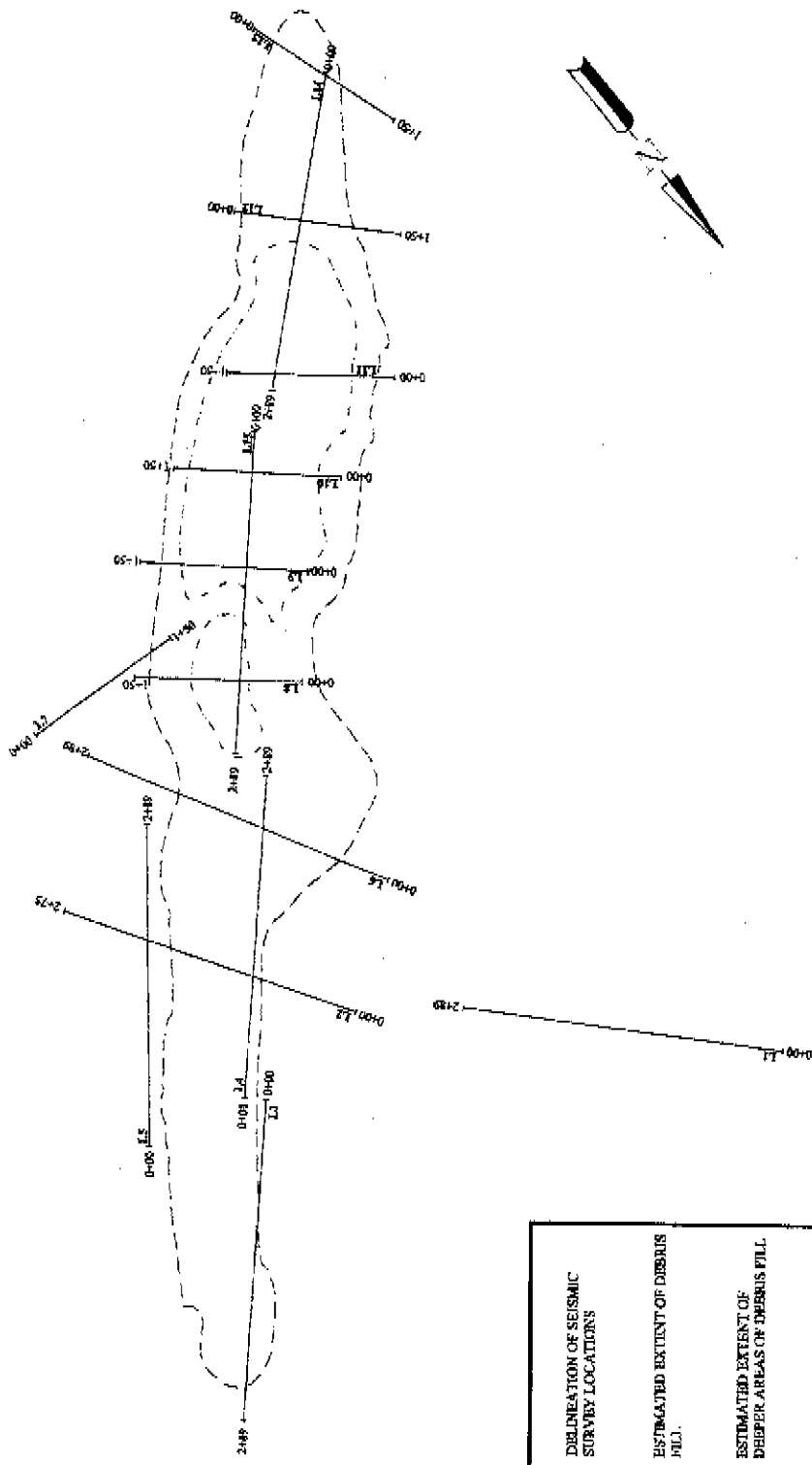
**Figure 3  
Site Features**



Proposed Eagle Canyon Dam  
Palm Springs and Cathedral City, California

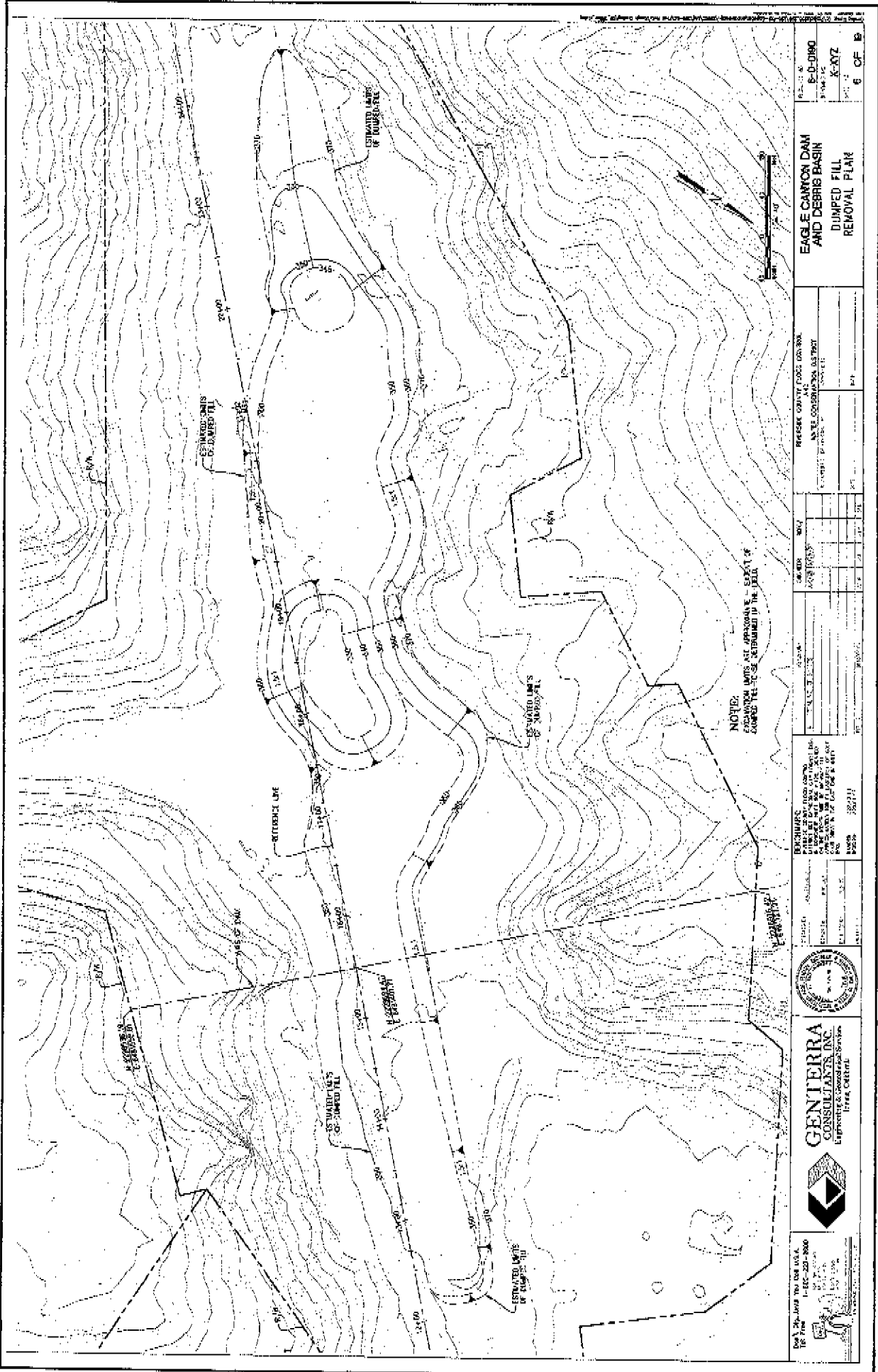



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
File No.: 08340-02



<b>REMI<sup>SM</sup> SURVEY SITE PLAN</b> PROJECT: 206-8102    DATE: OCTOBER 1986    ENGINEER:	
 <b>GENTERRA CONSULTANTS, INC.</b> Registered Professional Engineers	
<b>PROPOSED EAGLE CANYON DAM AND RESERVOIR</b>	
ALPINE COUNTY    FLOOD CONTROL DISTRICT    ALPINE COUNTY ALPINE COUNTY    ALPINE COUNTY    ALPINE COUNTY	
SHEET NO. 20 TOTAL SHEETS 20	 SCALE: 1" = 100'



DOT 28, JUNIOR TOWN DASH U.S.A.  
1-800-233-3000  
BY   
1500 GENTERRA DRIVE, SUITE 100  
HUNTSVILLE, AL 35894-1000  
TEL: (205) 748-2100  
FAX: (205) 748-2101

**GENTERRA**  
CONSULTANTS, INC.  
Engineering & Construction Services  
Livermore, California



**REVISIONS:**  
FILED IN PROJECT NUMBER 000000000  
DATE OF ISSUE 12/20/00  
DRAWN BY JLB  
CHECKED BY [signature]  
SCALE 1" = 500'  
SHEET NO. 6 OF 8

NO.	DATE	BY	DESCRIPTION

PROJECT NO. 000000000  
SHEET NO. 6 OF 8  
DATE OF ISSUE 12/20/00  
DRAWN BY JLB  
CHECKED BY [signature]

**EAGLE CANYON DAM  
AND DEBRIS BASIN  
DUMPED FILL  
REMOVAL PLAN**