PETERSEN RANCH BANK ENABLING INSTRUMENT REVIEW OF
U.S. ARMY CORPS OF ENGINEERS COMMENTS

May 4, 2015

AGENDA

I. March 30th Meeting Notes

II. Report on County of LA CUP/CEQA Document

III. Exclusion Areas

IV. Casualty Insurance

V. Crediting

VI. Bank Sales / 404 / 401/ Grading permits

VII. Grazing

VIII. Service Area

IX. Elizabeth Lake Restoration Sites Biostablization

X. Other

XI. Next Steps/Action Items

I. March 30th Meeting Notes

PETERSEN RANCH MITIGATION BANK
IRT MEETING NOTES

Project: Petersen Ranch Mitigation Bank [USACE: SPL-2012-00669, CDFW: 1798-2013-04-R5]

Meeting Date: 3-30-2015, 10 a.m.-1 p.m.

Purpose of Meeting: To discuss the remaining issues held over from the 3-16-15 IRT meeting.

Meeting Notes:

Elizabeth Lake Restoration: Corps staff said they discussed the proposed restoration further, and would like the Sponsor's engineer to evaluate the potential to use the bioengineered bank stabilization techniques from the LA District Regional General Permit #70. These methods will be assessed and discussed in the revised Development Plans.

Grazing: Sponsor team updated IRT, on status of research into literature justifying the distance which cattle exclusion fencing should be setback from the edge of wetland and riparian areas. Research to-date indicates a 5-meter buffer is sufficient for most pathogens and nutrients. Sponsor team indicated they would provide additional research regarding nutrients. Regional Board staff indicated that Sponsor team should reach out to Cindy Wise as she is coordinating the Board's Grazing Regulatory Action Project. Corps staff indicated that when grazing setbacks are determined, the Sponsor team should indicate both distance from edge of wetland/riparian vegetation as well as distance from edge of wetlands/waters. CDFW indicated that Sponsor team should include language in the LTMP/Grazing Plan clarifying how different pastures may be managed, given the Phased approach to the bank.

Hunting: Sponsor team presented the draft Hunting document that summarized current California Hunting Regulations as they pertain to the bank Property. CDFW indicated that Doves should be added to the hunting memo. IRT indicated concerns regarding the intensity of use associated with the "commercial hunting" provisions in BEI. IRT and Sponsor agreed to add language in the BEI to clarify that IRT must review and approve any commercial hunting requests and will have 30-days to provide approval.

Service Area: Sponsor team presented the updated 404 service area based on the Corps comments on the Draft BEI, with the exception that the Bank Sponsor felt that Upper Piru Creek HUC-10 should still be included due to demand, and similarity of habitats. Corps indicated that eastern Piru Creek is very similar to Bank Property and can be included, however western Piru Creek watershed should probably be excluded, recommended looking at HUC-12 boundaries to determine split. Corps also indicated that they would discuss internally the inclusion of the Ventura River and Calleguas Creek HUC-8s in the tertiary service area and get back to the Sponsor team with their decision. Corps staff indicated that the presence of ILFs and the high level of impacts in these watersheds warrant discussions with the District Engineer prior to a decision.

Exclusion Areas: Sponsor team presented current status of water program planning on the Property, indicating the planning is not yet at a stage to be able to provide the detailed data that the IRT has indicated they would like to see. Sponsor suggested that the BEI be structured so that the IRT will have to approve any future water pumping program on the property, and that the Sponsor would be able to provide more details on the program at that time. IRT agreed in

concept, however Corps indicated that they wanted to be sure that any proposed infrastructure was outside of the cattle exclusion areas. EPA indicated they still have concerns about edge effects surrounding the proposed exclusion areas and would like to see some analysis/language addressing those concerns. Sponsor team indicated they would provide additional restrictions to limit activities within x-feet of the exclusion area boundaries to limit edge effects.

Crediting: **Ex. 4 CBI**

Ex. 4 CBI

III. Exclusion Areas

PETERSEN RANCH SITE BANK EXCLUSION AREAS

Attached are a series of maps showing the Petersen Ranch Mitigation Bank exclusion areas. The exclusion areas within the boundary of the Petersen Ranch Mitigation Bank are summarized in the table below and a description of the proposed activities for each exclusion follows.

EXCLUSION AREAS	ACREAGE
Main lodge and existing structures at Johnson Rd entrance[1]	92
Future well sites at Ranch[2]	5
Four 4-acre areas - existing structures[3]	16
Two 4-acre areas – no existing structures[4]	8

[1]The 92-acre exclusion area located adjacent to Johnson Road contains existing infrastructure including multiple buildings (lodge, caretaker homes, garage, and storage facilities). This area will be excluded from the Conservation Easement and is depicted on the "Main Lodge" exclusion map.

[2]A 5-acre area has been excluded from the Ranch for potential future water extraction and recharge activities, shown on the "Future Well Sites" exclusion map. There are several existing wells and pipelines at the Ranch, which are shown on attached existing infrastructure map as blue lines. The Property Owner is conducting hydrological monitoring and further testing to determine what impact, if any, the extraction and recharge activities would have on the Bank Property, and will notify the IRT at a future date should it decide to pursue a water extraction and recharge program.

[3]Houses and ancillary improvements currently exist on four parcels, two of which are located in the exclusion areas of the Phase I Bank Boundary. Site A is located at grade in a grassy canyon located off the main Ranch road. Site B is located near Site A and includes fencing and a water tank. Site C has an existing old house set on an elevated site overlooking the large pond in the Phase III bank area while Site D, located on a grassy hilltop straddling the Phase II/III Bank Boundary, includes a radio tower with a shed structure.

[4]Site E is located north of Johnson Road on a knoll within the Phase I Bank Boundary, with no existing improvements, and Site F is on a flat, grassy knoll in Phase III of the Bank overlooking the large pond in Phase III. Site F historically served as a location for beehives.

DESCRIPTION OF ACTIVITIES ON THE SIX 4-ACRE EXCLUSION ACTIVITES

All six 4-acre exclusion areas are accessed via existing dirt and/or gravel roads that will be maintained in perpetuity and which are excluded from the Bank's crediting. Any existing infrastructure and buildings would be retained and these areas are designated as campsites for the Property Owner. These campsites would be maintained in their natural states. There will be no perimeter fencing. However, since these areas are excluded from the Bank's credits, the corners of each area will be marked to delineate the exclusion areas from the Bank. No open fires will be allowed. Passive uses are expected within the exclusion area and it is expected that any overnight visitors (approximately 5-6 people per site) will hike to the campsites from a drop off point at the main Lodge. These six areas are intended to help educate guests about the Bank's mitigation and conservation values and would not detract from or impact the Bank resources in any manner.

ELIZABETH LAKE SITE BANK BOUNDARY

The small 1,100 square foot exclusion area is a family cemetery that is under separate ownership and is shown as a small square on the "Elizabeth Lake" exclusion area map. The easement associated with this family cemetery requires the Property Owner to allow family members access to the plot via the existing dirt/gravel road. There have been no visitors to this family cemetery for at least 5 years.

These access roads are excluded from the Bank's credits. No other uses of this exclusion area will occur.

The larger, 2.8-acre exclusion area on Elizabeth Lake is intended as a home site for a future Property Owner. It is located on the edge of the Bank site and is accessible via the existing dirt/gravel road system that serves the cemetery. This use would not conflict with or compromise the conservation values of the Bank property, and due to the on-site presence of a third party, would help assure long-term oversight of the Bank's resources.

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Petersen Ranch
Overview

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0 1,800 3,600
Feet

Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Petersen Overview.mxd

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Main Lodge

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Feet

Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Main Lodge.mxd

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Future Well and
Pipeline Sites

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Feet

Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Future Well Sites.mxd

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Site A

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Site A.mxd

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Site B

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

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ENVIRONMENTAL CONSULTANTS

Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Site C

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Site C.mxd

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ENVIRONMENTAL CONSULTANTS

Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Site D

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Site E

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Site E.mxd

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ENVIRONMENTAL CONSULTANTS

Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Site F

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Site F.mxd

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Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Elizabeth Lake
Overview

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0 660 1,320
Feet

Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Elizabeth Lake Overview.mxd

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ENVIRONMENTAL CONSULTANTS

Petersen Ranch
Mitigation Bank

Los Angeles County,
California

Elizabeth Lake

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Map Date: April 2015
Map By: Chris Zumwalt
Base Source: USGE EROS 1' ortho

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Exclusion Areas\Elizabeth Lake.mxd

V. Crediting

Subject: Petersen Ranch

From: Tracey Brownfield - To: Allen, Aaron O SPL - Date: April 28, 2015 at 10:21 AM

Hi Aaron ,

Ex. 4 CBI

Ex. 4 CBI

Thank you, Tracey

--

Tracey Brownfield
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Ex. 4 CBI

VII. Grazing

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Petersen Ranch
Bank Property

Los Angeles County,
California

Cattle
Exclusion Areas

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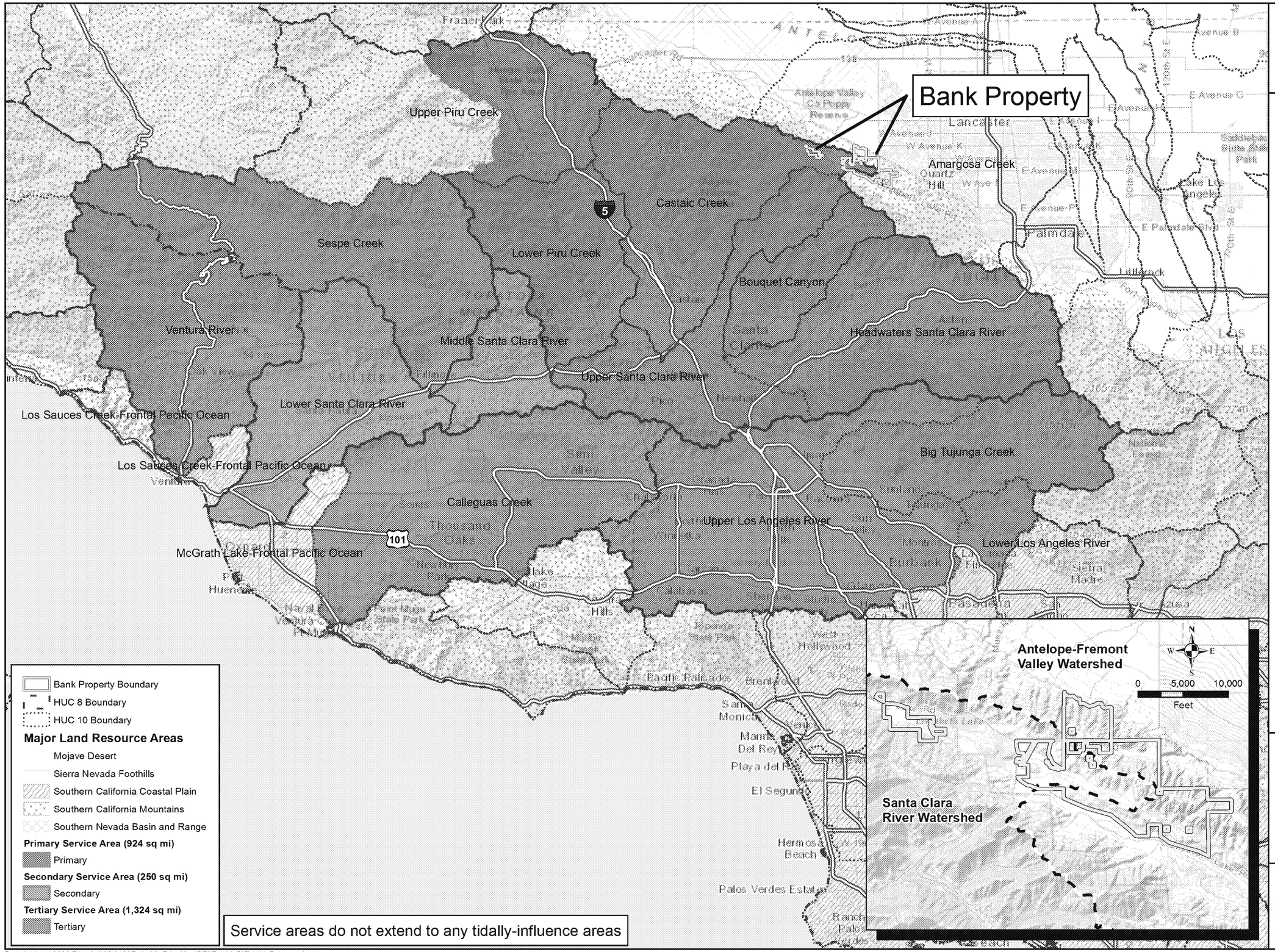
Feet

Map Date: April 2015
Map By: Chris Zumwalt
Base Source: ESRI Streaming 5/8/10

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\Misc\Grazing Map 20150429.mxd

VII. Service Area



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ENVIRONMENTAL CONSULTANTS

Petersen Ranch Mitigation Bank

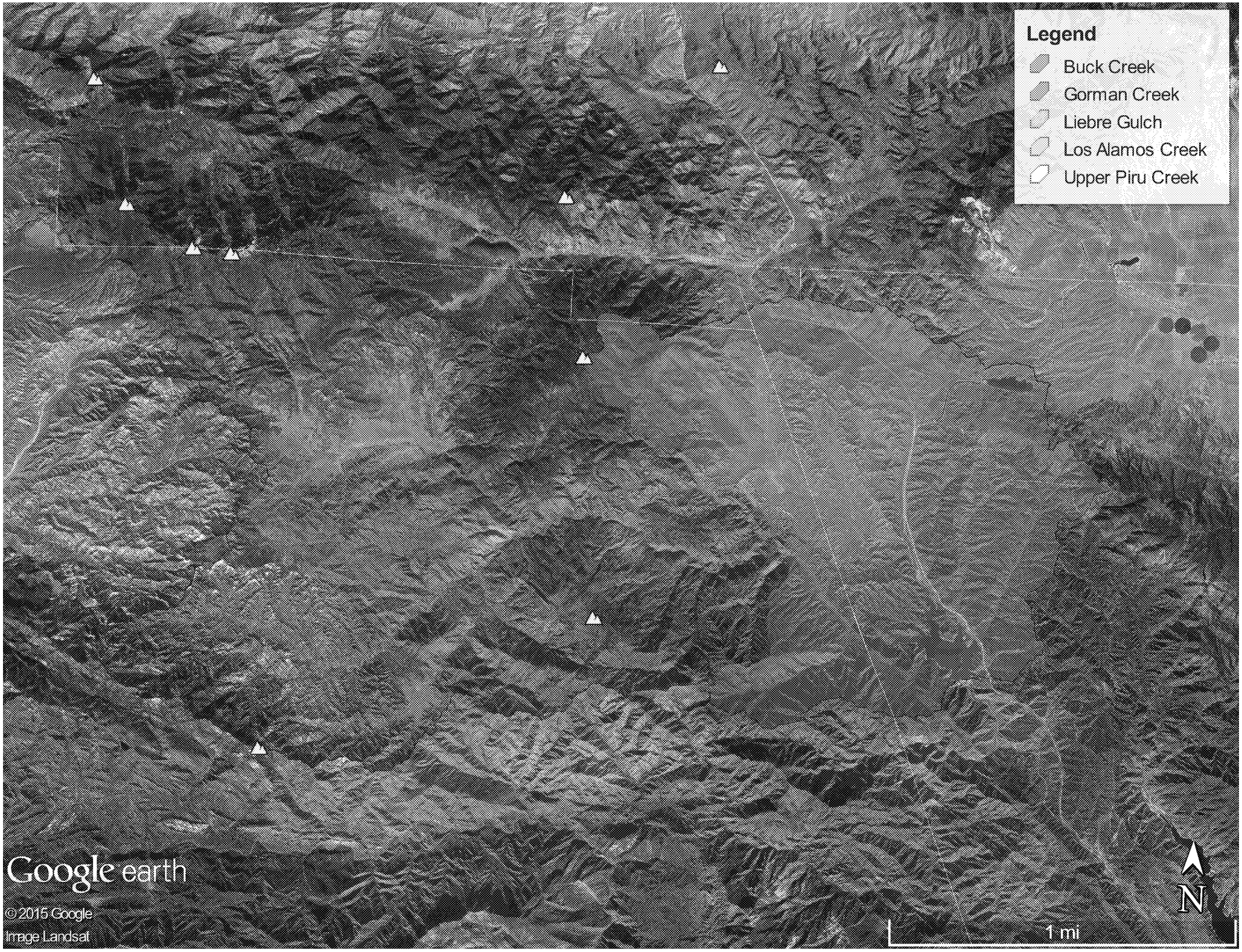
Los Angeles County, California

Exhibit B-1.1

Section 404 Service Area

Map Date: March 2015
Map By: Chris Zumwalt
Data Source: WRA, Inc.
Base Source: ESRI Streaming World Topo

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\BER\Exhibit B\Exhibit B-1.1.mxd


Legend
Buck Creek
Gorman Creek
Liebre Gulch
Los Alamos Creek
Upper Piru Creek
Google earth
© 2015 Google
Image Landsat
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IX. Elizabeth Lake Restoration Sites Biostablization

VA CONSULTING, INC.
ENGINEERS • PLANNERS • SURVEYORS
46 Discovery, Suite 250, Irvine, CA 92618
Phone (949) 474-1400 Fax (949) 261-8482

Memorandum
(FORM VA-3)

Date:	April 29, 2015	**Project:**	Petersen Ranch Mitigation Bank
To:	Ms. Tracey Brownfield	**Project No.:**	1169.01.0100
	Land Veritas Corp. 1505 Bridgeway, Suite 209 Sausalito, CA 94965		

From: Dan Villines, P.E.

Subject: Assessment of USACOE, LA District, Permit No. SPL-2014-00032-CLH

VA Consulting, Inc. (VA) has reviewed the US Army Corps of Engineers (USACOE), Los Angeles District, Permit No. SPL-2014-00032-CLH dated January 22, 2014 (Guidance Document) regarding the construction and application of bioengineered bank stabilization techniques. The content of the Guidance Document describes the use of living plants, minor grading, and other techniques to stabilize the banks of conveyances against the erosive and destabilizing effects of flow. The purpose of the review was to assess its applicability to site-specific conditions associated with the proposed restoration improvements required for the restoration of the Munz Canyon alluvial fan, Restoration Site 4, and Restoration Site 5 as defined in the Petersen Ranch Mitigation Bank Preliminary Engineering Report prepared by VA and dated January 29, 2014. All three sites are located in the Elizabeth Lake area of unincorporated Los Angeles County, California, and are components of the Petersen Ranch Mitigation Bank.

Munz Canyon Alluvial Fan Restoration

Under existing conditions, Munz Canyon is blocked by an earthen berm that has been filled in on the upstream side by sediment and debris. A breaching in the berm exists at its easterly abutment which allows flow and debris from Munz Canyon to flow directly to Elizabeth Lake through an existing erosional feature. Prior to the construction of the berm, canyon flows proceeded in a northerly direction and deposited sediment and debris on to the downstream alluvial fan. As a result of the berm's construction, and the breach that has formed, the downstream alluvial fan is presently inactive.

Offices in:
Orange County,
Inland Empire,
Palm Desert,
San Diego,
and Phoenix, AZ

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The proposed Petersen Ranch Mitigation Bank restoration intends to reestablish flows on the alluvial fan surface downstream of the Munz Canyon apex. The restoration will include sealing off the existing breach in the berm that presently conveys all of Munz Canyon's flow towards the Elizabeth Lake and away from the downstream alluvial fan surface. Additionally, the existing berm will be protected from erosion by lining the downstream face of the berm along its entire width with rock material of adequate size to resist the erosive velocities of flow passing over the lined surface. These two improvements will allow for the random distribution of flow upstream of the berm, the conveyance of random flow paths over the surface of the berm, and the continuation of randomly distributed flow downstream of the berm on the alluvial fan surface.

The proposed improvements will provide for a fully functional operation during storm events up to a 50-year Capital Flood as defined by the Los Angeles County Department of Public Works (LACDPW). LACDPW considers their 50-year Capital Flood to be equivalent to a FEMA 100-year storm per Section 4.5 of the Los Angeles County Hydrology Manual (Hydrology Manual).

Maintenance of the proposed improvements is expected to be minimal. Maintenance activities may include the occasional replacement of a dislodged stone from the proposed rock lining of the berm.

Upon review of the USACOE Guidance Document, VA has concluded that the bioengineered bank stabilization techniques described in the Guidance Document cannot be substituted for the presently proposed rock stabilization of the berm surface. The reasons for this conclusion are as follows:

1. Vegetative cover, if placed on the surface of the berm, would be subject to loss and subsequent sporadic coverage due to the infrequent water regime that is typical of alluvial fan surfaces. The supply of water to any given location on the surface of the berm is random. Vegetation, if planted as a part of a bioengineered approach, would not survive across the entire surface of the berm and the requirement that "living plants" be incorporated as a part of the stabilization process could not be fully achieved.

2. The stabilized berm surface will need to resist the erosive effects of flow passing over the downstream inclined surface. At locations where plant materials were not present (as explained in Reason No. 1 above), only the exposed sandy-silt soil would be present to resist the erosive effects of flow. VA estimates that flow velocities on the surface of the berm where vegetation is not present will be approximately 20 feet-per-second (fps) during a 50-year Capital Flood and approximately 18 fps during a 2-year storm event. Table 2-5 of the USACOE design manual, Hydraulic Design of Flood Control Channels (EM 1110-2-1601) limits flow velocities over sandy-silt materials to 2 fps. Therefore, given the anticipated sporadic vegetative cover as indicated Reason No. 1 above, flow velocities over the surface of the berm at locations that are devoid of vegetation have the potential to damage the berm surface or cause a new breach of the berm.

3. A new breach in the existing berm caused by erosion would severely jeopardize the viability of the downstream alluvial fan surface and habitat. A breach in the berm would serve to

concentrate flow along a single flow path and would prevent the random distribution of flow to other locations on the downstream alluvial fan. An example of this type of failure is present in the adjacent Lucky Canyon where a similar berm has been breached and the downstream alluvial fan is presently inactive. Therefore, sound engineered measures that propose to confidently stabilize the Munz Canyon berm are critical to the long-term viability of the alluvial fan restoration process.

In the absence of an exclusive bioengineered approach to stabilizing the surface of the berm, the presently proposed rock stabilization could be combined with a surficial vegetative treatment of the rock surface. Such an approach would include the placement of soil within the surface voids of the rock material and extending the soil depth to a point approximately 6 inches above the rock surface. The soil could then be planted with appropriate alluvial fan/drought tolerant vegetation.

While the long-term viability of superficial vegetation cannot be ensured, portions of the vegetative treatment will remain in place over an extended period of time as roots take hold and find support within the voids of the rock material. Furthermore, as earthen material is transported from the upstream canyon to the berm surface, areas of exposed rock surfaces will tend to be re-covered and potentially re-vegetated through natural processes.

Restoration Site 4

Restoration Site 4 is an alluvial fan that is situated to the east Munz Canyon. The fan originates from the apex of an unnamed canyon that is approximately 90 acres in size. Portions of the lower canyon that are situated downstream of the apex of the alluvial fan are developed with a handful of low-density ranch-style residences.

Presently, flow on the upper portions of the alluvial fan surface is mostly intercepted by a paved dead-end roadway, Joey Road, which provides access to the existing residences. Once flow is intercepted by Joey Road it is prevented from re-entering the alluvial fan. As such, the Site 4 alluvial fan is presently inactive.

The restoration of the Site 4 alluvial fan will include modifications to Joey Road at the location where alluvial fan flows are presently intercepted and diverted. The modifications will include enhancing the performance of the existing westerly gutter of the road in order to promote the interception of canyon flow. The gutter will be sloped to a proposed collector channel that will discharge into a distribution channel leading to the alluvial fan. The distribution channel will outlet into a graded area that will allow flows to randomly proceed downstream over the alluvial fan surface.

The proposed improvements will function adequately during all storm events up to and including a 50-year Capital Flood as defined by the LACDPW. LACDPW considers their 50-year Capital Flood to be equivalent to a FEMA 100-year storm per Section 4.5 of the Hydrology Manual.

Maintenance of the proposed improvements is expected to be minimal. Roadway improvements will need to consider periodic repairs due to vehicular traffic damage. The lined collector channel will need undergo periodic inspection and possible crack repair. And the rock-lined distribution channel may need to have any dislodged rocks replaced on an as-needed basis.

Upon review of the USACOE Guidance Document, VA has concluded that the bioengineered bank stabilization techniques described in the Guidance Document cannot be substituted for the presently proposed roadway modifications and conveyance channels that are required to restore flow to the inactive alluvial fan. The reasons for this conclusion are as follows:

1. The proposed modifications to Joey Road will require that the portions of the roadway being modified be replaced in-kind with a hardened drivable surface capable of supporting vehicular traffic loads.

2. Once flows are collected by the proposed modifications to Joey Road, they need to be safely conveyed to the location of the existing alluvial fan. These flows will be concentrated and traveling at an estimated minimum velocity of approximately 14 fps in both the collector channel and rock-lined distribution channel. Table 2-5 of the USACOE design manual, Hydraulic Design of Flood Control Channels (EM 1110-2-1601) limits flow velocities in vegetated channels to a maximum of 8 fps under the best of vegetative conditions. As such, bioengineered stabilization techniques cannot be safely used for these conveyances.

In the absence of an exclusive bioengineered approach to the proposed improvements at Site 4, the presently proposed rock-lined distribution channel could be combined with a surficial vegetative treatment. Such an approach would include the placement of soil within the surface voids of the rock material and extending the soil depth to a point approximately 6 inches above the rock surface. The soil could then be planted with appropriate drought tolerant vegetation.

While the long-term viability of superficial vegetation cannot be ensured, portions of the vegetative treatment will remain in place over an extended period of time as roots take hold and find support within the voids of the rock material. Furthermore, as earthen material is transported from the upstream canyon to the distribution channel, areas of exposed rock surfaces in the channel will tend to be re-covered and potentially re-vegetated through natural processes.

Restoration Site 5

Under existing conditions, flow from the canyon that is tributary to Restoration Site 4 is intercepted by Joey Road and is conveyed within the roadway section to the location where Joey Road changes from a north-south alignment to an east-west alignment. At this location flow is either partially intercepted by an existing storm drain inlet or overflows the inlet. Both the storm drain flow from the inlet and the inlet overflow discharge into a natural conveyance that has experienced significant erosion. The natural conveyance extends for a distance of approximately 450 feet downstream to the bank areas of Lake Elizabeth. Site 5 will include the restoration of eroded natural conveyance.

The proposed restoration of Site 5 will include the repair and armoring of the existing storm drain outlet that discharges storm water into the site. Repairs will include the infilling of the existing scour-hole that has formed at the outlet. Once filled, the outlet area will be lined with riprap to protect it against future erosion. Furthermore, the interception and redistribution of alluvial fan flows to Site 4 (see above) will significantly reduce flows to the site and reduce the overall erosion potential. It is important to note that the restoration of Site 5 should not proceed in the absence of the restoration of Site 4.

Downstream of the storm drain outlet, the existing erosion in the conveyance will be filled. As a result, the flow conveyance section will be widened. Plantings will be established throughout the widened conveyance section to promote wetland type vegetation and habitat and provide protection against future erosion.

The proposed improvements will provide for a fully functional operation during storm events up to a 50-year Capital Flood as defined by the LACDPW. LACDPW considers their 50-year Capital Flood to be equivalent to a FEMA 100-year storm per Section 4.5 of the Hydrology Manual.

Maintenance of the proposed improvements is expected to be minimal. Rocks that are occasionally dislodged in the proposed riprap lined area located at the storm drain outlet may need to be occasionally replaced. Downstream of the rock lined area, periodic monitoring should be performed to identify areas where localized rutting could appear due to an uncontrolled loss of vegetative material by natural causes. Losses in vegetation should be replaced.

The use of bioengineered stabilization technics are warranted and presently proposed for the restoration areas located downstream of the storm drain outlet area. It is anticipated that the reduction of flow associated with the Site 4 improvements in combination with the energy dissipation provided by the proposed riprap placement at the storm drain outlet will reduce flow velocities to non-erosive levels through the bio-stabilized restoration area.

The use of bioengineered stabilization techniques at the storm drain outlet is not recommended. Flows discharging from the storm drain are anticipated to exceed 8 fps, which is the velocity limit for vegetated channels as specified in Table 2-5 of EM 1110-2-1601. Additionally, flows exiting the storm drain will be highly confined by the narrow width of the upstream pipe. The proposed riprap lining in the immediate vicinity of the of the storm drain outlet will serve to distribute flow to the total width of the downstream restoration area as well as reduce flow velocities to levels that are compatible with the proposed bio-stabilized conveyance.

Please do not hesitate to contact me with any questions at (949) 474-1400, extension 224 or by e-mail at dvillines@vaconsultinginc.com.

Offices in:
Orange County,
Inland Empire,
Palm Desert,
San Diego,
and Phoenix, AZ

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