



US Army Corps
of Engineers®
San Francisco District

SAN FRANCISCO DISTRICT

Regulatory Division
1455 Market Street, 16th Floor
San Francisco, CA 94103-1398

PUBLIC NOTICE

PROJECT: Alexander Valley In-Stream Mining

PUBLIC NOTICE NUMBER: **2010-00343N**

PUBLIC NOTICE DATE: March 26, 2013

COMMENTS DUE DATE: April 26, 2013

PERMIT MANAGER: Roberta Morganstern

TELEPHONE: 415-503-6782

E-MAIL: Roberta.A.Morganstern @usace.army.mil

1. INTRODUCTION: Mr. John Perry, representing Syar Industries, Inc. (contact: Jennifer Gomez 707-259-5826) has submitted a new application to the U.S. Army Corps of Engineers (USACE), San Francisco District, for a Department of the Army Letter of Permission (LOP) procedure to annually extract up to 350,000 tons of gravel from waters of the U.S., the Russian River in lower Alexander Valley. The extraction amount remains the same as the previous submission in 2010, 350,000 tons of gravel extracted annually. It is the extraction area that has been reduced from 15 bars to 3 bars. Figure 1 - 1 shows the project location. Figure 1-2 identifies the 3 bars the applicant proposes to mine during the ten year duration of the permit. Alcoves, oxbows and plantings are incorporated into some of the extraction areas to minimize impacts and/or improve aquatic resource function. The summary table provides total acreages and amounts of gravel proposed for extraction, not to exceed 350,000 tons in any season. The dynamic functioning of the River dictates that over the life of the LOP procedure, final design plans, cross sections, fill amounts and mitigation be approved annually. This Department of the Army LOP program application is being processed pursuant to the provisions of (Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq.*)).

2. PROPOSED PROJECT:

Project Site Location: The project area is River Mile 53 to 55 of the Russian River. Gill Creek defines the northern boundary and one gravel bar south of the Geyserville Bridge is the southern limit of extraction. Coordinates for Bars 8 & 9 are longitude -122°53'46"W, latitude 38°42'44" N, for Bar 13, longitude -122°54'49"W, latitude 38°43'27"N.

Project Site Description: Syar Industries, Inc. proposes to mine gravel from bars in the Russian River in Sonoma County on property owned by the company. The headwaters of the River begin in the hills north of Ukiah and flow south into the Alexander Valley where the River occupies a portion of the Valley floor. Alexander Valley is surrounded on both sides by hills, the Coast Range to the west and Mayacamas, to the east. Agriculture, mostly vineyards, occupies land on either side of the River. The project area is within the southern portion of the Alexander Valley. The River continues beyond the project area, flowing south to Healdsburg before turning west to discharge into the Pacific Ocean. An area of 1,485 square miles in Mendocino, Sonoma and Lake Counties contributes drainage to River flow. Regional geology consists of mixtures of rock types and is influenced by on-going tectonic activity. Slopes adjacent to the River north of Alexander Valley contain steep terrain and are easily weathered by "flashy" seasonal precipitation. These conditions can deliver large volumes of sediment to the Russian River. Forestry practices and development have increased areas of easily weathered slopes by removing stabilizing vegetation. Gravel has been mined from the river for close to 100 years. Historically, the River occupied a wider portion of the Valley floor which now contains large amounts of gravel. To increase crop land, agriculture has confined and narrowed the channel, maximizing use of fertile soils deposited next to the river during high flow and flood events. Restricting the ability of the River to "meander" disturbs natural processes and equilibrium. Floodplains which previously performed flood control services are now disengaged from the River.

Project Description: Figure 1-2 provides an overview of the project location with the three bars proposed for mining identified. Figures 1-3A, B, C, located at the end

of this notice, provide bar cross sections, with mining excavation and accompanying enhancements. Specific details will be approved annually. Annual review can include changes caused by flow variability and mining impacts. The applicant proposes to extract a maximum of 350,000 tons of sand and gravel per year including construction of alcoves and oxbows. The **Summary of Gravel Bar Volumes** table identifies the bar, project component, total volume of the bar compared with volume extracted from the proposed surface area. The plan avoids vegetated areas. Willows and cottonwoods are the dominant woody vegetation on the bars and would remain undisturbed. Large woody debris would be relocated. Extraction of gravel would follow “horseshoe mining” methods. A schematic representation of “horseshoe mining” is outlined in Figure 5. The “horseshoe” refers to two lateral and head of bar buffers that will remain following extraction. Studies suggest the gravel removed from the central “bar body” is storage gravel. The central “bar body” influences river dynamics during very high flow events when the entire bar is reconfigured into the natural, stable shape. Only one bar would be mined at a time but all three may be mined within a season. Each season will include extraction of a previously agreed upon habitat feature, generally located near current extraction activities. Annual plan approvals provide the opportunity to address changes resulting from previous extraction. Annual review would offer the opportunity to detail the changes that occur. The bars proposed for extraction cover a total area of 37.3 acres. Gravel would be removed from interior storage of the bar. The method would preserve a minimum of 1/3 the distance from the start or upstream end (head) of the bar. The head of the bar remains in place and side bar buffers remain. A minimum of 20% channel width would remain as a lateral buffer. Enough perimeter material must remain to preserve the high point on the bar during a 2 year event or larger. Defined by these parameters, gravel would be removed to 12 inches above low flow elevation which is shown on each plan and which would be confirmed each year. The excavated area would be re-graded to parallel and outlet to the active channel. The method preserves undisturbed gravel bar buffers on three sides of the excavated area. Since an initial application submitted in 2007, Syar has been working closely with National Marine Fisheries Service (NMFS) and has incorporated many of NMFS’s recommended extraction methods. Maintaining the apex at the head of bar preserves geomorphology necessary for successful salmonid reproduction. Annual monitoring will confirm that particle sorting and riffles and pools remain functional.

Annual design approval will ensure elevations meet requirements to function properly.

In addition to extraction, habitat construction and vegetation planting, the applicant requests authorization to discharge 530 cubic yards of fill annually, to a maximum area of 0.25 acres of jurisdictional waters and wetlands. The fill discharge acts as approach ramps and supports for placement of temporary bridges. Temporary bridges are used for hauling material harvested during mining activities. A maximum of 4 temporary crossings with associated fill may be constructed each year. All machinery and access structures would be removed at the end of the mining season each year and re-constructed at the beginning of the next season.

An annual technical review by the regulatory agencies (Corps, CDFW, RWQCB) and Sonoma County would require monitoring of extraction areas and annual agency approval prior to the next season extraction.

Basic Project Purpose: The basic project purpose comprises the fundamental, essential, or irreducible purpose of the project, and is used by USACE to determine whether the project is water dependent. The basic project purpose is to supply gravel.

Overall Project Purpose: The overall project purpose serves as the basis for the Section 404(b)(1) alternatives analysis, and is determined by refining the project purpose in a manner that specifically describes the applicant's goals, while allowing a reasonable range of alternatives to be analyzed. The overall project purpose is to supply aggregate for construction, development and infrastructure maintenance in Sonoma County on a sustainable basis.

Project Need: Department of Conservation within California Geological Survey publishes maps projecting 50 year demand and permitted aggregate resources. Cost of aggregate varies, influenced by fuel and transport costs. Infrastructure, such as roads, bridges and buildings, require aggregate for maintenance. Sonoma County growth and new development depend on a continuing source of gravel.

Market analysis supports the need for aggregate in Sonoma County. The County maintains production reports which indicate increasing demand despite the current economic downturn. The quality of aggregate varies depending on its source. In stream gravel is excellent in terms of shape and purity. Alternative sources, project configurations, amounts, and methods for

obtaining high quality aggregate will be reviewed to satisfy requirements of National Environmental Policy Act (NEPA) in Appendix B, 33 C.F.R. Part 325 and 40 C.F.R. Parts 1500-1508. Lower quality aggregate can be excavated from upland mines, and used for road construction and infrastructure. Portland Cement Concrete, a potential use for extracted gravel is a mix of Portland cement with coarse and fine aggregate which becomes coated with a paste that forms after the addition of water. Hydration begins a chemical reaction which hardens the mixture forming a basic building block for construction of almost everything we build. Aggregate, which makes up 60 – 75% of the volume, needs to be clean, hard, strong and devoid of coatings. In-stream aggregate is an efficient source, meaning it is easily obtained.

Project Impacts: The applicant proposes to extract a maximum of 350,000 tons of sand and gravel per year from interior gravel bar storage deposits outlined in Figures 1-3, A through C. Gravel removed during construction of oxbows and alcoves would be included in the annual 350,000 ton harvest volume.

Only one bar would be mined at a time but all three bars may be mined within a season. The bar area designated for extraction covers 37.3 acres. In addition to extraction and habitat construction, the applicant requests authorization to erect temporary access ramps for hauling to and from the gravel bars during mining activities. A maximum of 4 crossings would be installed in a given annual mining season. Approved alcove or oxbow and adjacent wetlands would be constructed in close proximity to extraction activities. Annual approval for final design plans allows all aspects of the project to adjust to unforeseen changes. Annual monitoring would track salmonid habitat function, bank stability and elevations for successful re-vegetation. Although gravel extraction techniques would remove storage aggregate, indirect impacts may disrupt sediment transport within the River. Therefore, the Corps will also be examining the potential effects of the project on the overall stability of the Russian River system, within our scope of analysis. Potential impacts from gravel extraction and habitat construction need to be separated from impacts resulting from past land use decisions.

Proposed Mitigation: The applicant has proposed to avoid impacts to Waters of the U.S. by maintaining existing vegetation. The applicant has proposed to minimize impacts through NMFS-designed extraction techniques, replacement of large woody debris, and laying

back steep stream banks. The applicant has proposed compensatory mitigation through aggressive removal of giant reed (*Arundo donax*) followed by appropriate native species re-vegetation designed to restore aquatic functions which may be impacted by the project. Annual monitoring of topography and ensuring that the compensatory mitigation sites are meeting Corps-approved performance standards will allow the quality and quantity of enhancement to be adjusted in response to impacts resulting from gravel extraction. Adaptive management would allow oversight agencies opportunities to guide mitigation based on the response of the River and its flood plain.

As part of the Corps review process we will determine direct, indirect and cumulative impacts, and come to agreement about compensatory mitigation to ensure it adequately addresses the impacts.

Project Alternatives: The applicant has submitted an alternatives analysis described below. The Corps will complete an independent, formal analysis of alternatives to satisfy Section 404 (b)(1) guidelines.

The No Project Alternative would require an outside source of gravel. Department of Conservation–California Geological Survey prepares and publishes 50 year aggregate projections. The most recent projection, published in 2005, includes resource locations and permitting status. The projection for the North San Francisco Bay study area which contains the project, indicate permitted resources are well below projected needs.

Alternative 2 describes gravel extraction using Effective Discharge Stage Height or measurements of flow from in stream gauges to define the limits of skimming. The extraction boundaries are designed to remain above summer low flow elevation without consideration of the morphology of the gravel bar and sediment sorting necessary for salmonid lifecycle needs.

Alternative 3 is terrace mining which is currently not approved by Sonoma County Mining Regulations. Terrace mining is removal of gravel from pits excavated in uplands to depths reaching as much as 60 feet. The pits can pollute both surface and ground water and have the potential to convert to floodplain pits susceptible to capture by main river flow. During high flows both the river and fish can be carried into the pits. Once flow decreases, the pit no longer maintains a connection with the river, the water warms and the trapped fish would die.

Examples of terrace mining in the Middle Reach can be observed at Sonoma County Riverfront Park.

Active upland sites do exist which remove gravel outside of river boundaries. Hard rock quarries can supply aggregate. The quality of material does not consistently meet the standard required for manufacture of Portland cement. However, it may be appropriate for other uses.

3. STATE AND LOCAL APPROVALS:

Water Quality Certification: State water quality certification or a waiver is a prerequisite for the issuance of a Department of the Army Permit to conduct any activity which may result in a fill or pollutant discharge into waters of the United States, pursuant to Section 401 of the Clean Water Act of 1972, as amended (33 U.S.C. Part 1341 *et seq.*). No Department of the Army Permit would be issued until the applicant obtains the required certification or a waiver of certification. A waiver can be explicit, or it may be presumed, if the RWQCB fails or refuses to act on a complete application for water quality certification within 60 days of receipt, unless the District Engineer determines a shorter or longer period is a reasonable time for the RWQCB to act.

Water quality issues should be directed to the Executive Officer, California Regional Water Quality Control Board, North Coast Region, 5550 Skyline Boulevard, Suite A, Santa Rosa, California 95403.

Coastal Zone Management: Section 307(c) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. § 1456(c) *et seq.*), requires a non-Federal applicant seeking a federal license or permit to conduct any activity occurring in or affecting the coastal zone to obtain a Consistency Certification that indicates the activity conforms with the State's coastal zone management program. Generally, no federal license or permit would be granted until the appropriate State agency has issued a Consistency Certification or has waived its right to do so. The project does not occur in the coastal zone, and a *preliminary* review by USACE indicates the project would not likely affect coastal zone resources. This presumption of affect, however, remains subject to a final determination.

Other Local Approvals: The applicant has applied for the following governmental authorizations for the project:

County of Sonoma Board of Supervisors is responsible for certifying the EIR, approving amendments to the

Aggregate Resource Mining Plan, County Mining and Reclamation Ordinance, and approving a use permit, a reclamation plan and rolling permit.

The County Permit and Resource Department would review annual plans and reclamation activities along with other members of the Scientific Review Committee and agency representatives.

California Department of Fish and Wildlife would oversee the project via a streambed alteration agreement. Section 2080.1 requirements would be considered.

California Department of Conservation would review the reclamation plan along with financial assurance cost estimates.

4. COMPLIANCE WITH VARIOUS FEDERAL LAWS:

National Environmental Policy Act (NEPA): At the conclusion of the public comment period, USACE would assess the environmental impacts of the project in accordance with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4347), the Council on Environmental Quality's Regulations at 40 C.F.R. Parts 1500-1508, and USACE Regulations at 33 C.F.R. Part 325. The final NEPA analysis would normally address the direct, indirect, and cumulative impacts that result from regulated activities within the jurisdiction of USACE and other non-regulated activities USACE determines to be within its purview of Federal control and responsibility to justify an expanded scope of analysis for NEPA purposes. The final NEPA analysis would be incorporated in the decision documentation that provides the rationale for issuing or denying a Department of the Army Permit for the project. The final NEPA analysis and supporting documentation would be on file with the San Francisco District, Regulatory Division.

Endangered Species Act (ESA): Section 7(a)(2) of the ESA of 1973, as amended (16 U.S.C. § 1531 *et seq.*), requires Federal agencies to consult with either the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) to insure actions authorized, funded, or undertaken by the agency are not likely to jeopardize the continued existence of any Federally-listed species or result in the adverse modification of designated critical habitat. As the Federal lead agency for this project, USACE has conducted a review of the California Natural Diversity

Data Base, digital maps prepared by USFWS and NMFS depicting critical habitat, and other information provided by the applicant, to determine the presence or absence of such species and critical habitat in the project area. Based on this review, USACE has made a preliminary determination that the following Federally-listed species and designated critical habitat are present at the project location or in its vicinity, and may be affected by project implementation. The project reach of the Russian River contains Federally-listed endangered Steelhead (*Oncorhynchus mykiss*, Coho salmon (*Oncorhynchus kisutch*, and threatened Chinook salmon (*Oncorhynchus tshawytscha*). Designated critical habitat consists of the water, streambed, and the adjacent riparian zone. The overall project could potentially induce changes in channel morphology, including the loss of pool and riffle habitat and degradation of the riverbed; promote the stranding of salmonids on the affected bars; result in direct mortality of salmonids during installation of the bridge crossings and relocation of juvenile salmonids from the excavated pools; cause the loss of riparian vegetation and large wood debris; and generate turbidity and downstream sedimentation, the deposition of which would likely contribute to the degradation of spawning habitat. To address project related impacts to these species and designated critical habitat, designated May 5, 1999 (64 FR24049), USACE initiated formal consultation with NMFS on January 30, 2013, pursuant to Section 7(a) of the Act. The "River Enhancement Activities" prepared by Swanson Hydrology + Geomorphology in August 2008 and submitted as part of the application contains activities agreed to by the applicant to offset the historic misuse of the River. The referenced plan includes monitoring elements and performance standards considered as part of the project which would be included as part of the authorization. Any required consultation must be concluded prior to the issuance of a Department of the Army Permit for the project.

Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA): Section 305(b)(2) of the MSFCMA of 1966, as amended (16 U.S.C. §1801 *et seq.*), requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) on all proposed actions authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. EFH is designated only for those species managed under a Federal Fisheries Management Plan (FMP), such as the *Pacific Groundfish FMP*, the *Coastal Pelagics FMP*, and the *Pacific Coast Salmon*

FMP. As the Federal lead agency for this project, USACE has conducted a review of digital maps prepared by NMFS depicting EFH to determine the presence or absence of EFH in the project area. Based on this review, USACE has made a *preliminary* determination that EFH is present at the project location or in its vicinity, and that the critical elements of EFH may be adversely affected by project implementation. To address project related impacts to EFH, USACE would initiate consultation with NMFS, pursuant to Section 305(5)(b)(2) of the Act. Any required consultation must be concluded prior to the issuance of a Department of the Army Permit for the project.

Marine Protection, Research, and Sanctuaries Act (MPRSA): Section 302 of the MPRS of 1972, as amended (16 U.S.C. § 1432 *et seq.*), authorizes the Secretary of Commerce, in part, to designate areas of ocean waters, such as the Cordell Bank, Gulf of the Farallones, and Monterey Bay, as National Marine Sanctuaries for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values. After such designation, activities in sanctuary waters authorized under other authorities are valid only if the Secretary of Commerce certifies that the activities are consistent with Title III of the Act. No Department of the Army Permit would be issued until the applicant obtains the required certification or permit. The project does not occur in sanctuary waters, and a *preliminary* review by USACE indicates the project would not likely affect sanctuary resources. This presumption of effect, however, remains subject to a final determination by the Secretary of Commerce, or his designee.

National Historic Preservation Act (NHPA): Section 106 of the NHPA of 1966, as amended (16 U.S.C. § 470 *et seq.*), requires Federal agencies to consult with the appropriate State Historic Preservation Officer to take into account the effects of their undertakings on historic properties listed in or eligible for listing in the *National Register of Historic Places*. Section 106 of the Act further requires Federal agencies to consult with the appropriate Tribal Historic Preservation Officer or any Indian tribe to take into account the effects of their undertakings on historic properties, including traditional cultural properties, trust resources, and sacred sites, to which Indian tribes attach historic, religious, and cultural significance. As the Federal lead agency for this undertaking, USACE has conducted a review of latest published version of the *National Register of Historic Places*, survey information on file with various city and county municipalities, and other information provided by

the applicant, to determine the presence or absence of historic and archaeological resources within the permit area. Based on this review, USACE has made a *preliminary* determination that historic or archaeological resources are not likely to be present in the permit area, and that the project either has no potential to cause effects to these resources or has no effect to these resources. USACE would render a final determination on the need for consultation at the close of the comment period, taking into account any comments provided by the State Historic Preservation Officer, the Tribal Historic Preservation Officer, the Advisory Council on Historic Preservation, and Native American Nations or other tribal governments. If unrecorded archaeological resources are discovered during project implementation, those operations affecting such resources would be temporarily suspended until USACE concludes Section 106 consultation with the State Historic Preservation Officer or the Tribal Historic Preservation Officer to take into account any project related impacts to those resources.

5. COMPLIANCE WITH THE SECTION

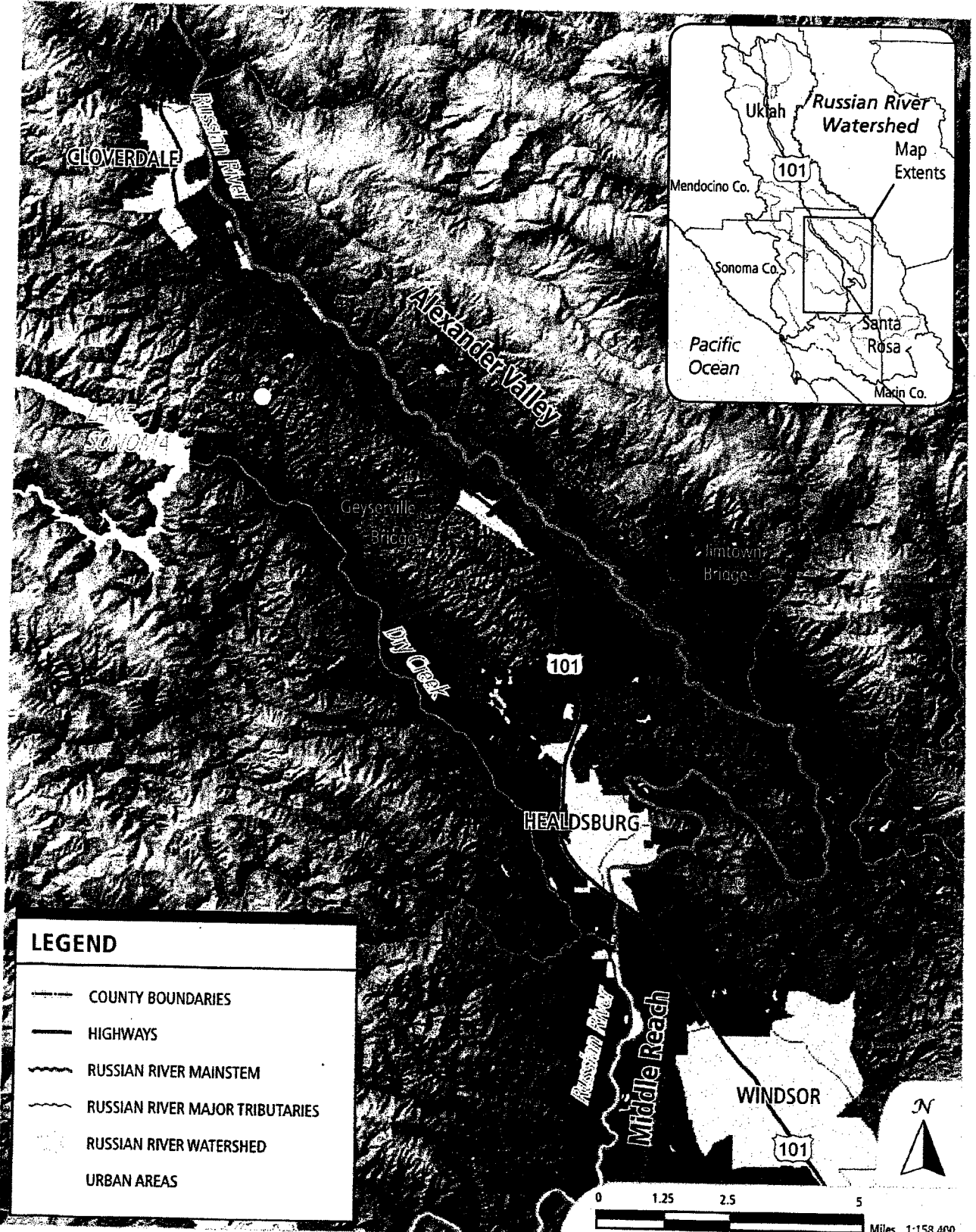
404(b)(1) GUIDELINES: Projects resulting in discharges of dredged or fill material into waters of the United States must comply with the Guidelines promulgated by the Administrator of the Environmental Protection Agency under Section 404(b) of the Clean Water Act (33 U.S.C. § 1344(b)). An evaluation pursuant to the Guidelines indicates the project is not water dependent. This conclusion raises the (rebuttable) presumption of the availability of a less environmentally damaging practicable alternative to the project that does not require the discharge of dredged or fill material into special aquatic sites. The applicant has submitted an analysis of project alternatives which is being reviewed by USACE.

6. PUBLIC INTEREST EVALUTION: The decision on whether to issue a Department of the Army Permit would be based on an evaluation of the probable impacts, including cumulative impacts, of the project and its intended use on the public interest. Evaluation of the probable impacts requires a careful weighing of the public interest factors relevant in each particular case. The benefits that may accrue from the project must be balanced against any reasonably foreseeable detriments of project implementation. The decision on permit issuance would, therefore, reflect the national concern for both protection and utilization of important resources. Public interest factors which may be relevant to the decision process include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards,

floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

7. CONSIDERATION OF COMMENTS: USACE is soliciting comments from the public; Federal, State and local agencies and officials; Native American Nations or other tribal governments; and other interested parties in order to consider and evaluate the impacts of the project. All comments received by USACE would be considered in the decision on whether to issue, modify, condition, or deny a Department of the Army Permit for the project. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, and other environmental or public interest factors addressed in a final environmental assessment or environmental impact statement. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the project.

8. SUBMITTING COMMENTS: During the specified comment period, interested parties may submit written comments to Roberta Morganstern San Francisco District, Regulatory Division, 1455 Market Street, 16th Floor, San Francisco, California 94103-1398; comment letters should cite the project name, applicant name, and public notice number to facilitate review by the Regulatory Permit Manager. Comments may include a request for a public hearing on the project prior to a determination on the Department of the Army permit application; such requests shall state, with particularity, the reasons for holding a public hearing. All substantive comments would be forwarded to the applicant for resolution or rebuttal. Additional project information or details on any subsequent project modification of a minor nature may be obtained from the applicant and/or agent, or by contacting the Regulatory Permit Manager by telephone or e-mail cited in the public notice letterhead. An electronic version of this public notice may be viewed under the tab on the USACE website: <http://www.spn.usace.army.mil/Missions/Regulatory.aspx>.



01250011 - 01250011 - GEOGRAPHIC
 500 Seabright Ave, Suite 202 Santa Cruz, CA 95062
 PH 831.427.0288 FAX 831.427.0472

FIGURE 1: PROJECT SITE VICINITY MAP.

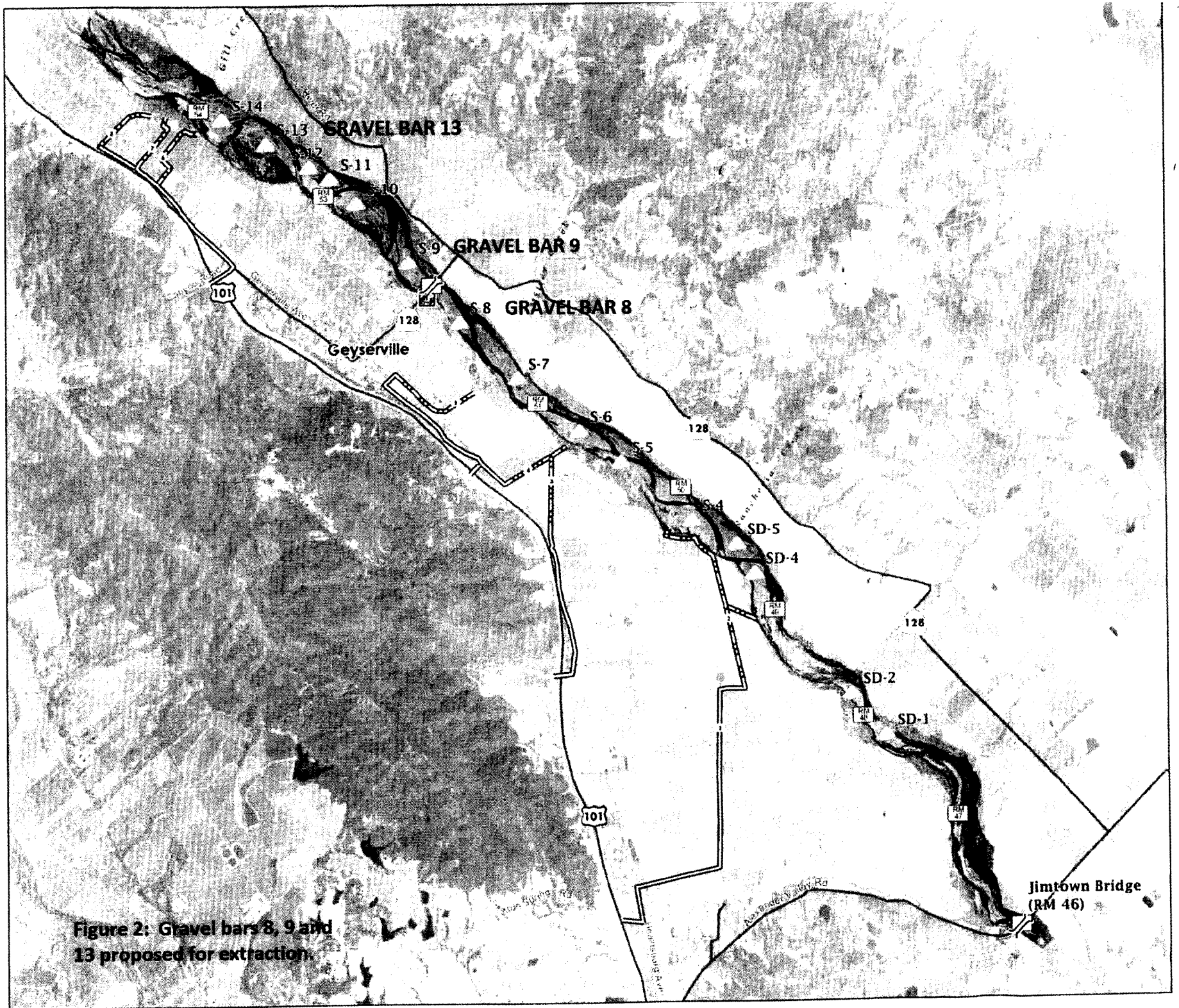
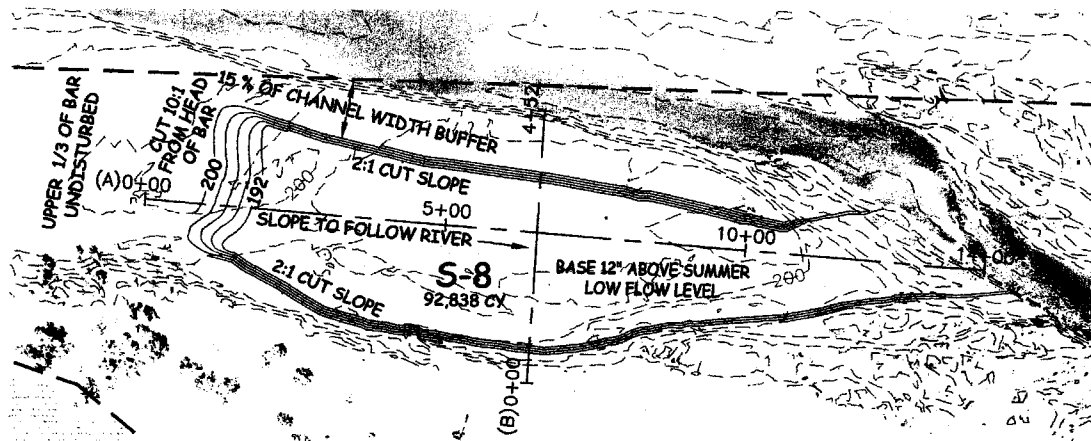
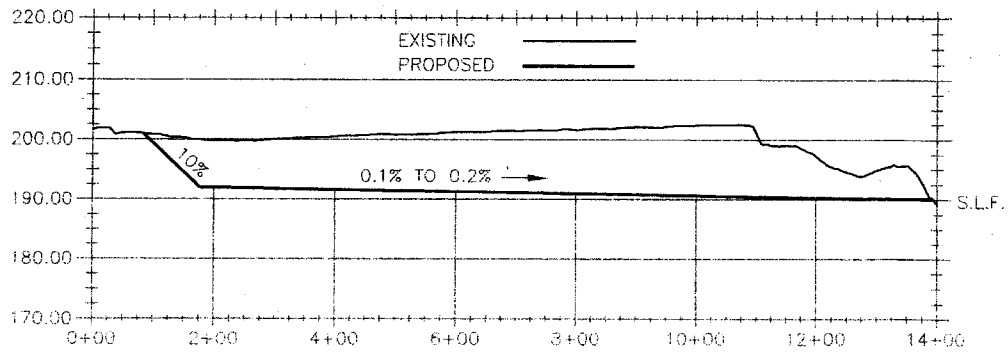


Figure 2: Gravel bars 8, 9 and 13 proposed for extraction.



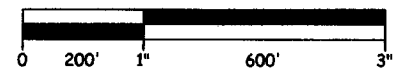
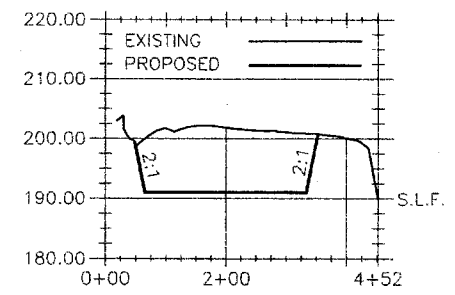
PROFILE S-8 A



LEGEND

- PROPERTY LINE ———
- EXISTING GROUND - - - - -
- PROPOSED GRADING ———
- SUMMER LOW FLOW S.L.F.

PROFILE S-8 B



YOLANO ENGINEER'S INC.
 2301 NAPA-VALLEJO HIGHWAY
 NAPA, CALIFORNIA 94558

RUSSIAN RIVER
 ALEXANDER VALLEY

BAR MINING
 PLAN

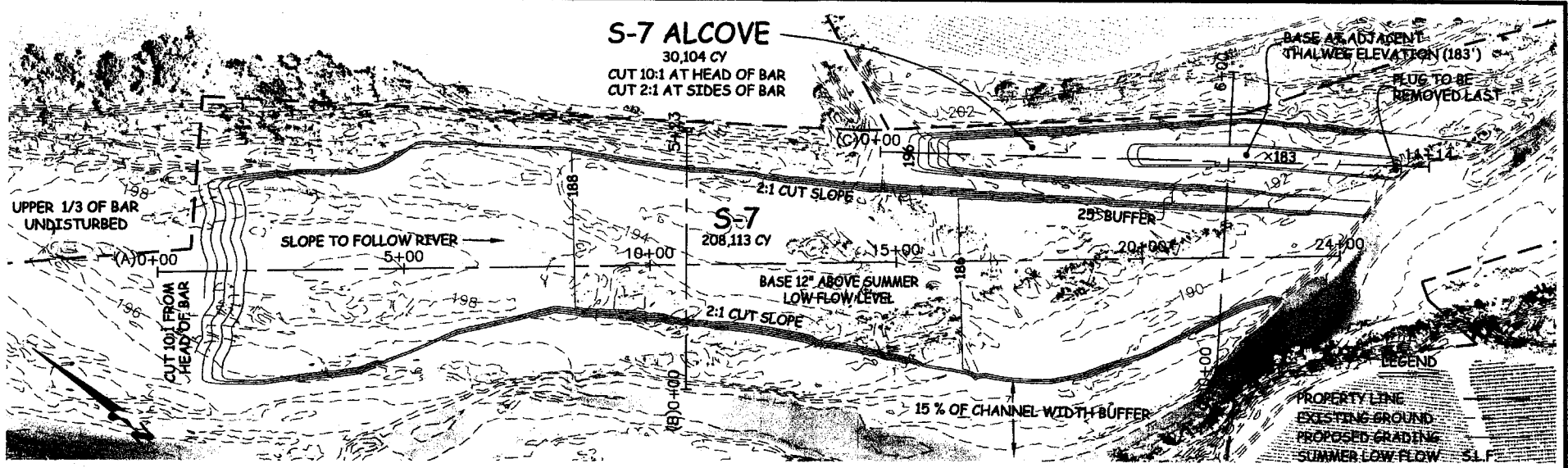
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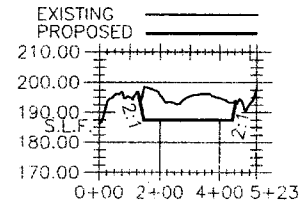
FIGURE 3

S-7 ALCOVE

30,104 CY
 CUT 10:1 AT HEAD OF BAR
 CUT 2:1 AT SIDES OF BAR



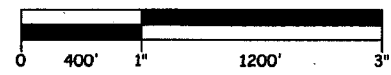
PROFILE S-7 B



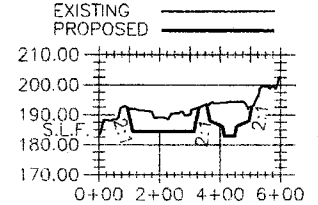
PLAN SCALE



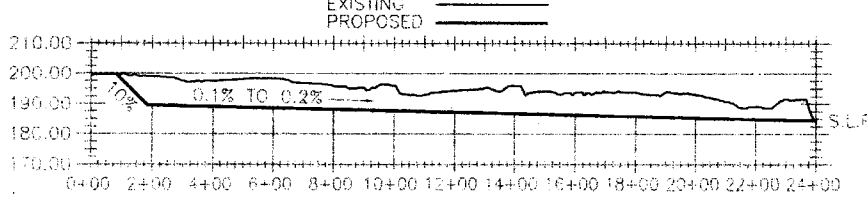
PROFILE SCALE



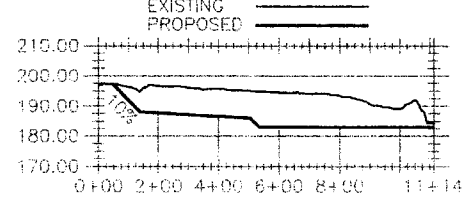
PROFILE S-7 D



PROFILE S-7 A



PROFILE S-7 C



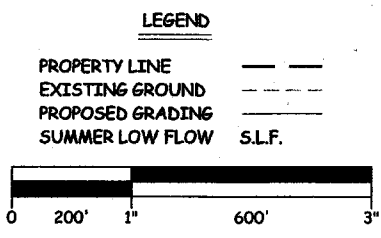
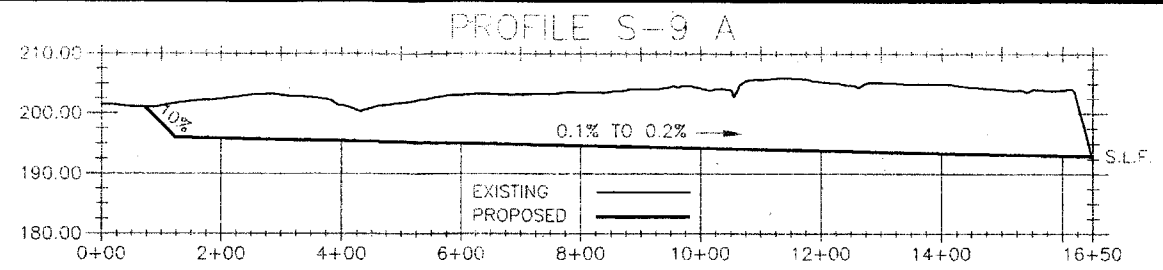
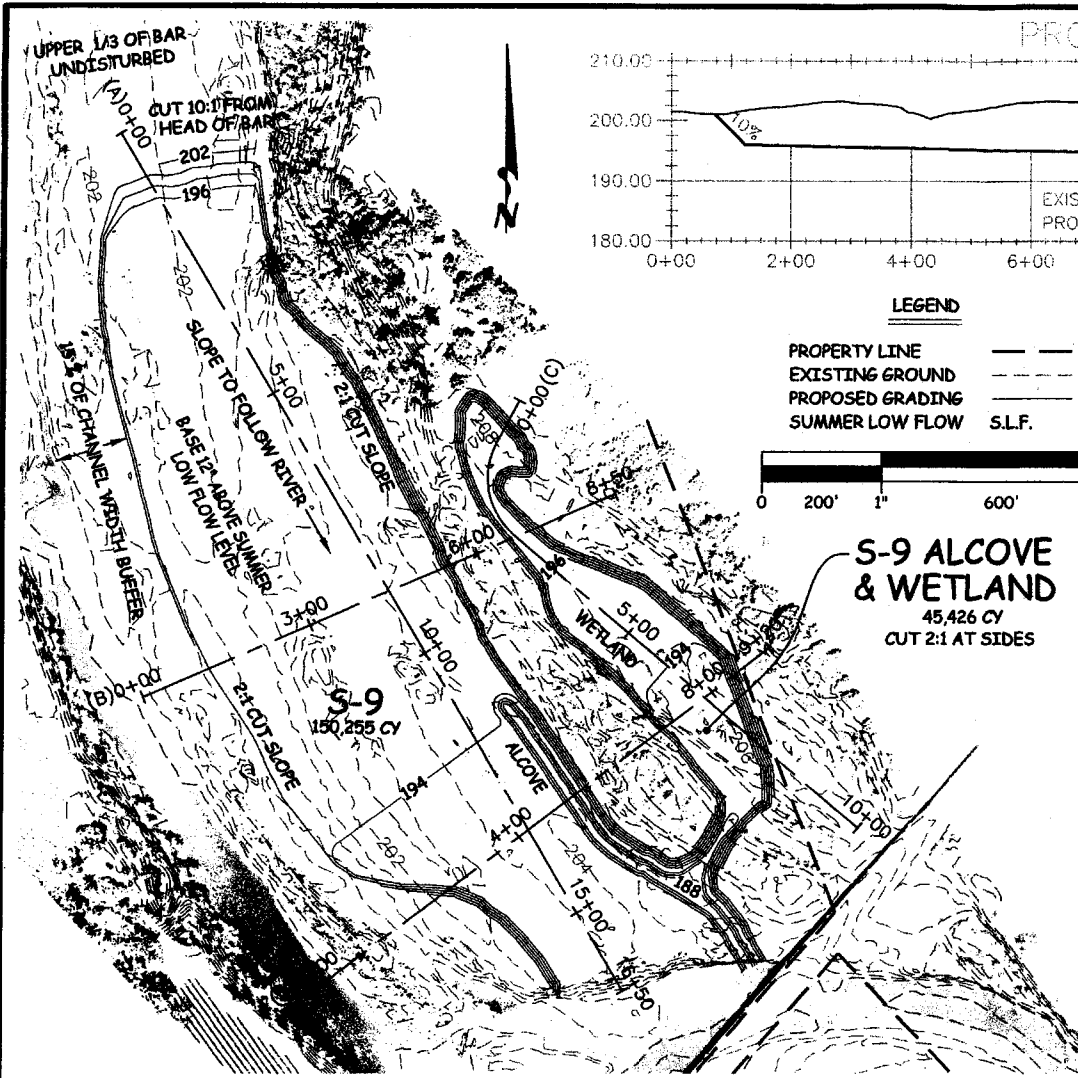
YOLANO ENGINEER'S INC.
 2301 NAPA-VALLEJO HIGHWAY
 NAPA, CALIFORNIA 94558

RUSSIAN RIVER
 ALEXANDER VALLEY
FIGURE 3A

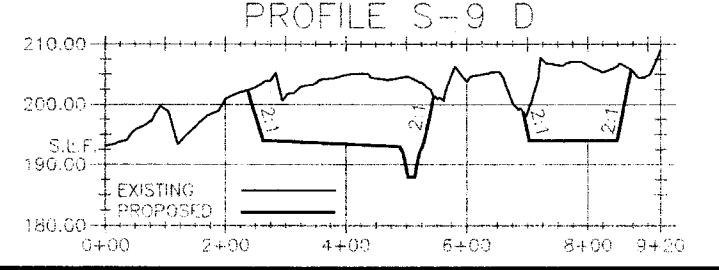
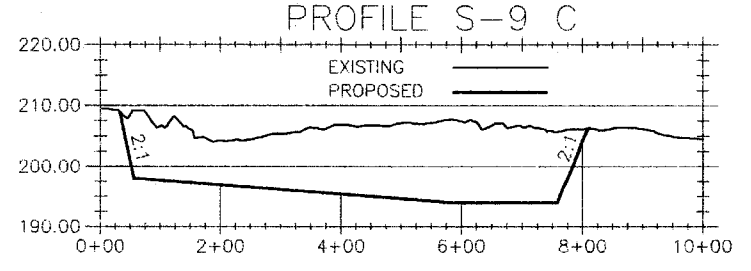
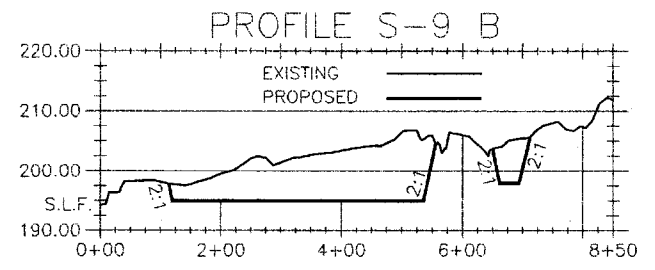
BAR MINING
 PLAN

SHT. NO.
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 OF
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YOLANO ENGINEER'S INC.



S-9 ALCOVE & WETLAND
 45,426 CY
 CUT 2:1 AT SIDES



YOLANO ENGINEER'S INC.
 2301 NAPA-VALLEJO HIGHWAY
 NAPA, CALIFORNIA 94558

RUSSIAN RIVER
 ALEXANDER VALLEY
FIGURE 4

BAR MINING
 PLAN

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YOLANO ENGINEER'S INC.

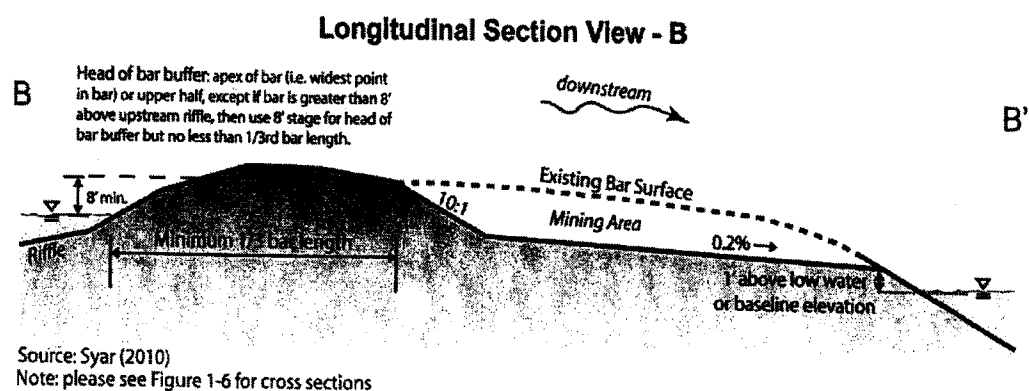
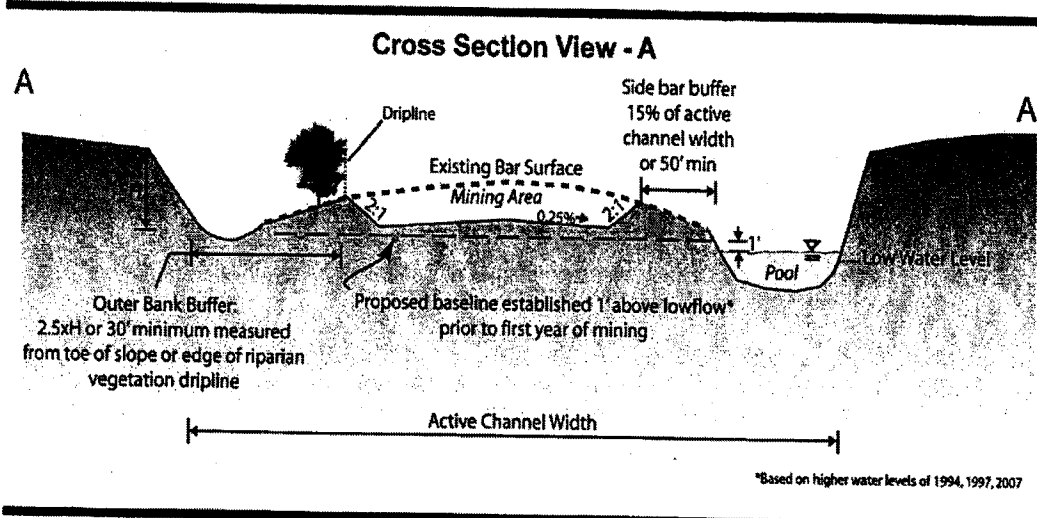
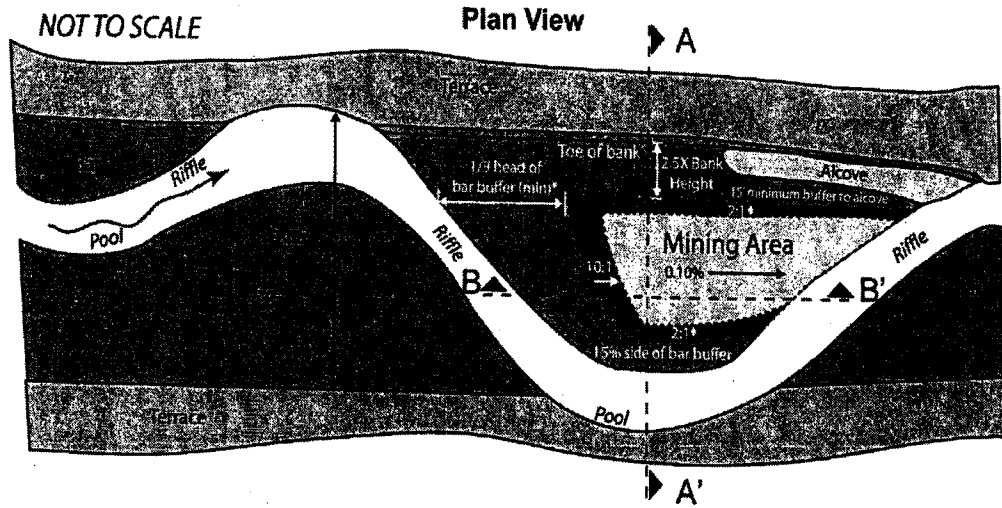
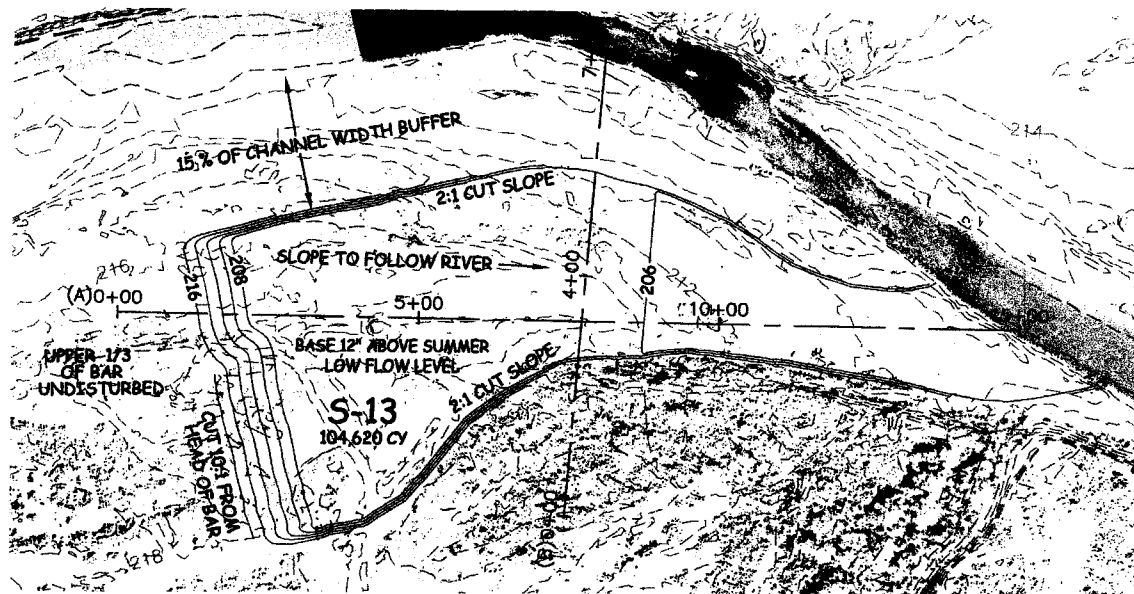


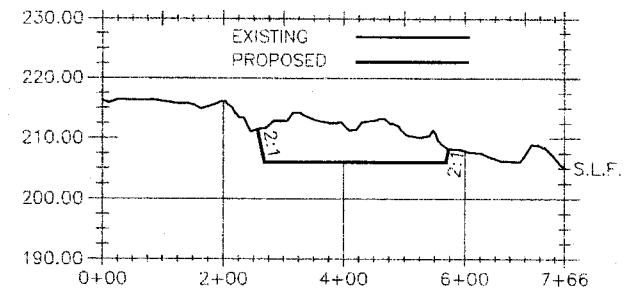
Figure 5



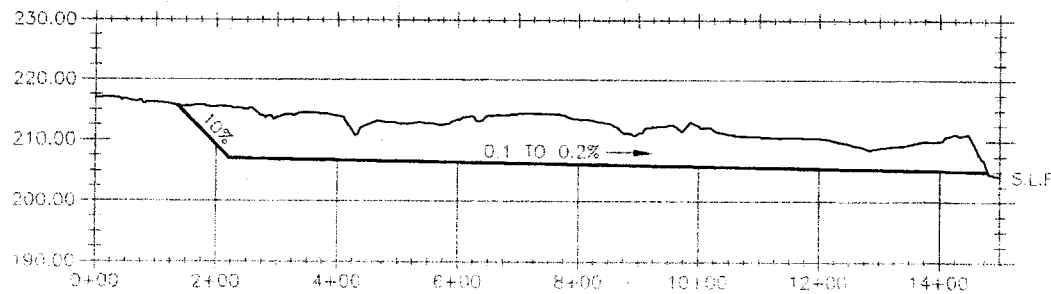
LEGEND

- PROPERTY LINE ———
- EXISTING GROUND - - - - -
- PROPOSED GRADING ———
- SUMMER LOW FLOW S.L.F.

PROFILE S-13 B



PROFILE S-13 A



YOLANO ENGINEER'S INC.
 2301 NAPA-VALLEJO HIGHWAY
 NAPA, CALIFORNIA 94558

RUSSIAN RIVER
ALEXANDER VALLEY

BAR MINING
PLAN

SHT. NO.
 1
 OF
 1

YOLANO ENGINEER'S INC.

FIGURE 6

TABLE: SUMMARY OF GRAVEL BAR VOLUMES

BAR	PROJECT	BAR SIZE	EXTRACTION	GRAVEL
I.D.	component	acreage	acreage	tons extracted
S-8	mining	136.2	6.4	132,093
S-7-8	oxbow	136.2	1.8	30,672
S-9	mining	218	13.7	218,628
	alcove	218	2.5	71,977
S-13	mining	88.13	10.2	156,930
	oxbow A	88.13	1.0	13,440
	oxbow B	125.12	1.7	13,636
TOTAL			37.3	637,676