County of Santa Cruz

PLANNING DEPARTMENT

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ALVIN D. JAMES, DIRECTOR

Agenda Date: June 6, 2000

May 31, 2000

Board of Supervisors
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Subject: **Public Hearing to consider approval of a Regular Coastal Permit as a follow-up to emergency work undertaken pursuant to Emergency Coastal Development permit #99-0419; and to consider authorizing the Planning Director to issue an additional emergency approval for various measures to implement a Storm-water Pollution Prevention Plan. The follow-up approval to #99-0419 requires a Regular Coastal Development Permit; the additional proposed measures require an Emergency Coastal Development Permit.**

Members of the Board:

The item before you today regarding the Santa Cruz Biotechnology biomedical livestock operation has a variety of components which will be discussed separately in this letter. These water quality-related subjects include a recommendation to issue a Regular Coastal Permit as a follow-up to Emergency Coastal Permit 99-0419, a request to authorize the Planning Director to issue an additional Emergency Coastal Permit to implement a storm-water pollution prevention plan, an evaluation of a report prepared by a local geologist on the potential for contamination of a nearby well resulting from the biomedical livestock operation, a recommendation for performance standards to protect the water quality of surface waters in the area, and an evaluation of various recommendations for monitoring developed by Save Our Agricultural Land. In addition to discussion of these water quality-related topics, this letter provides an update to your Board regarding the status of payments made by Santa Cruz Biotechnology for various "at-cost" contract billings and information regarding the execution of a contract for preparation of the Biomedical Livestock Operation Master Plan Environmental Impact Report (EIR).

Follow-up to Emergency Coastal Permit #99-0419

In August of 1999, your Board held several hearings regarding the need for additional measures to protect water quality on the Santa Cruz Biotechnology property. At the conclusion of these hearings, and after weighing various options, your Board concluded that the pen areas surrounding the western barn complex needed to be pulled back from the drainage ways to a location above the break-in-slope. At the eastern complex, fence relocation was viewed as a logical step in order to separate

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high-use pen areas from drainage inlets which convey runoff to an intermittent stream. The adequacy of existing manure management practices on the property, particularly during the winter months, was also discussed at length. Your Board specifically disallowed a proposal by Santa Cruz Biotechnology to construct manure bunkers in advance of your consideration of the Master Plan, but instead opted to require measures to ensure that surface and rainwater would not come into contact with the existing manure piles. Your Board further endorsed the implementation of a manure haul-away program if Environmental Health Services staff determined that these drainage-related improvements were inadequate to reduce or eliminate water quality impacts emanating from the manure piles.

On August 24, 1999, your Board authorized the Planning Director to issue an Emergency Coastal Permit for the following work: relocation of livestock fencing, one tent, and two "iso-sheds"in the vicinity of the western barn complex to an area located in the southern portion of the pasture known as "Genuine Risk" and/or "Omaha;" relocation of fencing along the northern side of barn 4 in the eastern barn complex; relocation of the outlet to an existing drainage pipe in the vicinity of the eastern barn complex; and provision for a manure haul-away program, should that need arise. As a part of this Emergency Approval, your Board directed that the applicant be required to execute a Waiver and Indemnification Agreement which included a statement indicating that the authorized work was being undertaken at the applicant's own risk in advance of approval of the Master Plan solely for the purpose of abating water quality problems. Emergency Coastal Permit #99-0419 was issued by the Planning Department on September 14, 1999.

On December 14, 1999, the Planning Department provided your Board with a status report on the work authorized by this permit. Staff reported that the relocation of fencing, small structures, and revegetation of the vacated pen areas adjacent to the water courses had been completed. Your Board accepted and filed that report.

Since that time, your Board has had continued discussions regarding water quality problems on the property. Most recently, your Board decided that, because you would be reviewing a comprehensive storm water pollution control plan likely to contain recommendations for measures requiring the approval of a Coastal Development Permit, it would be appropriate for you to hold a public hearing on the entire matter, including the required public hearing for application #99-04 19, the Emergency Coastal permit discussed above. On April 26th the Planning Commission agreed with your request to refer this application to your Board for your consideration. The correspondence from the Planning Commission regarding this referral is included for your information as Attachment 1. A copy of Emergency Coastal Permit #99-0419, including Conditions of Approval, the signed Waiver and Indemnification Agreement, a detailed description of the work, and the Notice of Exemption from the California Environmental Quality Act, is included for your review as Attachment 2.

The recommended Conditions of Approval for the follow-up permit before you today are very similar to those applied to the original Emergency Approval. Because the work has been completed, references to deadlines for completion of the improvements have been deleted. Staff has also included a new condition relating to the placement of fencing adjacent to an ephemeral section of Scaroni Creek. The drainageway in question is located across Back Ranch Road from the eastern barn complex. There has been considerable discussion by the Planning Commission and testimony before your Board about the need to protect this area for purposes of water quality protection.

Currently, this area is grazed by goats during the spring, summer, and fall. Temporary electric fencing is installed 10 feet from the drainage way between December 1"' and April 1 st. Installation of this seasonal fencing is consistent with permit No. 96-0837, issued on June 6, 1997 by the Planning Department.

On March 7, 2000, your Board directed that staff ensure that the goat herd be kept 30 feet from this drainageway on a year-round basis. As you recall, the permit under which this condition is proposed for inclusion is related to the protection of water quality. Therefore, the conditions of approval must be reasonably related to this objective. Planning and Environmental Health Services staff believe that seasonal fencing located 30 feet from the channel is adequate for the protection of water quality, with the provision that the fencing be in place between October 1 and April 15 in conformance with Regional Quality Control Board requirements. It is our view that their is little or no added benefit, from the perspective of water quality protection, to requiring that the fencing be in place year-round. While there has been discussion about the biological value of the vegetation which exists within the narrow confines of the channel itself and the need to protect this resource on a year-round basis, such protection is not related to the issue of water quality. In addition, the value of the biological resources associated with this drainage and the merits of providing protection will be evaluated in the Master Plan EIR. In summary, staff is recommending that permit No. 99-0419 include a requirement for installation of seasonal fencing 30 feet to the west of the ephemeral segment of Scaroni Creek, that this fencing be in place between October 1"' and April 1 5th of each year, pending a full evaluation of the this fencing issue in the Master Plan EIR. The increase from 10 to 30 feet, coupled with the requirement to have the fence in place over a longer period of time will result in improved water quality in this location.

On Thursday, May 25, Santa Cruz Biotechnology representatives proposed an additional alternative to staff for fencing adjacent to this ephemeral segment of Scaroni Creek. A majority of the flow in this drainage way is the result of road runoff from Back Ranch Road as it descends the hill between the lower and upper marine terraces. At the base of this hill, Back Ranch Road turns sharply and the runoff is conveyed into the adjacent pasture via a culvert. This water flows across the pasture for a distance of approximately 50 feet, before turning to parallel Back Ranch Road in the ephemeral segment of Scaroni Creek.

The applicant is proposing to prevent this road runoff from flowing into the pasture by creating a roadside ditch immediately adjacent to Back Ranch Road. As a result, the drainage area feeding this small ephemeral channel would be reduced significantly. Because this proposal was presented so late in the process of preparing this report for your Board, staff has not had adequate time to properly evaluate the request and formulate a recommendation for your consideration. As such, we are recommending that your Board require, through the Conditions of Approval of application 99-04 19, the placement of seasonal fencing as discussed above. Further evaluation of Santa Cruz

Biotechnology's proposal will occur during the consideration of the Master Plan EIR.

Staff recommendation: approve the follow-up permit to Emergency Coastal Permit #99-04 19, including Conditions of Approval, Coastal Development Permit Findings, and Development Permit Findings (Attachment 3).

Storm-water Pollution Prevention Plan

On April 11, 2000, your Board was informed that Santa Cruz Biotechnology was in the process of developing a storm-water pollution prevention plan (hereinafter referred to as the Plan) for the property, as required by the Notice of Violation and Notice of Noncompliance issued by Environmental Health Services and the Regional Water Quality Control Board, respectively. The first in a series of proposed plans was submitted by Santa Cruz Biotechnology on May 1st, while the supporting project narrative and calculations were delivered on May 3rd.

One of the most significant elements of this first proposal would have involved approximately 5,500 cubic yards of grading. This grading was required to create berms to divert runoff from sensitive areas and to install detention basins and subsurface filtration trenches to remove fecal coliform from water which had come into contact with manure. Environmental Health Services and Planning Department staff met with Santa Cruz Biotechnology representatives on May 9 to discuss this proposal and expressed concern regarding the amount of grading and land disturbance, the effectiveness of the "treatment facilities," and the extent to which structural measures were being proposed in advance of approval of the Master Plan.

On May 18th , a revised set of plans was submitted for review by staff. This plan differed from the first, in that the subsurface filtration trenches had been eliminated in favor of a series of detention basins and an accompanying proposal to spray irrigate the up slope pastures with contaminated water during inter-storm periods. On May 19th , these plans were the topic of discussion during a meeting between County staff, Santa Cruz Biotechnology representatives, and representatives from Save Our Agricultural Land and other interested parties. As a result of that meeting, Santa Cruz Biotechnology revised their proposal a second time. These revisions, discussed with the applicant's representatives on May 26th, involve management of the herd in an attempt to reduce the intensity of use of the outdoor pen areas and eliminate reliance on detention and pumping facilities. While these revisions were discussed conceptually with Santa Cruz Biotechnology, staff has not seen modified plans or a narrative describing the proposed management activities as of the date of preparation of this Board report.

With the exception of proposed management strategies to reduce the use of outdoor pens areas and the elimination of the large detention/filtration structures, all other aspects of the current Plan have remained consistent since the original May 1st submittal.

The proposal calls for the following: roof barn extensions to cover the open areas between the existing barns in the western and eastern barn complexes, including addition of siding to weather-proof the eastern end of the eastern barn complex; placement of a third tent on the upper terrace (in addition to the two which presently exist there); placement of tarps over portions of the existing horse corrals on the upper terrace; improvements to the existing manure pads (two on the lower terrace, one on the upper terrace); and construction of a feed storage silo at the eastern barn complex. While the proposed management strategies to reduce the use of outdoor pens during the winter period would involve revegetation, use of temporary electric fencing within existing pen areas, and minor drainage improvements, the use of additional temporary tents is also requested. These various Plan components are presented separately below, including a proposed staff recommendation for each item.

Construction of Barn Roof Extensions

Santa Cruz Biotechnology has proposed the construction of roof extensions to cover the open areas between barns in the western and eastern barn complexes on a number of occasions. The open areas between the existing barns are subjected to high numbers of animals during the winter months. Manure deposited onto the ground is churned into the wet soil, making these areas very difficult to clean. Storm-water falling onto these areas comes into contact with manure and is a source of some of the contaminated runoff leaving the site. On March 7, 2000, your Board expressed a willingness to consider authorizing the construction of barn roof extensions. Covering these open areas would eliminate this source of fecal coliform contamination, and staff believes that this work should be undertaken. The roof extensions would add 1,560 and 4,800 square feet of covered area at the western and eastern barn complexes, respectively. The resulting structure at the western barn complex would be 19 feet high, while the eastern barn would measure 21.5 feet in height. In addition, the eastern end of the eastern barn complex is currently exposed to the weather and rain can enter the area where animals congregate. Santa Cruz Biotechnology has requested authorization to erect siding in this location to prevent rain water from coming into contact with manure. Staff agrees with this request.

> Staff recommendation: authorize the Planning Director to issue an Emergency Coastal Permit which includes construction of barn roof extensions between barns 1 and 2 (western barn complex) and barns 4 and 5 (eastern barn complex) and erection of siding at the eastern end of barns 4 and 5.

Placement of a third tent on the upper terrace

As your Board may recall, there are currently two tents located on the upper terrace which are

used to provide shelter for goats during the winter period. These two tents were the subject of enforcement action on the part of the Planning Department during the summer of last year. Your Board discussed at length whether these facilities met the definition of "development" in the Coastal Zone and required issuance of a Coastal Permit. On August 24, 1999, your Board decided to forego further debate regarding the need for issuance of a Coastal Permit and indicated that enforcement action concerning these tents would be suspended, pending consideration of the Biomedical Livestock Operation Master Plan.

The Plan narrative supplied to staff on May 3rd indicates that "A third new tent, in addition to recognizing the two existing tents, is proposed on the upper terrace near the existing caretaker's quarters." While the original Plan narrative provided to staff does not discuss the need for additional fencing to enclose the area surrounding the proposed third tent, the project plans in our possession indicate that new fencing would be erected.

Environmental Health Services staff have consistently maintained that the provision of adequate shelter for the herd during the winter period is critical to water quality protection efforts. As such, staff supports the request for an additional temporary tent on the upper terrace. Rather than create a new fenced outdoor pen area, as depicted on the most recent set of plans submitted by Santa Cruz Biotechnology, however, staff recommends that this third tent be placed within one of the existing pen areas to minimize disturbance.

As indicated above, the Plan proposes that the two existing tents be "recognized." As indicated above, staff supports issuance of an Emergency Coastal Permit for placement of an additional tent on the upper terrace. We believe that recognizing the existence of the two tents presently in place, on an interim basis and pending the outcome of the Master Plan review process, is an appropriate step which does not materially change conditions on the property. As with any other structural improvements which your Board may elect to authorize, staff recommends a requirement for execution of a Waiver and Indemnification Agreement which includes a statement indicating that the improvements are being undertaken solely for the purpose of water quality protection and are being installed at the risk of the applicant, pending completion of the Master Plan review process.

> Staff recommendation: authorize the Planning Director to issue an Emergency Coastal Permit which includes a provision for recognition of two existing tents, and placement of a third temporary tent on the upper terrace, with the requirement that this third tent is to be placed within one of the existing pen areas so as to minimize around disturbance.

Placement of Tarps over Horse Corrals on the Upper Terrace

The Plan narrative proposes that protective tarps be placed over a portion of each existing horse

corral on the upper terrace. These corrals are contiguous to one another and, unlike the situation with the facilities for the goat herd in this area, the horses have been afforded no shelter and are completely exposed to the weather. From an animal welfare perspective and in order to provide a small incremental improvement to water quality, staff believes that at least a portion of each corral should be covered, as recommended in the Plan.

> Staff recommendation: Direct the Planning Director to include, as a component of an Emergency Coastal Permit, a provision for placing tarps over a portion of each of the existing horse corrals on the upper terrace, as described in the Plan.

Improvements to Manure Stockpile Areas

Santa Cruz Biotechnology proposes to elevate each of the three existing manure stockpiles on a two to three foot high earthen pad. While each of the manure stockpiles has existing berms which direct runoff around the area, these berms are proposed to be enlarged. The Plan does not address equipment access to the manure stockpiles. As your Board may recall, you authorized Environmental Health Services to institute a manure haul-away program on the property if, in staffs judgement, the manure stockpiles were contributing significantly to water quality degradation. Staff believes that, should such a step be warranted, implementation should be immediate and that provision for all-weather equipment access is critical to ensure compliance. Staff recommends that the improvements to the manure stockpile areas detailed in the Plan be installed, with an additional directive to Santa Cruz Biotechnology to identify three locations (at the western and eastern barn complexes and on the upper terrace) for placement of drop boxes or large dumpsters which can be accessed by trucks at any time during the winter period.

> Staff recommendation: authorize the Planning Director to include the improvements to manure stockpile areas proposed in the Plan in an Emergency Coastal Permit, with an additional requirement that drop box locations be identified which can be accessed at any time during the winter period, should the need for implementation of a manure haul-away* program arise.

Construction of a Feed Storage Silo

The western barn complex currently includes a feed storage silo. Santa Cruz Biotechnology has sought to construct a silo within the eastern barn complex for some time, arguing that, without such a storage facility, the feed attracts birds which roost on the barn roofs, and whose excrement contributes to the documented water quality problem. This problem reportedly does not exist at the western barn complex, where food storage is via a secure silo. While staff does not dispute that birds contribute to poor water quality conditions, the magnitude of their contribution to this condition is unknown and is likely quite small. Nevertheless, because the nine foot diameter, 25

foot high silo is being proposed within a developed barn complex, and could bring about a small, incremental improvement to the serious water quality problem emanating from this facility, staff recommends that this feed storage facility be constructed.

> Staff recommendation: Authorize the Planning Director to issue an Emergency Coastal Permit which includes a provision for constructing a feed storage silo at the eastern barn complex.

Management Strategies to Reduce Use of Outdoor Pen Areas During the Winter Period

Outdoor pens; including the uncovered areas between the existing barns, are difficult to clean during the winter. Storm runoff carries manure from these areas to the downslope drainages whose waters have become contaminated with extremely high levels of fecal coliform bacteria. Staff has, for some time, stated that significant improvements in water quality on the property can only be achieved through a reduction in the use of outdoor pen areas during the winter period. Construction of barn roof extensions, discussed earlier in this report, will provide much needed protection at both the eastern and western barn complexes, but will not address contaminated runoff originating from the adjacent pens.

As previously indicated, Santa Cruz Biotechnology has recently revised the Plan to include a series of management strategies to reduce the use of outdoor pen areas during the winter period. Environmental Health Services and Planning Department staff have discussed these changes with the applicant's representatives on a conceptual level only. The following discussion, therefore, is based on an oral presentation of the proposal to staff by the Santa Cruz Biotechnology. The overall objective of this component of the Plan is to reduce the potential for storm-water to come into contact with manure through the use of non-structural measures, to the maximum extent feasible.

During the past few winters, the use of outdoor pen areas at the eastern and western barn complexes has, for the most part, not been managed to protect storm runoff from contacting manure. The intensity and timing of use of these pens has resulted in a high concentration of manure in areas denuded of vegetation and exposed to storm runoff. The proposal by Santa Cruz Biotechnology is to divide some of the larger pen areas, through use of electric fencing, and to manage the resulting areas such that they can be re-seeded and will support vegetation on a year-round basis. Under this management scenario, the herd would be rotated through the subdivided pens to avoid overgrazing and damage to the re-established grass cover.

During the winter period, the applicant envisions reducing the overall intensity of use of these pens by turning the herd out to pasture more frequently and in a more controlled manner than has

occurred in the past. The pasture areas themselves would be divided through the use of electric fencing and the herd would be rotated between pastures to prevent over use and to maximize the dispersal of animals. Temporary "runs," or fenced corridors would be established on an as-needed basis to facilitate this rotation of the herd. In our discussion with Santa Cruz Biotechnology representatives, we also suggested that only portions of the herd be allowed out during any given inter-storm period, thereby reducing the number of animals depositing fecal material in the pastures. We were informed that this approach would be considered by the applicant either as a standard practice during the winter period or as a contingency measure, should this management scheme prove insufficient to adequately address fecal coliform contamination.

The use of temporary tents is also proposed by the applicant as a component of this overall management strategy. In the pastures adjacent to the eastern barn complex, the use of tents would be employed during the winter period to provide shelter. These tents may be moved along with the herd as the animals are rotated from pasture to pasture. Upon relocation of any tent, the area underneath would be cleaned to remove as much manure as possible. A hay bale or silt fence barrier would then be erected to filter runoff from the area of disturbance in the event that manure could not be completely removed. During our meeting, the applicant's representatives could not quantify the number of tents needed, but indicated that they would likely be requesting the use of two to four of these temporary structures in proximity to the eastern barn complex.

The use of one temporary structure is being proposed on the southern side of barn 3. This structure would be in the form of an awning, erected during the winter to provide protection from the weather. This barn apparently houses animals which must be separated from the remainder of the herd and who cannot be turned out to pasture. This awning would allow animals housed in barn 3 to use a small outdoor area during the winter period without creating a potential for water quality degradation.

Staff is supportive of this approach to improve water quality on the property through a reduction of the use of outdoor pen areas. There is no baseline information regarding past intensity or duration of use of the areas in question, however. In addition, staff has not been provided with a detailed, written description of the proposal. As a result, we are unable to predict the magnitude of the effect that implementing this proposal will have on improving water quality. Staff believes, however, that implementation of this proposal, in conjunction with the use of the water quality performance standards and contingency measures discussed below will lead to an improvement in water quality on the property.

Staff recommendation: authorize the Planning Director to issue an Emergency Coastal Permit which requires implementation of a variety of actions necessary to reduce the use of outdoor pen areas during the winter period, including the use of temporary fencing, temporary tents, and a

temporary awning.

Water Quality Performance Standards

On March 7, 2000, your Board directed staff to work with the Regional Water Quality Control Board (Regional Board) to develop performance standards for runoff from the SCB site "to ensure safe body contact and clean water". The Regional Board's Waste Discharge Requirements for the Stephenson Ranch currently require that fecal coliform levels in runoff not exceed body contact standards (400 MPN/100ml). Sampling during and after storm periods in nearby waterways unaffected by the operation and other parts of the county with a variety of different land uses show bacteria levels substantially in excess of body contact standards and suggest that it is not feasible to expect that body contact standards can be fully met during these periods. As a matter of practice, County Environmental Health issues press releases that warn swimmers and surfers to avoid contact with water in the vicinity of storm drains and creek discharges for a period up to three days after a storm event. However, in the interest of public health protection, it is desirable to implement measures to bring bacteria levels into compliance with body contact standards as soon as feasible after a storm, and to minimize the bacteria levels during storm periods. Staff suggests that on a county-wide basis, water quality objectives should continue to be held at the body contact level, but that enforcement action regarding stormwater contamination would be triggered by a somewhat higher level of bacteria.

The Regional Board's Water Quality Control Plan for the Central Coast Basin includes short term fecal coliform standards for both water contact recreation (REC-1) (400 MPN/100ml) and non-contact water recreation (REC-2) (4,000 MPN/100ml). Water contact recreation is defined to include those types of activities where there is direct body contact and ingestion of water is reasonably possible. Non-contact water recreation is defined as use of water for recreational activities involving proximity to water, but not normally involving contact with water where ingestion is reasonably possible. These include hiking, picnicking, sunbathing, etc. Staff believes it would be appropriate to expect that county streams and drainageways should meet non-contact standards during and immediately after storm periods, and meet contact recreation standards one to two days after storm periods. It is also recognized that bacteria levels may fluctuate very substantially during a storm event and that any data collected during an event has limited utility for making comparisons among different locations. Samples collected at the end of an event are more consistent and meaningful.

During the past winter, bacteria levels in runoff from the Stephenson Ranch have frequently exceeded non-contact standards (4000 MPN/100ml) immediately following storm events. Attainment of that standard will require substantial effort to improve the quality of runoff. That is the objective of the Stormwater Pollution Prevention Plan discussed previously in this letter. Because of the uncertain effectiveness of some of the measures contained in that plan, additional

contingency plans need to be in place and ready to be implemented on short notice in order to ensure timely attainment of water quality standards. If contingency measures are not effective, a progressive reduction in the sources of contamination (primarily numbers of goats outside), would be appropriate.

Staff recommendation: Establish the following performance standards in order to protect water quality:

1. Two hours after significant rainfall stops, fecal coliform levels in runoff leaving the Stephenson Ranch shall not exceed the non-contact water recreation (REC-2) standard of 4000 cfu/100ml or background levels, whichever is greater. Thirty-six hours after a storm stops, fecal coliform levels in runoff leaving the site shall not exceed the water contact recreation (REC-1) standard of 400 cfu/100ml. The body contact standard shall be maintained at all other times during non storm periods,
2. The storm water pollution prevention measures discussed above and as recommended by staff shall be installed and effectively operated. Additional contingency measures shall be submitted to the County for review by September 1. These measures shall be implemented within one week of an order by Environmental Health Services if water quality standards are substantially exceeded. If water quality standards continue to be exceeded, the number of goats shall be incrementally reduced as needed to reduce bacteria levels to meet standards.

Potential for Groundwater Impacts on the Upper Terrace

Your Board directed staff to evaluate a report by Gerald Weber which suggested there was a high probability for contamination of wells on the upper terrace as a result of manure deposition and other activities on SCB property. The most likely contaminants of concern would be pathogens (bacteria and virus) and nitrate. In completing that evaluation, staff reviewed the following information (reports on file with the Clerk):

- Letter report by G.E. Weber, "Geologic Conditions at Santa Cruz Biotechnology, Inc. 5322 Back Ranch Road, submitted to Jonathan Wittwer, October 2 1, 1999.
- Letter report by G.E. Weber, "Groundwater Conditions and Subsurface Geology along Back Ranch Road, Santa Cruz County", submitted to Frans Lanting and Chris Eckstrom, March 23, 2000.
  Letter Report by Todd Engineers, "Hydrogeology of the Stephenson Ranch and Edwards Property", submitted to Matt Mullin, Santa Cruz Biotechnology, April 4, 2000.
- Memo from Mike Cloud, County Hydrologist to Environmental Health "Comments on Gerald Webber's Evaluation of the SBI Proposed Development Application # 98-0647.
  U.S. Soil Conservation Service, Santa Cruz County Soil Survey, 1968.
- Unpublished water quality data from various wells and springs in the vicinity of the

Stephenson Ranch
- Well logs from wells in the vicinity of the Stephenson Ranch
- Soil testing by Chris Rummel, for proposed septic system on the upper terrace at the Stephenson Ranch
- Soil fertility analyzes by Soil Control Laboratory for soils on the Stephenson Ranch
- Discussions with Dave Landino, a neighbor and well driller familiar with the area.

Findings

There are many characteristics of the geology of the upper terrace that are still unknown, and there is some disagreement among geologists about the nature of the geologic formations and the direction of groundwater flow. Given those limitations, the following relevant findings can be made:

1. The SCB well at the northeast corner of the property and the neighboring community well located 120 feet to the north are 250-320 feet deep and both draw water from the Lompico formation, with the water level at about 75-125 feet below the surface.
2. These wells draw from a relatively small perched aquifer that underlies the terrace, but is higher in elevation than the nearby creeks and a deeper regional water table. The only source of water is recharge from the upper terrace.
3. Several alternating sand and clay/shale layers occur between the ground surface and the water bearing strata. These clay/shale layers may or may not be continuous, but would tend to slow down the downward percolation of water, diminish the movement of contaminants, and cause the differing perched groundwater levels that have been reported in the area. Water in the water-bearing rocks appears to occur and move through a series of fractures, which reduces the potential for filtration of contaminants.
4. Geologists have mapped most of the ground surface of the upper terrace as marine terrace deposits. The geologic formations which underlie the terrace deposits on different parts of the upper terrace are the Santa Cruz Mudstone, a layer of Santa Margarita Sandstone that has intruded into the Santa Cruz Mudstone and is locally saturated with tar, depositional Santa Margarita Sandstone and the Lompico Formation. The Monterey Formation may or may not be present.
5. The underlying rock layers and the surface slope dips to the south. The general direction of groundwater flow will tend to be to the east and west toward the deeply incised canyons, and to a lesser extent to the south, parallel to the surface slope and the dip of the underlying rock formations. There may be some localized water movement from the northern part of the SCB property toward the community well, particularly through fracture systems.
6. Some 369 boreholes were drilled through the terrace deposits into the oil and tar bearing deposits of the Santa Margarita sandstone. Some of these holes may penetrate the Santa

Margarita into the underlying Lompico formation, and represent potential conduits of surface water to deeper levels. Although some borings likely occurred throughout the upper terrace, most of the borings would be expected to be concentrated in the southern part of the terrace where the oil and tar deposits are located. The total area1 extent of the 369 four inch boreholes would be about 30 square feet.

7. At least 80% of the northern half of the upper terrace is mapped by the U.S. Soil Conservation Service as having surface soils (Watsonville loam) with very low permeability due to presence of a dense clay layer l-4 feet thick starting l-2 feet below the surface. Presence of soils with these characteristics throughout much of the area was confirmed by soil testing for-locating a septic system in the area. Two testholes showed sandy soil along the edge of the terrace in an area mapped as an exposure of Santa Margarita sandstone. The presence of clay soils promotes nitrogen removal through denitrification and greatly limits the amount of nitrate and other contaminants that percolate downward into groundwater. This has been clearly shown by studies of contaminants from septic tank effluent in the San Lorenzo Valley and elsewhere. There is a possibility that there are breaks in the low permeability soils which, which would increase the potential for percolation of nitrate.
8. Storm water running across and off the upper terrace from the SCB Ranch shows high levels of fecal coliform (5,000 MPN/100ml) and low levels of nitrate (less than 0.5 mg-N/l). Nitrate levels would be expected to increase significantly with increased livestock use of the upper terrace.
9. Literature and experience clearly indicate bacteria, virus, and other microorganisms do not migrate any substantial distance under ground, particularly with the presence of clay and shale layers, and a fine-grained matrix. A properly constructed well with a 50 foot seal, concrete pad, wellhead sealed against surface water inflow, and an adequate setback from any pollution source (50-l 00 ft.) is rarely susceptible to contamination by microorganisms.
10. Two rounds of soil testing on the Stephenson Ranch, as required by the Regional Board Waste Discharge Requirements, show that the soils consistently have a nitrogen deficit, with a substantial capacity to absorb and hold nitrogen.
11. The good water quality (low dissolved solids and nitrate) of wells and springs tapping groundwater underlying the upper terrace, indicate no water quality degradation after years of varying levels of livestock use on the property. The nitrate-nitrogen levels range from 0.12 to 0.5 1 mg-N/l. The safe drinking water standard for nitrate-nitrogen is 10 mg-N/l. The existing SCB production well, located in close proximity to the goat pens on the upper terrace has shown consistently low nitrate levels of 0.12 or less mg-N/l.
12. If impacts from increased livestock use did occur, it could take up to several years for' increased nitrate levels to begin to be seen in the neighboring wells. If the source of nitrate was controlled at that time, levels over a period of years would be expected to continue to rise, stabilize, and then decline. If an increase in nitrate did occur, but the source was

subsequently controlled, it is unlikely that nitrate levels would ever exceed drinking water standards. If monitoring wells were installed closer to the surface, any contamination could be detected and controlled sooner, reducing impact on the deeper supply wells.

Conclusions Regarding Potential for Groundwater Contamination

1. Although there is potential for groundwater contamination from presence of livestock and manure spreading on the upper terrace, the potential for contamination is likely to be limited due to the extensive presence of low permeability surface soils and the occurrence of clay, shale and tar layers deeper in the underlying formations. There is no indication of any groundwater contamination at this time.
2. The same factors that limit the percolation of contaminants would also be expected to limit the amounts of annual groundwater recharge, and would be expected to limit the amount of total sustainable yield from the relatively small perched aquifer under the upper terrace. Groundwater depletion is a much more likely and serious impact than contamination. The northernmost well cannot be utilized for irrigation purposes until an analysis of the impacts of the water extraction and use is completed through the environmental review process.

Staff Recommendations

1. SCB should continue to monitor soil nitrogen levels, manure application rates, nitrogen application rates, groundwater quality, and spring water quality throughout and around the edges of the upper terrace.
2. SCB should install and monitor additional shallow monitoring wells completed to the base of the terrace deposits to assess direction and amount of groundwater flow and to provide an early warning of any percolation of nitrate or other contaminants. This should be done as a part of the environmental review process, and as a precondition of any significant increase in livestock or manure spreading on the upper terrace.
3. Livestock grazing and manure spreading should be restricted in the northern areas that generate surface runoff that flows within 250 feet from the community well. This is the area where documented surface water degradation might provide the most immediate threat to existing wells.
4. The potential for groundwater contamination and depletion on the upper terrace should be evaluated as a part of the EIR process.

Evaluation of Recommendations from SOAL for Increased Monitoring

On March 3, 2000, Save Our Agricultural Land (SOAL) submitted a letter to Environmental

Health and the Regional Board which contained various recommendations for improving water quality and monitoring the effect of the operations on the Stephenson Ranch, On March 7, your Board directed Environmental Health evaluate the monitoring recommendations e-i contained in their letter (Attachment 4). Following is a summary of those recommendations and staff comments:

e. **Ensure that independent water quality monitoring is done to determine the sources of pollution on the SCB site:** Environmental Health staff have conducted two rounds of sampling at various locations on the site to identify the primary sources. SCB staff were present and were shown appropriate sampling locations for follow up sampling. SCB was directed by both the County and the Regional Board to conduct follow up sampling on the site. The rainy season stopped at that time. Only one significant storm occurred at night since then and it was not sampled. As required by the Regional Board, sampling is done by SCB, with testing at a certified lab. Additional spot sampling is done by the County to check the reliability of the results. Santa Cruz Biotechnology should comply with sampling, mandated by the County and the Regional Board.

f. **Correlate past and future E.coli concentrations with the number of animals kept on the site.** This effort, unless carefully controlled would not yield meaningful results. There are many factors that have over-riding influence on the E.coli levels other than the number of animals, such as drainage control, manure cleanup practices, numbers of animals outside, condition of pasture areas, etc. With the implementation of the various measures contained in the Stormwater Prevention Plan, it would be useful to evaluate the number of goats and the amount of exposed pen areas in the areas that are tributary to particular drainage outlets. SCB should be required to maintain and submit records of both goat numbers and pen areas in use during the winter months.

g. **Require soil testing for various contaminants to determine potential for lateral underground movement of pollution.** Soil testing for nitrogen and other parameters is already required by the Regional Board to determine the soils' ability to assimilate nitrogen and other contaminants. Subsurface lateral movement of contaminants does occur by stormwater movement through the extensive gopher holes on the property. Proper management of stormwater will address the issue of lateral movement through gopher holes. No additional monitoring is recommended.

h. **Require an accurate contour map of the area between Laguna and Majors Creek.** A map has been prepared which covers most of the area. No additional action necessary.

i. **Require measurements of temperature, coliform and other parameters to measure the extent of cornposting in the manure piles.** Testing of compost is required by the Regional Board, although this does not include bacterial testing. Monitoring of temperature to determine cornposting effectiveness is required by the Regional Board and is provided for in guidelines for manure management contained in the Master Plan. SCB should be required to include E. coli in the testing done for the compost and to increase the frequency of testing to monthly during the time that compost is applied to pastures.

Regional Water Quality Control Board Action

The Regional Water Quality Control Board considered a status report and public comment on the SCB operation at their May 19, 2000, meeting. The Regional Board took no action at that time. A further status report is scheduled for September 15, 2000. At that time, it is expected that the Regional Board will consider recommendations for groundwater monitoring and protection. SCB is required to submit a proposed groundwater monitoring program to the Regional Board staff on June 1, 2000.

Status of "At-cost" Billings

On April 11, 2000, your Board was informed that Santa Cruz Biotechnology was in arrears on their payments for work performed by the Planning Department under various "at-cost" contracts for permit processing. At that time, you requested that you be provided with a report on this date regarding any outstanding permit processing-related bills owed by Santa Cruz Biotechnology. In addition, you directed Environmental Health Services to recover costs incurred to date for their efforts to monitor and report on matters related to water quality on the property.

Following the discussion of this matter by your Board, Santa Cruz Biotechnology submitted a check to the Planning Department on April 12th in the amount of $17,293.75. Of this amount, $7,496.75 was applied to past due invoices and $9,797.00 will provide additional funds to allow for ongoing work by the Planning Department to be billed against these existing accounts. In summary, there is currently no outstanding amount owed by Santa Cruz Biotechnology for Planning Department permit processing.

Environmental Health has recently prepared an invoice in the amount of $9,555.85 for expenses incurred over the past 10 months. The Planning Department will include this amount in the next invoice prepared for submission to Santa Cruz Biotechnology. Santa Cruz Biotechnology will be required to submit additional funds, as necessary, to maintain a positive account balance.

Status of the Environmental Impact Report for the Biomedical Livestock Operation Master Plan

As your Board is aware, the Environmental Coordinator has determined that an EIR is required to evaluate the impacts associated with Biomedical Livestock Operation Master Plan application submitted by Santa Cruz Biotechnology. Planning Department staff had originally anticipated requesting your approval of the EIR contract on June 6th. This schedule was predicated upon the selection of the EIR consultant by May 19th. On May 19th, we received a letter (please refer to Attachment 5) from Santa Cruz Biotechnology requesting an additional two week period to review the consultant proposals prior to making a recommendation for our consideration during

the selection process. This request was granted, establishing June 2nd as the new deadline for comments. Because, at the time of preparation of this report, the Planning Department had not received these comments from Santa Cruz Biotechnology, we are unsure of the schedule for bringing a proposed contract to your Board for your consideration. We will provide you with this information during our staff presentation on June 6th.

Recommendations

In addition to approving the follow-up Coastal Permit to emergency approval #99-04 19, including a requirement to place seasonal fencing 30 feet to the west of the ephemeral segment of Scaroni Creek, staff recommends that your Board authorize the Planning Director to issue an Emergency Coastal Permit to implement the Storm-water Pollution Prevention Plan proposed by Santa Cruz Biotechnology. That permit would include the following work: construction of barn roof extensions at the western and eastern barn complexes, erection of weather-proof siding on the eastern end of barns 4 and 5, addition of a third tent and recognition of two existing tents on the upper terrace, the placement of tarps over portions of the horse corrals located on the upper terrace, improvements to manure stockpile areas, construction of a feed storage silo at the eastern barn complex, and implementation of management strategies to reduce the use of outdoor pen areas, including use of additional temporary tents in the pastures adjacent to the eastern barn complex fencing, and placement of an awning on the south side of barn 3 in the western barn complex. Like the Emergency Coastal Permit authorized by your Board last fall, we are also recommending the applicant be required to sign a Waiver and Indemnification Agreement which includes a statement that the improvements being installed are solely for the purpose of water quality protection and are being undertaken at the applicant's risk in advance of completion of the Biomedical Livestock Operation Master Plan permit process.

It is therefore RECOMMENDED that your Board take the following actions:

1. Hold a public hearing on the follow-up Coastal Permit to Emergency Approval #99-0419;

2. Approve application 99-04 19, including a requirement that seasonal fencing be placed 30 feet to the west of the upper reaches of Scaroni Creek for water quality protection purposes, subject to the conditions and findings included as Attachment 3;

3. Authorize the Planning Director to issue an Emergency Coastal Permit to implement the Storm-water Pollution Prevention Plan proposed by Santa Cruz Biotechnology which would include the following:

- Roof barn extensions to cover the open areas between the existing barns in the western and eastern barn complexes, including addition of siding to weather-proof the eastern end of the eastern barn complex;

- Placement of a third tent on the upper terrace and recognition of the two tents which presently exist there;,

- Placement of tarps over portions of the existing horse corrals on the upper terrace;

- Improvements to the existing manure pads (two on the lower terrace, one on the upper terrace);

- Construction of a feed storage silo at the eastern barn complex;

- Implementation of proposed management strategies to reduce the concentrated use of outdoor pens during the winter period, including revegetation, use of temporary electric fencing within existing pen areas, minor drainage improvements, and the use of additional temporary tents (staff will develop a recommendation regarding the specific number of tents, to be provided during our presentation on this matter);

- Establishment of water quality-related performance standards, including contingency measures and provisions for reducing numbers of goats if standards are not met;

- Restriction of grazing and manure spreading in the northeast comer of the property which drains within 250 feet of the neighboring community well; and,

- Monitoring of water quality in runoff from the various parts of the operation and documenting the numbers of goats in pastures and pen areas contributing to those runoff locations.

4. Accept the report by Environmental Health Services regarding the potential for groundwater contamination resulting from livestock use of the upper terrace and considering various recommendations developed by Save Our Agricultural Land for additional monitoring.

Sincerely,

Alvin D. James
Planning Director

Rama Khalsa
Health Services Agency Administrator

RECOMMENDED:

Susan A. Mauriello
County Administrative Officer

Attachments:
1. Planning Commission Referral of Application #99-04 19
2. Emergency Coastal Permit #99-04 19
3. Follow-up Coastal Permit to Emergency Approval #99-04 19
4. Excerpt from March 3 letter of SOAL
5. Letter from Santa Cruz Biotechnology dated May 19, 2000

AJ/RK/kh/jr/G:\DATA\WP51\WASTWATR\RICKER\SCBJune6,2000.wpd

cc: Santa Cruz Biotechnology
Mailing list

ATTACHMENT 1

County of Santa Cruz

PLANNING DEPARTMENT

701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060

(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123

ALVIN D. JAMES, DIRECTOR

April 27, 2000

Board of Supervisors
County of Santa Cruz
70 1 Ocean Street
Santa Cruz, CA 95060

Subject: Referral of Application 99-0419

Members of the Board:

In accordance with Section 18.10.124(b) of the County Code, the Planning Commission hereby refers Coastal Development Permit application 99-0419 to your Board for final consideration, on the basis that the project merits the more extensive review that your Board can provide.

Sincerely,

Rob Bremner
Chairperson of the Planning Commission

PLN711C:\files\Permit-related\SCBPCReferExhibit.wpd

ATTACHMENT 2

EMERGENCY COASTAL PERMIT

County of Santa Cruz Planning Department
701 Ocean Street Santa Cruz, CA 95060

Telephone: (408) 454-2260
Fax: (408) 454-2131

John and Brenda Stephenson
Owner's Name

_ _
Assessor's Parcel Number

Applicant's Name

Telephone Number

345 Back Ranch Road Santa Cruz, CA 95060
Address

Location of Emergency Work: Vicinity of barns one and two and barns four and five located on the above referenced parcel

Emergency Caused By: Surface runoff from the subject property during the winter months results in elevated fecal coliform levels, exceeding body contact standards.

Emergency Status Verified By: Planning Department and Environmental Health staff through review of water quality sampling data, and by Board of Supervisors at their meeting of August 24, 1999.

Work Authorized: Relocation of livestock fencing, one tent, two "iso-sheds," and the outfall to one drainage pipe, more specifically described in the attached Conditions of Approval and accompanying Exhibits

IN ACCORDANCE WITH SECTION 13.20.090 OF THE COUNTY CODE, AN EMERGENCY COASTAL ZONE PERMIT MAY BE ISSUED FOR PROJECTS UNDERTAKEN TO PREVENT LOSS OF, OR DAMAGE TO LIFE, HEALTH, OR PROPERTY; OR TO RESTORE, REPAIR OR MAINTAIN PUBLIC WORKS, UTILITIES, AND SERVICES DURING AND IMMEDIATELY FOLLOWING A NATURAL DISASTER OR SERIOUS ACCIDENT. THE PLANNING DIRECTOR MAY REQUEST, AT THE APPLICANT'S EXPENSE, VERIFICATION BY A QUALIFIED PROFESSIONAL OF THE NATURE OF, AND SOLUTIONS TO, THE EMERGENCY SITUATION.

CONDITIONS OF ISSUANCE:

1. Only the work specifically described above is authorized. Any additional work requires separate authorization. If the scope of work authorized by this permit is exceeded, a notice of violation resulting in civil penalties may be issued.

2. At the time of issuance of this permit, the applicant shall submit a completed application, including the appropriate fees, for a regular permit. Within 90 **days of this permit issuance,** all required technical reports and project plans must be submitted unless the Planning Director grants a time extension. Failure to submit the required information will **void** this permit.

3. The work authorized by this permit **must begin within** 15 **days** of issuance or the permit will be voided.

4. This permit shall **expire** 60 **days** after issuance

5. Other Conditions: Please refer to Attachment 1: Conditions of Approval

ATTACHMENTS: 1. **Conditions of Approval**
2. **CEQA Notice of Exemption**

Issued by: Alvin D. James
Title: Planning Director

Date: 9/14/99

I have read the above permit conditions and limitations and agree to conform to the conditions described above.

Owner 9/14/99
Date

for John & Brenda Stephenson

CONDITIONS OF APPROVAL

Emergency Coastal Zone Approval No. 99-04 19
Date of Issuance: September 14, 1999
Applicant and Property Owner: John and Brenda Stephenson
Assessor's Parcel No. : 059-02 l-08
Property Location and Address: 345 Back Ranch Road, Santa Cruz;
Located approximately 4 miles northwest of the City of Santa Cruz municipal boundary
Bonny Doon Planning Area

I. This permit authorizes the following work in accordance with the Board of Supervisors' decision on Item No. 37 on August 17, 1999, and Item No. 49 on August 24, 1999:

Relocation of fencing, one tent, and two "iso-sheds" in the vicinity of the western barn complex, to an area located in the southern portion of the pasture known as "Genuine Risk" and/or "Omaha," as depicted on Exhibit A (Sheet 2);

Relocation of fencing along the northern side of barn 4 in the eastern barn complex, as depicted on Exhibit A (Sheet 3); and

Relocation of the outlet to an existing drainage pipe in the vicinity of the eastern barn complex to a location and in a manner depicted on Exhibit A (Sheet 3).

Prior to exercising any rights granted by this permit, including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign and date the approval to indicate acceptance and agreement with the conditions thereof; and

B. Sign and record the Waiver and Indemnification Agreement developed for this approval (Exhibit B).

II. All of the relocation work and construction shall be performed in accordance with the plans prepared by Matt Mullin, dated September 2, 1999 (Exhibit A, Sheets 1-3), and consistent with the letter dated September 14th, 1999. In conducting this work, the applicant/owner shall meet the following conditions:

A. Work authorized by this approval shall commence within 15 days of the date of issuance;

B. All work authorized by this approval, including revegetation (soil preparation, seeding, and commencement of irrigation) of the areas vacated through relocation of the pens and fencing, shall be completed no later than October 1, 1999, unless written documentation provided by the applicant demonstrates that the work could not have reasonably been accomplished

within this time frame; and

C. All bare soil associated with the relocation of the drainage pipe shall be seeded, mulched, protected from livestock grazing, and irrigated prior to October 1, 1999, unless written documentation provided by the applicant demonstrates that the work could not have reasonably been accomplished within this time frame.

III. Operational Conditions

A. Livestock shall be precluded from any access to or use of the area vacated through the relocation of the pens in the vicinity of the western barn complex (Exhibit A) pending approval of the Master Plan for the property currently being processed under application 98-0647;

B. Berms or swales shall be installed and maintained around the relocated pen areas created within "Genuine Risk" and/or "Omaha" for the purpose of diverting overland flow from entering the pens;

C. Manure stockpiles on the site shall be protected from rainfall by placing tarps securely over the piles during the winter months. Drainage swales or berms of an appropriate size shall be installed around the stockpiled manure to ensure that manure does not come into contact with surface runoff during the winter period.

D. If manure stockpiles are determined by Environmental Health Services staff, through visual inspection and water quality sampling, to be contributing significantly to water quality degradation and other measures developed in conjunction with or agreed upon by Environmental Health Services staff fail to adequately mitigate the problem, a manure haul-away program shall be implemented between October 1 and April 15, and subject to the following requirements:

1. Environmental Health Services staff shall approve the manure storage location (s) to ensure that access by trucks is feasible and that truck traffic will not result in erosion or damage to pastures; and

2. Manure shall be hauled from the site no less frequently than every

two weeks, unless this schedule is interrupted by inclement weather.

IV. As an additional condition of this Emergency Coastal Zone Approval, the applicant/owner is required to submit an application for a regular Coastal Zone Approval in order to:

- construct a secondary containment facility associated with an existing above-ground fuel storage tank located on APN: 059-021-08; and

- restore an eroding gully located on APN: 062- 15 l-03.

An application for this work, including plans and specifications, shall be submitted to the Planning Department no later than September 28, 1999, unless the applicant documents, in writing, that the engineering firm preparing the plans and specifications cannot perform this work within that time frame.

Exhibits:

A. Plans and Specifications
B. Waiver and Indemnification Agreement

September 14, 1999

Mr. Ken Hart
Principal Planner/Environmental Coordinator
Santa Cruz County Planning Department
701 Ocean Street, Room 400
Santa Cruz, CA 95060

RE: County's Water Quality Protection Plan
Emergency Coastal Zone Permit 99-0419
Santa Cruz Biotechnology

Dear Mr. Hart:

In accordance with the Board of Supervisors' authorization to issue an Emergency Coastal Zone Permit for the purposes of implementing the County's Water Quality Protection Plan at the Stephenson Ranch, and pursuant to your subsequent request, Santa Cruz Biotechnology, Inc. ("SCB") respectfully submits the enclosed plans. We believe the plans are consistent with the each element identified under the County's plan. Although we hope the County's Water Quality Protection Plan will be successful, our opinion is that the more comprehensive plan that was initially recommended by staff (and endorsed by the Regional Water Quality Control Board) would be more effective in protecting water quality. Nevertheless, SCB will diligently implement the Water Quality Protection Plan consistent with the Board of Supervisors' decisions.

The following is a brief summary of each element denoted in the enclosed plans:

WEST BARN COMPLEX
Barns 1/2 Pens - The pen to the south of the barn complex will be re-vegetated and used as pasture following approval of the Master Plan. New pen space (fencing, gates, movable panel gates, feeders, etc.) will be created around the west and north sides of the barn complex. As discussed in the field, a new fence will be installed 25-feet south of Barn 1. Low curbs consisting of posts and 2" x 10" boards, or railroad ties, will be installed in the former pen to slow the velocity of sheet flow and catch suspended materials.

Pen with tent and isosheds - This complex will be recreated (tent, isosheds (2), fencing, gates, movable panel gates feeders, etc.) to an up gradient location in the Omaha pasture. The exact location of the pen and its elements will be determined in field. The former pen will be re-vegetated and used as pasture following approval of the Master Plan. Berms and swales will be installed around the newly created pen to direct runoff around the area.

Barn 3 - The pen area adjacent to the drainage way will be re-vegetated and used for pasture following approval of the Master Plan. As discussed in the field, a new pen space will be created west of the barn by installing a new fenced 15-feet out from the existing sorting pen area and continue westerly to an existing fence near the office/caretakers house. The new pen area will include the existing isoshed in front of the office. Low curbs consisting of posts and 2" x 10" boards, or railroad ties, will be installed in the former pen to slow the velocity of sheet flow and catch suspended materials.

EAST BARN COMPLEX
Barns 4/5 - The drainage inlets north of the barn complex will be protected with new fencing placed 25-feet north of the barn and the fenced drainage inlet areas will be re-vegetated. Given the drainage inlets are on the north side of the barn, establishing a vegetative cover may be difficult due to the limited sunlight reaching this area. Aisles will be maintained out of the barn doors so that livestock may access the pens. A new fence located 30-feet north of the existing northerly pen fence will be installed, along with interior cross fencing, gates, feeders, and movable panel gates.

Drainage Outfall - A new 100-foot section of perforated pipe will be added to the existing drainage pipe south of the barn complex. The 12-inch perforated pipe will be installed in an 18" x 18" rock lined trench with an end cap riser. The perforated pipe will be located on contour to promote sheet flow.

If you have any questions or require anything further, please contact me immediately.

Sincerely,

Matt Mullin

cc: David Lee, Assistant Planning Director (w/o encl)
Jackie Young, Project Planner
John Ricker, Water Quality Program Manager
Bill Arkfeld, Regional Water Quality Control Board
Paul Bruno, Thelen Reid & Priest

Enclosure: Project Plans (3 Sheets)

EXHIBIT A

THE COUNT[illegible]'S WATER QUALITY PROTE[illegible]ION PLAN
STEPHENSON RANCH SITE PLAN
SEPTEMBER 2, 1999
Sheet 1

(Reference Only - Not to Scale)

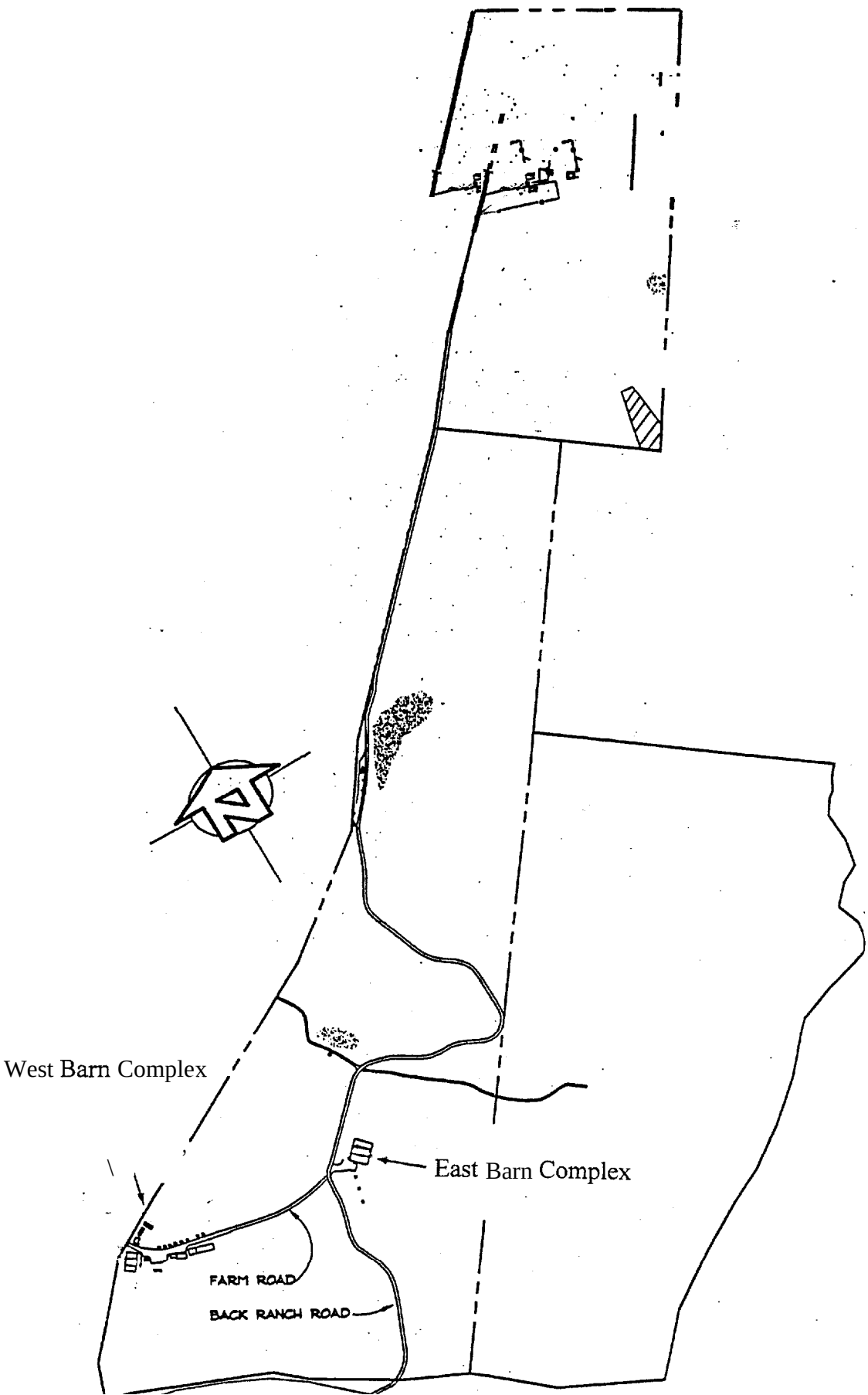

EXHIBIT A

ATTACHMENT 2

THE COUNT SWATER QUALITY PROTEC ION PLAN
WEST BARN COMPLEX - STEPHENSON RANCH
SEPTEMBER 2, 1999
Sheet 2

(Reference Only - Not to Scale)

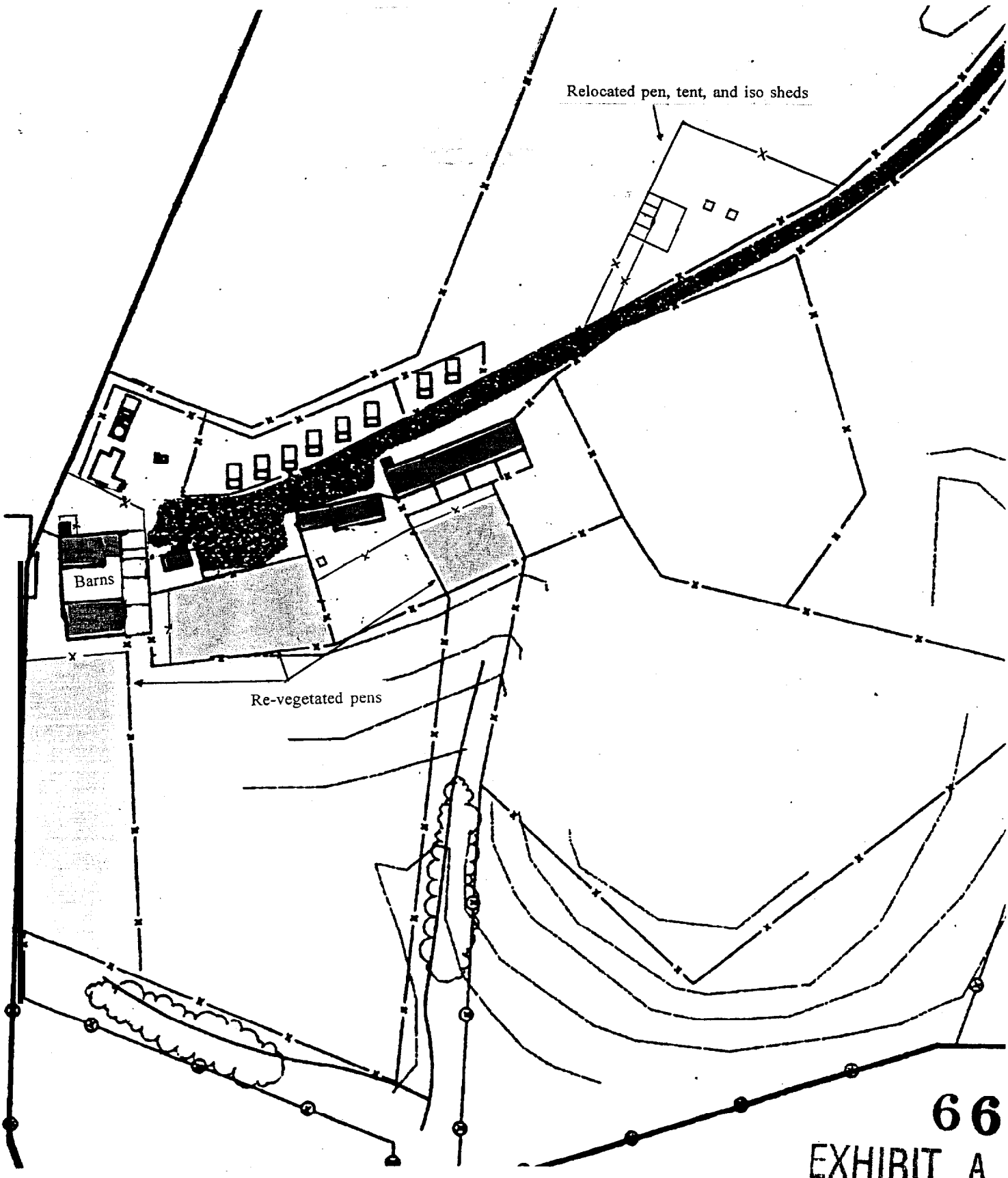

EXHIBIT A

ATTACHMENT 2

THE COUNT[illegible]S WATER QUALITY PROTEC[illegible]ON PLAN
EAST BARN COMPLEX - STEPHENSON RANCH
SEPTEMBER 2, 1999
Sheet 3

(Reference Only - Not to Scale)

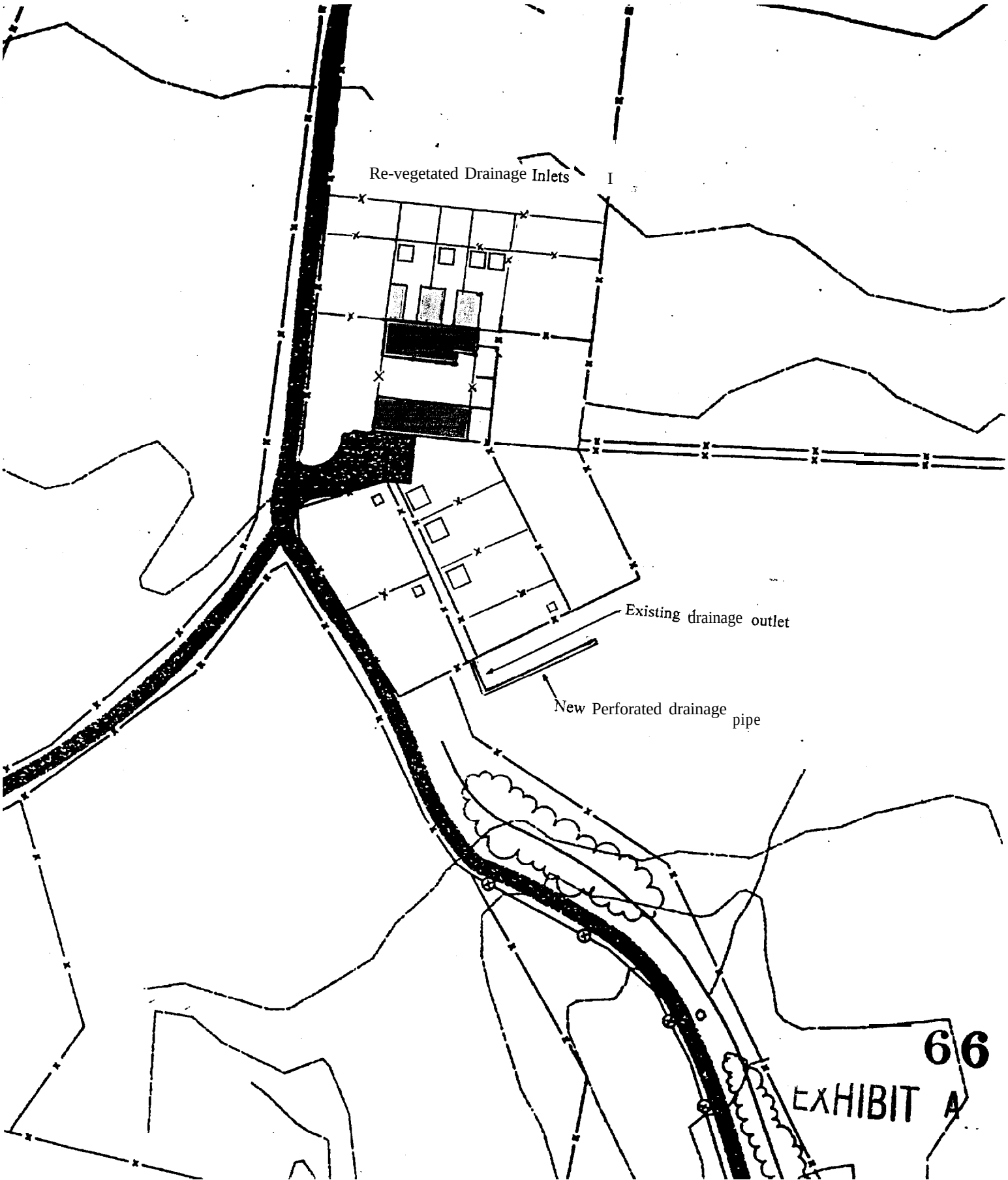

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EXHIBIT A

ATTACHMENT 2

Recording requested by:

COUNTY OF SANTA CRUZ

When recorded, return to:

Planning Department
County of Santa Cruz
70 1 Ocean Street
Santa Cruz, CA 95060

COPY of Document Recorded
14-Sep-1999 1999-0061147
Has not been compared with original
SANTA CRUZ COUNTY RECORDER

Re: APN 059-021-08

WAIVER AND INDEMNIFICATION/ACKNOWLEDGMENT OF RISK AGREEMENT

Emergency Coastal Zone Approval 99-04 19

This agreement made this 14TH day f September, 1999, by and between the COUNTY OF SANTA CRUZ, a political subdivision of the State of California, hereinafter referred to as "COUNTY", and JOHN AND BRENDA STEPHENSON, hereinafter referred to as "Emergency Coastal Zone Approval Holder", and is made with reference to the following recitals.

WHEREAS, Emergency Coastal Zone Approval Holder is the owner of the real property identified as APN 059-021-08, and more particularly described in Exhibit "A" attached hereto;

WHEREAS, COUNTY granted Emergency Coastal Zone Approval 99-0419 for the real property, subject to certain conditions; and

WHEREAS, work authorized under Emergency Coastal Zone Approval 99-0419 will be performed in advance of approval of the Master Plan application (98-0647) currently being processed for the real property;

NOW, THEREFORE, the parties agree as follows:

1. The Emergency Coastal Zone Approval Holder shall comply with all the conditions for the Emergency Coastal Zone Approval, and shall defend, indemnify and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees) against the COUNTY, its officers, employees, and agents to attack, set aside, void, or annul the Emergency Coastal Zone Approval of the COUNTY or any subsequent amendment of this Emergency Coastal Zone Approval which is requested by the Emergency Coastal Zone Approval Holder.

(a) COUNTY shall promptly notify the Emergency Coastal Zone Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Emergency Coastal Zone Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Emergency Coastal Zone Approval Holder shall not thereafter be responsible to defend, indemnify or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Emergency

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EXHIBIT B

Santa Cruz Biotechnology
Emergency Coastal Zone Approval 99-04 19
Waiver and Indemnification/Acknowledgment of Risk Agreement

Coastal Zone Approval Holder.

(b) Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

(1) COUNTY bears its own attorney's fees and costs; and

(2) COUNTY defends the action in good faith.

(c) The Emergency Coastal Zone Approval Holder shall not be required to pay or perform any settlement unless such Emergency Coastal Zone Approval Holder has approved the settlement. When representing the COUNTY, the Emergency Coastal Zone Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the Emergency Coastal Zone Approval without the prior written consent of the COUNTY.

(d) Within 30 days of the issuance of the Emergency Coastal Zone Approval, the Emergency Coastal Zone Approval Holder shall record this agreement in the office of the Santa Cruz County Recorder or the Emergency Coastal Zone Approval shall become null and void.

2. This agreement may only be modified or amended by writing.

3. Emergency Coastal Zone Approval Holder as used in this agreement shall include the successors in interest, heirs, and assigns of the party signing this agreement as "Emergency Coastal Zone Approval Holder".

4. Emergency Coastal Zone Approval Holder hereby acknowledges that the work to be performed under the Emergency Coastal Zone Approval is being undertaken at Emergency Coastal Zone Approval Holder's own risk solely for the purpose of abating water quality problems, and that the Master Plan permit process could result in relocation or elimination of these same improvements.

Executed on this 2nd day of SEPTEMBER, 1999

J R Stephenson
Emergency Coastal Zone Approval Holder

Brenda Stephenson
Emergency Coastal Zone Approval Holder

STATE OF CALIFORNIA, COUNTY OF SANTA CRUZ} ss

On SEPTEMBER 2nd 1999 before me ANNMARIE H. PORKEY, personally appeared JOHN R STEPHENSON AND BRENDA K STEPHENSON, personally known to me (or proved to me on the basis of satisfactory evidence) to be the

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EXHIBIT B

Santa Cruz Biotechnology
Emergency Coastal Zone Approval 99-0419
Waiver and Indemnification/Acknowledgment of Risk Agreement

person(s) whose name(s) ~~is~~/are ~~subscribed to the~~ within instrument and acknowledged to me that ~~he/she~~/they executed the same in ~~his/her~~/their authorized capacity(ies), and that by ~~his/her~~/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official authority to acknowledge said signature pursuant to Civil Code Section 1181.

Signature Addolorata M. Popkey
(Signature of Notary Public)

ADDOLORATA M. POPKEY
Commission # 1148423
Notary Public - California
Santa Cruz County
My Comm. Expires Jul 25, 2001

COUNTY OF SANTA CRUZ

By: Alvin D. James
Alvin D. James
Planning Director

STATE OF CALIFORNIA, COUNTY OF SANTA CRUZ) ss

On September 14, 1999 before me Bettie Shackelford, Notary Public, personally appeared Alvin D. James
personally known to me ~~(or proved to me on the basis of satisfactory evidence)~~ to be the person whose name) is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official authority to acknowledge said signature pursuant to Civil Code Section 1181.

Signature Bettie Shackelford
(Signature of Notary Public)

BETTIE SHACKELFORD
Commission # 1196668
Notary Public - California
Santa Cruz County
My Comm. Expires Sep 19, 2002

EXHIBIT "A"

All the real property situated in the County of Santa Cruz, State of California, conveyed from John R. Stephenson to John R. and Brenda Stephenson, H/W, CP, by deed recorded as Document Number 5960-014, Santa Cruz County Official Records Office on December 30, 1996. Assessor's Parcel Number 059-021-08, located in the County of Santa Cruz, State of California also described as:

345 Back Ranch Road, Santa Cruz, California

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt from the provisions of CEQA as specified in Sections 15061 - 15329 of CEQA for the reason(s) which have been checked on this document.

Application Number: 99-0419
Assessor Parcel Number: 059-021-08
Project Location: 345 Back Ranch Road, Santa Cruz (approx. 4 miles northwest of City of Santa Cruz municipal boundary)

Project Description: Relocation of livestock pens (with associated small structures), fencing, and a drainage outfall in order to provide for an increase in water quality protection.

Person or Agency Proposing Project: John and Brenda Stephenson

Staff Contact and Phone Number: Ken Hart 454-3127

A. ____ The proposed activity is not a project under CEQA Guidelines, Sections 1928 and 501.
B. ____ **Ministerial Project** involving only the use of fixed standards or objective measurements without personal judgement.
C. ____ **Statutory Exemption** other than a Ministerial Project.
Specify type: Emergency (CEQA Guidelines Section 15269)

D. Categorical Exemption

_X_ 1. Existing Facility
2. Replacement or Reconstruction
_X_ 3. New Construction of Small Structures
4. Minor Alterations to Land
___ 5. Alterations in Land Use Limitation
___ 6. Information Collection
___ 7. Actions by Regulatory Agencies for Protection of the Environment
___ 8. Actions by Regulatory Agencies for Protection of Nat. Resources
___ 9. Inspection
___ 10. Loans
___ 11. Accessory Structures
___ 12. Surplus Govt. Property Sales
13. Acquisition of Land for Wild-Life Conservation Purposes
___ 14. Minor Additions to Schools
___ 15. Functional Equivalent to EIR
___ 16. Transfer of Ownership of Land to Create Parks
___ 17. Open Space Contracts or Easements
___ 18. Designation of Wilderness Areas
___ 19. Annexation of Existing Facilities/ Lots for Exempt Facilities
___ 20. Changes in Organization of Local Agencies
___ 21. Enforcement Actions by Regulatory Agencies
___ 22. Educational Programs
___ 23. Normal Operations of Facilities for Public Gatherings
___ 24. Regulation of Working Conditions
___ 25. Transfers of Ownership of Interests in Land to Preserve Open Space
___ 26. Acquisition of Housing for Housing Assistance Programs
___ 27. Leasing New Facilities
___ 28. Small Hydroelectric Projects at Existing Facilities
___ 29. Cogeneration Projects at Existing Facilities

E. ____ Lead Agency Other Than County:

Environmental Coordinator: Date September 3,1999

ATTACHMENT 2

John and Brenda Stephenson
Application No. 99-04 19
APN: 059-021-08/062-151-03

CONDITIONS OF APPROVAL

Coastal Zone Permit No. 99-0419

APPLICANT AND PROPERTY OWNER: John and Brenda Stephenson

ASSESSOR'S PARCEL No.: 59-021-08162-l 5 l-03 (single parcel)

PROPERTY LOCATION AND ADDRESS: Both sides of Back Ranch Road at it's with intersection Highway 1 four miles north of the Santa Cruz City limits, Bonny Doon planning area

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EXHIBITS

Exhibit A - Plans and Specifications Submitted with Emergency Coastal Permit Application No. 99-0419

I. Authorized work:

Relocation of fencing, one tent, and two "iso-sheds" in the vicinity of the western barn complex, to an area located in the southern portion of the pasture known as "Genuine Risk" and/or "Omaha," as depicted on Exhibit A (Sheet 2);

Relocation of fencing along the northern side of barn 4 in the eastern barn complex, as depicted on Exhibit A (Sheet 3); and

Relocation of the outlet to an existing drainage pipe in the vicinity of the eastern barn complex to a location and in a manner depicted on Exhibit A (Sheet 3).

Placement of seasonal fencing 30 feet to the west of the channel of the ephemeral segment of Scaroni Creek.

John and Brenda Stephenson
Application No. 99-0419
APN: 059-021-08/062-151-03

II. Construction Specifications

A. All of the pen relocation work and drainage outlet reconfiguration shall be performed in accordance with the plans prepared by Matt Mullin, dated September 2, 1999 (Exhibit A, Sheets 1-3), and consistent with the letter dated September 14th, 1999.

B. To prevent pollution of surface water by animal waste the owner/applicant shall, install seasonal fencing west of the ephemeral segment of Scaroni Creek, below the lower reservoir, to prevent livestock access. This seasonal fencing shall be located no closer than 30 feet to the west of the west bank of the ephemeral drainage. The fencing shall be maintained in place between October 1"' and April 15th of each year, pending completion of the Biomedical Livestock Operation Master Plan review process. Prior to placement of this permanent fence, its proposed location shall be staked in the field for review and approval by the Planning Department.

III. Operational Conditions

A. Livestock shall be precluded from any access to or use of the area vacated through the relocation of the pens in the vicinity of the western barn complex (Exhibit A) pending approval of the Master Plan for the property currently being processed under application 98-0647;

B. Berms or swales shall be installed and maintained around the relocated pen areas created within "Genuine Risk" and/or "Omaha" for the purpose of diverting overland flow from entering the pens;

C. Manure stockpiles on the site shall be protected from rainfall by placing tarps securely over the piles during the winter months. Drainage swales or berms of an appropriate size shall be installed around the stockpiled manure to ensure that manure does not come into contact with surface runoff during the winter period.

D. If manure stockpiles are determined by Environmental Health Services staff, through visual inspection and water quality sampling, to be contributing significantly to water quality degradation and other measures developed in conjunction with or agreed upon by Environmental Health Services staff fail to adequately mitigate the problem, a manure haul-away program shall be

implemented between October 1 and April 15, and subject to the following requirements:

1. Environmental Health Services staff shall approve the manure storage location (s) to ensure that access by trucks is feasible and that truck traffic will not result in erosion or damage to pastures; and

2. Manure shall be hauled from the site no less frequently than every two weeks, unless this schedule is interrupted by inclement weather.

MINOR VARIATIONS WHICH DO NOT CHANGE THE OVERALL CONCEPT OR DENSITY OF THIS PERMIT MAY BE APPROVED BY THE PLANNING DIRECTOR AT THE REQUEST OF THE APPLICANT OR THE PLANNING STAFF.

THIS PERMIT SHALL BE VOID IF NOT EXERCISED ACCORDING TO THE CONDITIONS OF THIS PERMIT IN THIS CASE, CONDITIONS MUST BE MET WITHIN 30 DAYS OF PERMIT APPROVAL.

September 14, 1999

Mr. Ken Hart
Principal Planner/Environmental Coordinator
Santa Cruz County Planning Department
701 Ocean Street, Room 400
Santa Cruz, CA 95060

RE: County's Water Quality Protection Plan
Emergency Coastal Zone Permit 99-0419
Santa Cruz Biotechnology

Dear Mr. Hart:

In accordance with the Board of Supervisors' authorization to issue an Emergency Coastal Zone Permit for the purposes of implementing the County's Water Quality Protection Plan at the Stephenson Ranch, and pursuant to your subsequent request, Santa Cruz Biotechnology, Inc. ("SCB") respectfully submits the enclosed plans. We believe the plans are consistent with the each element identified under the County's plan. Although we hope the County's Water Quality Protection Plan will be successful, our opinion is that the more comprehensive plan that was initially recommended by staff (and endorsed by the Regional Water Quality Control Board) would be more effective in protecting water quality. Nevertheless, SCB will diligently implement the Water Quality Protection Plan consistent with the Board of Supervisors' decisions.

The following is a brief summary of each element denoted in the enclosed plans:

WEST BARN COMPLEX
Barns 1/2 Pens - The pen to the south of the barn complex will be re-vegetated and used as pasture following approval of the Master Plan. New pen space (fencing, gates, movable panel gates, feeders, etc.) will be created around the west and north sides of the barn complex. As discussed in the field, a new fence will be installed 25-feet south of Barn 1. Low curbs consisting of posts and 2" x 10" boards, or railroad ties, will be installed in the former pen to slow the velocity of sheet flow and catch suspended materials.

Pen with tent and isosheds - This complex will be recreated (tent, isosheds (2), fencing, gates, movable panel gates feeders, etc.) to an up gradient location in the Omaha pasture, The exact location of the pen and its elements will be determined in field. The former pen will be re-vegetated and used as pasture following approval of the Master Plan. Berms and swales will be installed around the newly created pen to direct runoff around the area.

Barn 3 - The pen area adjacent to the drainage way will be re-vegetated and used for pasture following approval of the Master Plan. As discussed in the field, a new pen space will be created west of the barn by installing a new fenced 15-feet out from the existing sorting pen area and continue westerly to an existing fence near the office/caretakers house. The new pen area will include the existing isoshed in front of the office. Low curbs consisting of posts and 2" x 10" boards, or railroad ties, will be installed in the former pen to slow the velocity of sheet flow and catch suspended materials.

EXHIBIT A

EAST BARN COMPLEX
Barns 4/5 - The drainage inlets north of the barn complex will be protected with new fencing placed 25-feet north of the barn and the fenced drainage inlet areas will be re-vegetated. Given the drainage inlets are on the north side of the barn, establishing a vegetative cover may be difficult due to the limited sunlight reaching this area. Aisles will be maintained out of the barn doors so that livestock may access the pens. A new fence located 30-feet north of the existing northerly pen fence will be installed, along with interior cross fencing, gates, feeders, and movable panel gates.

Drainage Outfall - A new 100-foot section of perforated pipe will be added to the existing drainage pipe south of the barn complex. The 12-inch perforated pipe will be installed in an 18" x 18" rock lined trench with an end cap riser. The perforated pipe will be located on contour to promote sheet flow.

If you have any questions or require anything further, please contact me immediately.

Sincerely,

Matt Mullin

cc: David Lee, Assistant Planning Director (w/o encl)
Jackie Young, Project Planner
John Ricker, Water Quality Program Manager
Bill Arkfeld, Regional Water Quality Control Board
Paul Bruno, Thelen Reid & Priest

Enclosure: Project Plans (3 Sheets)

EXHIBIT A

THE COUNTY'S WATER QUALITY PROTECTION PLAN
STEPHENSON RANCH SITE PLAN
SEPTEMBER 2, 1999
Sheet 1

(Reference Only - Not to Scale)

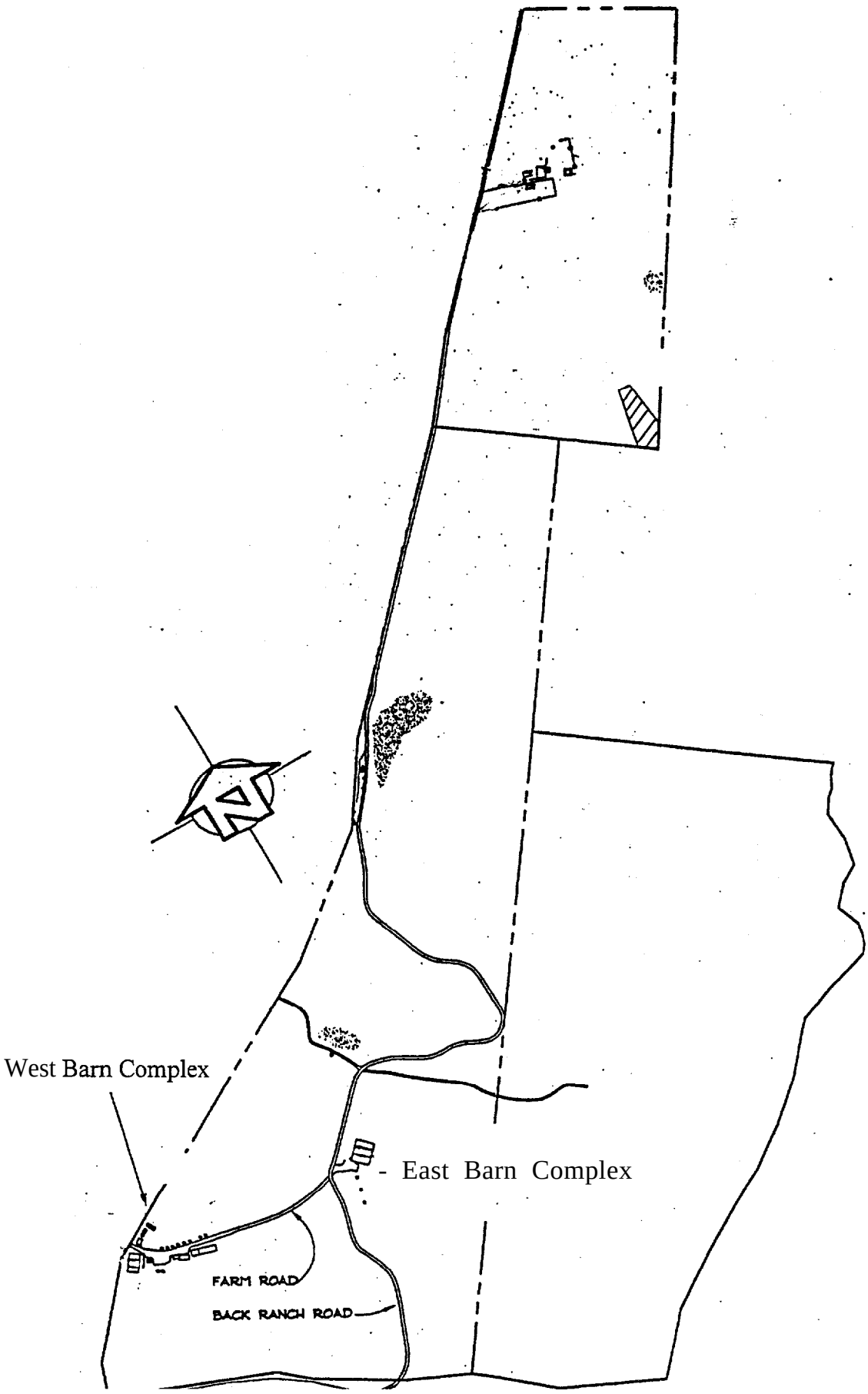

EXHIBIT A

ATTACHMENT 3

THE COUNT S WATER QUALITY PROTEC ION PLAN
WEST BARN COMPLEX - STEPHENSON RANCH
SEPTEMBER 2, 1999
Sheet 2

(Reference Only - Not to Scale)

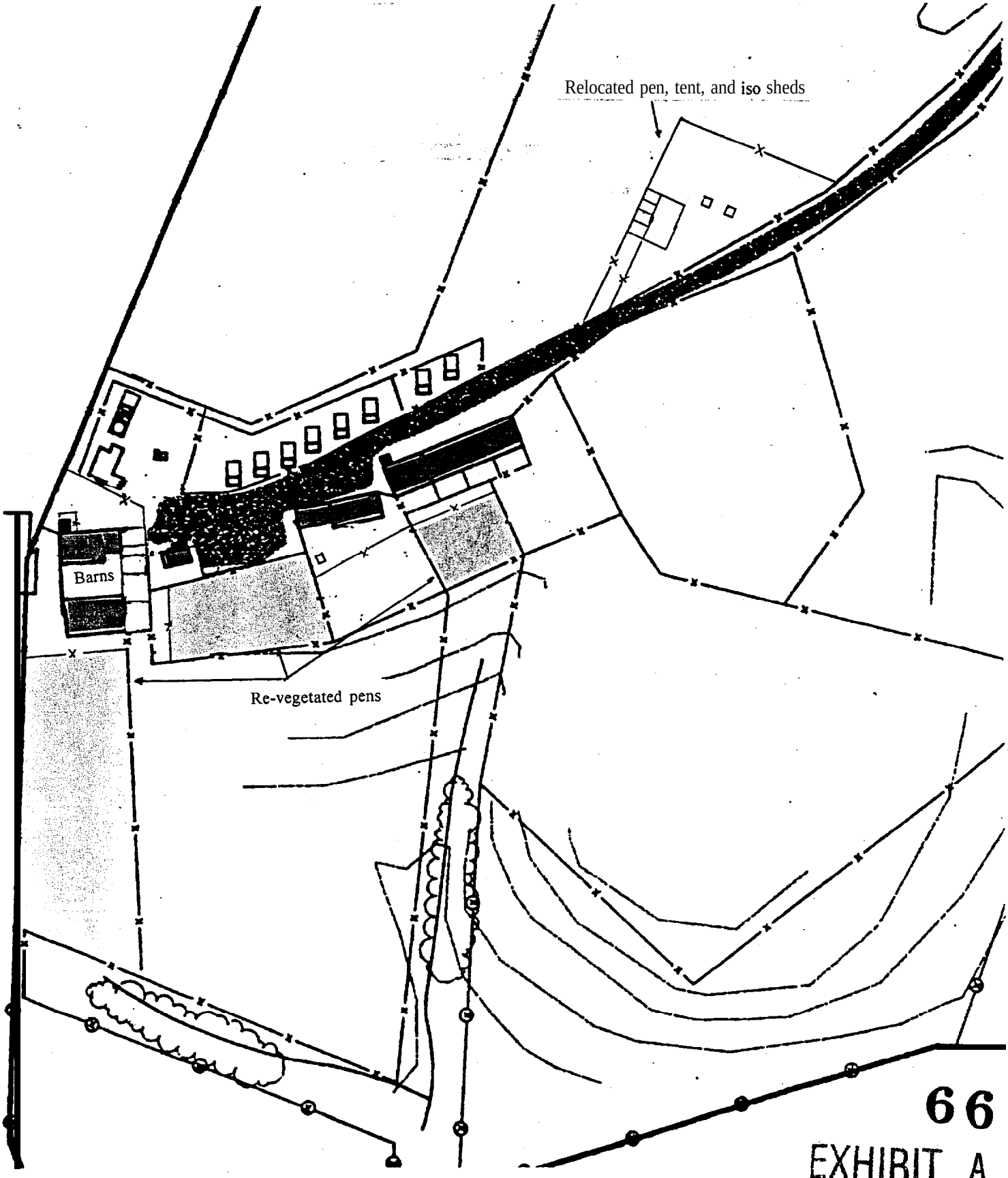

EXHIBIT A

ATTACHMENT 3

THE COUNT "S WATER QUALITY PROTEC ION PLAN
EAST BARN COMPLEX - STEPHENSON RANCH
SEPTEMBER 2, 1999
Sheet 3

(Reference Only - Not to Scale)

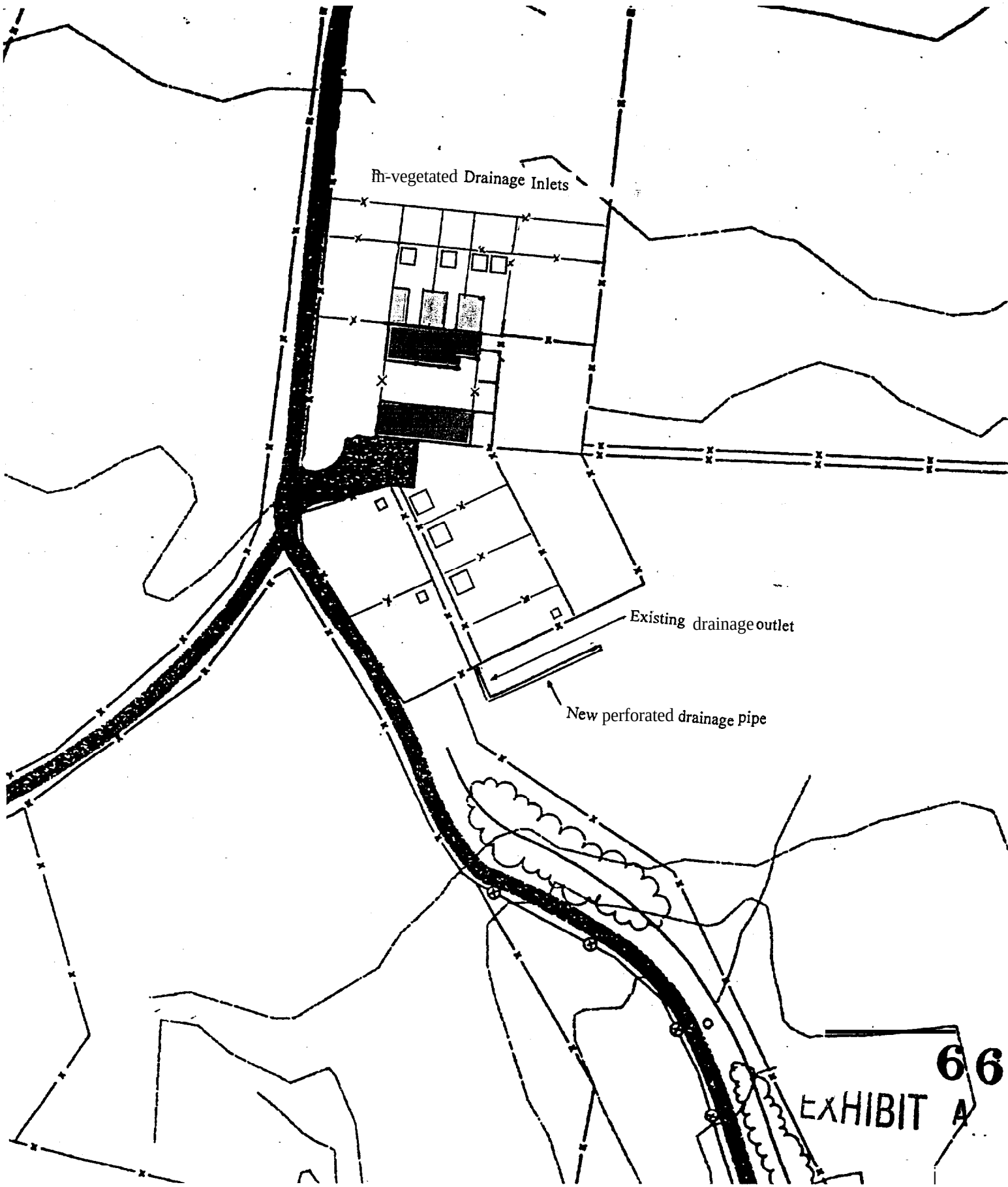

EXHIBIT A

John and Brenda Stephenson
Application No. 99-04 19
A P N : 059-021-08/062-151-03

COASTAL ZONE PERMIT FINDINGS:

1. THAT THE PROJECT IS A USE ALLOWED IN ONE OF THE BASIC ZONE DISTRICTS, OTHER THAN THE SPECIAL USE (SU) DISTRICT, LISTED IN SECTION 13.10.170(d) AS CONSISTENT WITH THE GENERAL PLAN AND LOCAL COASTAL PROGRAM LUP DESIGNATION.

Livestock fencing and drainage facilities are allowed uses in the "CA" (Commercial Agriculture) zone district where the project is located. "CA" zoning is an implementing zoning of the General Plan/LCP land use designation of "Agriculture" with an "Agricultural Resource" overlay. The property is so designated by the General Plan/LCP.

The project, as conditioned, meets all applicable General Plan policies. Specifically, the condition requiring the seasonal fence to be located 30 feet from the edge of the ephemeral reach of Scaroni Creek rather than 10 feet, as proposed by the applicant, will better protect the habitat of the ephemeral stream channel from the impacts of proximate livestock use, during the rainy season when such proximate use would be most likely to generate contaminated runoff into the ephemeral stream channel. Similarly, the relocation of fenced corrals from the south side to the north side of Farm Road will significantly increase the separation between livestock corrals and riparian habitat; thereby preventing manure laden runoff from entering Burns Creek and other riparian corridors. The isolation of drainage inlets from the livestock corral area at barns #4 and #5 (located opposite the intersection of Back Ranch and Farm Roads) will substantially improve the water quality of runoff entering the reach of Scaroni Creek downslope from these barns. In addition, the newly required drainage outlet facility that will disperse runoff collected in the vicinity of barns #4 and #5 will substantially reduce discharge velocities and provide a greater separation between the point of discharge and the nearest riparian habitat than was previous provided at this area of the ranch.

The requirements described above provide new habitat protections and meet General Plan policy objective 5.2 "to preserve, protect and restore all riparian corridors and wetlands for the protection of wildlife and aquatic habitat, water quality, erosion control, open space aesthetic and recreational values and the conveyance of storm waters". These permit conditions have also been designed to meet General Plan policy objective 5.7 "to protect and enhance surface and water quality in the County's streams, coastal lagoons and marshes by establishing best management practices on adjacent land uses". This policy objective is met by:

a) Requiring a discharge device that prevents erosion problems which meets policy 5.7.3 *(Erosion Control for Stream and Lagoon Protection)*

b) Providing an increased separation of vegetation, acting as a filter strip, between the relocated corrals and riparian habitat in accordance with policy 5.7.4 which requires development to "minimize the discharge of pollutants into surface water drainage...";

c) Requiring the project to conform the requirements of the RWQCB in compliance with policy 5.7.7 *(Stormwater Discharge Permit Requirements);* and

d) "Requiring all stables and other animal keeping operations to me managed to prevent discharge of sediment, nutrient and contaminants to surface water and groundwater (policy 5.7.8)

2. THAT THE PROJECT DOES NOT CONFLICT WITH ANY EXISTING EASEMENT OR DEVELOPMENT RESTRICTIONS SUCH AS PUBLIC ACCESS, UTILITY, OR OPEN SPACE EASEMENTS.

The project does not conflict with any existing easement or development restriction such as public access, utility, or open space easements. All property owners on Back Ranch Road have legal right-of-way to travel over that segment of Back Ranch Road that traverses the Stephenson parcel. Neither the project fencing nor the drainage outfall improvements will occur within this right-of-way.

3. THAT THE PROJECT IS CONSISTENT WITH THE DESIGN CRITERIA AND SPECIAL USE STANDARDS AND CONDITIONS OF THIS CHAPTER PURSUANT TO SECTION 13.20.130 et seq.

The project will place livestock fencing approximately 44 feet to 92 feet from the edge of the traveled roadbed of Back Ranch Road and the project complies with the applicable standards of County Code Section 13.20.130 et seq. In addition, agricultural land will be conserved to the fullest extend practical while protecting water quality and riparian habitat.

4. THAT THE PROJECT CONFORMS WITH THE PUBLIC ACCESS, RECREATION, AND VISITOR-SERVING POLICIES, STANDARDS AND MAPS OF THE GENERAL PLAN AND LOCAL COASTAL PROGRAM LAND USE PLAN, SPECIFICALLY CHAPTER 2: FIGURE 2.5 AND CHAPTER 7, AND, AS TO ANY DEVELOPMENT BETWEEN AND NEAREST PUBLIC ROAD AND THE SEA OR THE SHORELINE OF ANY BODY OF WATER LOCATED WITHIN THE COASTAL ZONE, SUCH DEVELOPMENT IS IN CONFORMITY WITH THE PUBLIC ACCESS AND PUBLIC RECREATION POLICIES OF

John and Brenda Stephenson
Application No. 99-04 19
APN: 059-021-08/062-151-03

CHAPTER 3 OF THE COASTAL ACT COMMENCING WITH SECTION 30200.

The project site is not located between the shoreline and the first public road. Consequently, the project will not interfere with public access to the beach, ocean, or any nearby body of water. Further, the project site is not identified as a priority acquisition site in the County Local Coastal Program.

5. THAT THE PROPOSED DEVELOPMENT IS IN CONFORMITY WITH THE CERTIFIED LOCAL COASTAL PROGRAM.

The proposed project has been conditioned so it will be in conformity with the County's certified Local Coastal Program in that productive pasture land on the parcel is maximized to the fullest extent possible while water quality and the identified riparian habitat is protected as required by the LCP. Finding #1 above discusses in more detail how the project, as conditioned, is consistent with the applicable policies of the LCP.

DEVELOPMENT PERMIT FINDINGS:

1. THAT THE PROPOSED LOCATION OF THE PROJECT AND THE CONDITIONS UNDER WHICH IT WOULD BE OPERATED OR MAINTAINED WILL NOT BE DETRIMENTAL TO THE HEALTH, SAFETY, OR WELFARE OF PERSONS RESIDING OR WORKING IN THE NEIGHBORHOOD OR THE GENERAL PUBLIC, AND WILL NOT RESULT IN INEFFICIENT OR WASTEFUL USE OF ENERGY, AND WILL NOT BE MATERIALLY INJURIOUS TO PROPERTIES OR IMPROVEMENTS IN THE VICINITY.

The location of the project fencing and drainage outfall and the conditions under which these facilities would be maintained will not be detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity in that the project is located in an area designated for agricultural uses. In fact, the purpose of the project is to improve water quality both on-site and for other properties downstream of the site. The fencing will allow livestock to be properly managed on the site while being located to prevent livestock from entering and impacting an ephemeral reach of Scaroni Creek. The drainage outfall will be moved farther from the head of a drainage flowing into an

intermittent reach of Scaroni Creek to provide increased filtration of contaminated water. The new discharge device will reduce the velocity of discharge thereby minimizing the potential for erosion of the slope and sedimentation of Scaroni Creek.

2. THAT THE PROPOSED LOCATION OF THE PROJECT AND THE CONDITIONS UNDER WHICH IT WOULD BE OPERATED OR MAINTAINED WILL BE CONSISTENT WITH ALL PERTINENT COUNTY ORDINANCES AND THE PURPOSE OF THE ZONE DISTRICT IN WHICH THE SITE IS LOCATED.

The project site is located in the "CA" zone district. The proposed location of the project and the conditions under which the project will be constructed and maintained will be consistent with all pertinent County ordinances and the purpose of the "CA" zone district, in that the primary use of the project fencing will be for the containment and management of livestock. The fencing and the drainage outfall are conditionally allowed and are common uses within the "CA" zone district. Further, the permit conditions require all fencing and drainage improvements to be located outside of any proximate riparian corridors in compliance with the County's Riparian Corridor and Wetlands Protection Ordinance (County Code Chapter 16.30).

3. THAT THE PROPOSED USE IS CONSISTENT WITH ALL ELEMENTS OF THE COUNTY GENERAL PLAN AND WITH ANY SPECIFIC PLAN WHICH HAS BEEN ADOPTED FOR THE AREA.

The project is located on land with an "Agriculture" land use designation. The use proposed by this project is consistent with all elements of the General Plan in that the installation of livestock fencing to raise livestock for biomedical or other purposes is an allowable use within this land use designation. As discussed in Coastal Zone finding #1 above, the project has been conditioned to be consistent with applicable General Plan policies regarding riparian corridors, sensitive habitats and surface water quality. No specific plan has been adopted for this area.

4. THAT THE PROPOSED USE WILL NOT OVERLOAD UTILITIES AND WILL NOT GENERATE MORE THAN THE ACCEPTABLE LEVEL OF TRAFFIC ON THE STREETS IN THE VICINITY.

The installation and maintenance of livestock fencing and the relocation of the drainage outfall will not overload utilities and will not generate additional traffic on Back Ranch Road other than an occasional vehicle used to haul fencing materials for installation or repair.

John and Brenda Stephenson
Application No. 99-04 19
APN: 059-02 l-08/062- 15 l-03

5. THAT THE PROPOSED PROJECT WILL COMPLEMENT AND HARMONIZE WITH THE EXISTING AND PROPOSED LAND USES IN THE VICINITY AND WILL BE COMPATIBLE WITH THE PHYSICAL DESIGN ASPECTS, LAND USE INTENSITIES, AND DWELLING UNIT DENSITIES OF THE NEIGHBORHOOD.

The project, as conditioned, will complement and harmonize with the existing and proposed land uses in the vicinity and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood in that the purpose of the project is to improve and permanently protect water quality through providing for an increased separation between livestock-related activities and sensitive drainage channels on the site and providing better drainage facilities which will substantially reduce the collection and discharge of contaminated runoff. The project does not include additional dwelling units nor the construction of buildings.

6. THE PROPOSED DEVELOPMENT PROJECT IS CONSISTENT WITH THE DESIGN STANDARDS AND GUIDELINES (SECTIONS 13.11.070 THROUGH 1 3.11.076), AND ANY OTHER APPLICABLE REQUIREMENTS OF THIS CHAPTER.

The project, as conditioned, is consistent with the applicable sections of the County's Design Review Ordinance in that the relocated pen areas and drainage outlet, are sited to provide greater physical separation between corrals where a concentrated numbers of animals are kept and nearby watercourses and riparian habitats. In addition, the corrals have been relocated in areas that will minimize impacts on private views.

John and Brenda Stephenson
Application No. 99-04 19
APN: 059-02 1-08/062-1 5 l-03

Required Special Findings for Level 5 (or Higher) Development on "CA" and "AP" Zoned Properties: County Code Section 13.10.314 (a)

1. THAT THE ESTABLISHMENT OR MAINTENANCE OF THIS USE WILL ENHANCE OR SUPPORT THE CONTINUED OPERATION OF COMMERCIAL AGRICULTURE ON THE PARCEL AND WILL NOT REDUCE, RESTRICT OR ADVERSELY AFFECT AGRICULTURAL OPERATIONS ON THIS AREA.

The fencing adjacent to an ephemeral segment of Scaroni Creek will support the raising of goats or other livestock on the 208 acre agricultural property. While the permit conditions will require approximately 1 acre of land to be removed from active livestock pasture to protect environmental resources and water quality on the site, this will not be a significant reduction of grazing land and will not affect the commercial raising of livestock for biomedical or other purposes. The corral relocation will preclude the another area of approximately 15,000 square feet from being used to house livestock in the interest of protecting water quality. However, there is available space on the opposite (north) side of Farm Road to keep the relocated livestock without impairing the livestock pasture in that area.

2. THAT THE USE OR STRUCTURE IS ANCILLARY, INCIDENTAL OR ACCESSORY TO THE PRINCIPAL AGRICULTURAL USE OF THE PARCEL,
OR
NO OTHER AGRICULTURAL USE IS FEASIBLE FOR THE PARCEL.

Livestock fencing and drainage facilities are ancillary uses on "CA" zoned properties which are common to and incidental to the raising of livestock. Goats are raised on the project parcel for biomedical purposes.

3. THAT SINGLE-FAMHY RESIDENTIAL USES WILL BE SITED TO MINIMIZE CONFLICTS, AND THAT ALL OTHER USES WILL NOT CONFLICT WITH COMMERCIAL AGRICULTURAL ACTIVITIES ON SITE, WHERE APPLICABLE, OR IN THE AREA.

No single-family dwelling will be constructed as part of this project. As discussed in finding #1 above and Development Permit finding #2, the project will not conflict with agricultural activities on the site nor effect other agricultural operations in the area. The project is limited to facilities required for the management of livestock and surface water drainage.

John and Brenda Stephenson
Application No. 99-0419
APN: 059-021-08/062-151-03

4. THAT THE USE WILL BE SITED TO REMOVE NO LAND FROM PRODUCTION (OR POTENTIAL PRODUCTION) IF ANY NON-FARMABLE POTENTIAL BUILDING SITE IS AVAJLABLE.

OR

IF THIS IS NOT POSSIBLE, TO REMOVE AS LITTLE LAND AS POSSIBLE FROM PRODUCTION.

The project has been conditioned to remove as little land as feasible from the production of crops and livestock. The amount of land removed from active agriculture is limited to approximately 1.25 acre to protect identified environmental resources and water quality on this portion of the site. The purposes for removing this land from active livestock raising are discussed in Coastal Zone permit finding # 1. This removed land is not a significant amount of pasture land on this 208 acre parcel.

contact with humans that the "body contact" standard should apply (see attached letter from County Environmental Health -- Exhibit K);" and

(2) that the Board of Supervisors take the following specific actions to stop the water pollution runoff from SCBI's site:

Direct SCBI to:

(a) immediately move all goat pens on the lower terrace to be located north of Farm Road and (i) eliminate all drainage inlets or drainage interceptors or trench drains which discharge or facilitate discharge into any riparian corridor, and (ii) prohibit any overland flow through the paddock area of the west barn complex;

(b) immediately remove all goats from, and cease any manure spreading operations on, the upper terrace which the Weber Report demonstrates is connected hydrogeologically **to** the Lanting well and which- measurements at the Skid Road Bridge and the Landino Dip demonstrate is a source of surface water pollution;

(c) immediately, and year round, fence the goats 30 feet away from the ephemeral Scaroni Creek below the lower reservoir;

(d) reduce the number of goats on the SCBI site to, in order of preference by SOAL, (i) the number which could **be** reasonably grazed if the SCBI operation were a true grazing operation dependent on the grazing capacity of the land; or, (ii) the number [whichever is less] currently on site or 1037 (the number for which there is currently 15 square feet of shelter per goat according to the 8-24-00 Staff Report);

Direct EHS to:

(e) arrange for the conduct (under EHS or other independent supervision and at the expense of SCBI) of a series of water quality samplings utilizing a protocol to be provided by Dr. Russell or other suitable expert to determine the most probable sources of pollution on the SCBI site in order of priority;

(f) correlate the past and future measurements of E.coli concentrations with the number of animals kept on site, utilizing SCBI records for past dates and an independent counter for future dates;

(g) arrange for the conduct (under EHS or other independent supervision and at the expense of SCBI) of a program of testing the subsurface soil between all barns/tents holding goats and the nearby riparian corridors for E.coli, nitrates, phosphorous, ammonia and urea so as to determine whether pollution is traveling laterally underground into the riparian corridors and if so where, if anywhere, the goats could be relocated to so as to avoid such lateral underground travel of the pollution;

(h) require SCBI to provide an accurate and detailed plan-sized contour map of the area between Majors Creek and Laguna Creek from the Lanting property south;

(i) require SCBI to fund an independent expert selected by the County to measure the temperatures and coliform levels in the SCBI manure piles for information relevant to composting and to submit samples of the manure in those piles to Soil Control Lab or other expert acceptable to the County to test for extent of composting and report the results thereof to the County as a public record;

(j) post signs on Back Ranch Road warning that the water flowing across or along Back Ranch Road or in the area of the SCBI operation is unsafe for body contact during and after storm events;

Contingent directives:

(k) if the foregoing steps do not reduce water pollution runoff to safe levels (200 MPL for E.coli) by the first rain exceeding 0.50 inches after April 1, 2000 as measured by EHS, require SCBI to further reduce the number of goats in the same manner by increments of 100 until such standard is achieved;

THELEN REID & PRIEST LLP
ATTORNEYS AT LAW
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SAN JOSE

PAUL A. BRUNO
408-282-1817
bruno@thelenreid.com

May 19, 2000

VIA FACSIMILE AND U.S. MAIL

Ken Hart
Environmental Coordinator
Santa Cruz County Planning Department
701 Ocean Street
Santa Cruz, California 95060

Re: Proposals for EIR Scope of Work

Dear Ken:

I am aware of communications between Matt Mullin (of Santa Cruz Biotechnology) and Kim Tschantz, the Deputy Environmental Coordinator on the issue of when comments are due on the EIR consultant proposals. The proposals are in the range of $400,000 for the agricultural enterprise (a biomedical livestock operation). As I understand, in order to get responses and negotiations complete, and the Board of Supervisors' authorization to enter the contracts it may be delayed by Mr. Mullin's request for time to comment.

This letter request two weeks' time extension from May 19, 2000 to comment on the proposals. The comments will largely be on areas of cost that should be reduced, deleted or increased based on the actual plan and reality of the Ranch.

These issues are critical for review by John and Brenda Stephenson before the commitment of the funds by contract. As the Initial Study and scope took great effort and care, the proposal review also deserves equal care.

THELEN REID & PRIEST LLP

I am sensitive to Mr. Tschantz' concerns as well. I have informed Matt and the Stephensons that any such extension to review and comment on the proposal could result in a "carryover" so that the ultimate delay for award of the contract may exceed two weeks. However, as these are among the most expensive EIR proposals for any enterprise in the County (certainly the largest for an agricultural enterprise), the minor risk is work the value of a review and comment by the Applicant.

Thank you for your consideration.

Very truly yours,

Paul A Bruno (RR)

Paul A. Bruno

PAB/rr
Cc: Kim Tschantz, Deputy Environmental Coordinator
Matt Mullin, Santa Cruz Biotechnology, Inc.

SJ #80141 v1

County of Santa Cruz

PLANNING DEPARTMENT

701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060

(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123

ALVIN D. JAMES, DIRECTOR

Date June 1, 2000

Agenda: June 6, 2000

Board of Supervisors
County of Santa Cruz
701 Ocean Street
Santa Cruz, California 95060

SUBJECT: Item 66 on the June 6 agenda

Members of the Board:

In our staff report to your Board dated May 31, 2000 regarding various water quality issues associated with the biomedical livestock operation operated by Santa Cruz Biotechnology, we explained that the staff report was prepared without the benefit of final plans. This approach was necessary due to the compressed time schedule for preparing our recommendations and making our report available to the public at the earliest possible time. Since the completion of our staff report, we have received these plans and we are attaching them for your review. Staff will analyze these plans and provide additional recommendations as necessary as part of our staff presentation on Tuesday.

Sincerely,

ALVIN D. JAMES
Planning Director

RECOMMENDED:

A
County Administrative Officer

Attachments: Project Plans Dated 5/31/00 and Storm Water Pollution Prevention Plan-May 2000

66

SANTA CRUZ BIOTECHNOLOGY – STEPHENSON RANCH
STORM WATER POLLUTION PREVENTION PLAN

May 2000

Prepared by:

Todd Engineers
Ifland Engineers
Santa Cruz Biotechnology, Inc.

With Contributions by:

Dr. Deanne Meyer (UC Davis)
Sheila Barry (UC Cooperative Extension)
Sergio Garcia (UC Cooperative Extension)
Ray Budzinski, Certified Range Manager
County Environmental Health Services
County Planning

SANTA CRUZ BIOTECHNOLOGY – STEPHENSON RANCH
STORM WATER POLLUTION PREVENTION PLAN

1. INTRODUCTION

Santa Cruz Biotechnology operates a biomedical livestock operation on Stephenson Ranch (ranch). The ranch is located along Highway One approximately five miles north of Santa Cruz between Majors and Laguna Creeks (Plans, Sheet 1). Non-structural BMPs, implemented on-site over the last two years, have not resulted in bringing surface water runoff consistently within fecal coliform standards adopted by the Regional Water Quality Control Board to the extent that such elevated counts relate to ranch activities. Therefore, the Santa Cruz County Board of Supervisors provided an option for Santa Cruz Biotechnology to develop a storm water pollution prevention plan incorporating structural Best Management Practices (BMPs).

The plan presented in this document incorporates structural BMPs presented at various public hearings and discussed with various agencies over the course of the last two to three years. It also incorporates elements that evolved over the last two months in discussions among team members contributing to this document and upon review and input by county personnel. Each component proposed for implementation is important to the overall goal of maintaining storm water quality within acceptable standards. Santa Cruz County is currently refining the applicability of the water contact standards to be implemented countywide.

The sections of this plan include Objective, Background, Performance Standards, Proposed Measures, Contingency Measures, Alternatives Considered and Rejected, and Summary. The Proposed Measures section describes the various elements that would be constructed or implemented upon approval of this plan. The section on Contingency Measures outlines elements that may be added at a future date if deemed beneficial and necessary. The accompanying plans provide engineering drawings showing for this project.

2. OBJECTIVE

The objective of this Storm Water Pollution Prevention Plan is to achieve compliance with bacteriological water quality performance standards consistent with normal background levels of bacteria commonly found in storm water discharge countywide.

3. BACKGROUND

On March 7, 2000, the Santa Cruz County Board of Supervisors (Board) directed Environmental Health Services (EHS) to develop water quality performance standards, and also directed Santa Cruz Biotechnology (SCB) to initiate one of the following options: Move all livestock barns and pens north of Farm Road; construct a berm north of Farm Road to prevent run-off; or prepare

and file a storm water pollution prevention plan. At that hearing, the Board stated its willingness to consider approval of structural measures identified within a future storm water pollution prevention plan, should that option be pursued. SCB has complied with the Board's direction and selected the third option by preparing and filing this Storm Water Plan. Moreover, approval and implementation of this Storm Water Plan will cure the Notice of Violation issued by EHS on March 9, 2000.

The development of an overall comprehensive Storm Water Pollution Prevention Plan (hereinafter referred to as "Storm Water Plan") was a collaborative effort involving Dr. Deanne Meyer, U.C. Davis, Sheila Barry, U.C. Cooperative Extension, Sergio Garcia, U.C. Cooperative Extension, Ifland Engineers, Santa Cruz Biotechnology Inc., and Todd Engineers. Ray Budzinski, Certified Range Manager, also provided input. Many different options were considered in its development.

Additionally, the development of the Storm Water Plan has included the involvement a number of county representatives, primarily from the Planning Department (Planning) and EHS. Several meetings have occurred with county staff that led to significant revisions and modifications to the overall StormWater Plan based upon their input.

On April 26th, SCB met with Planning and EHS to review the preliminary Storm Water Plan. On May 1st, SCB filed the Storm Water Plan narrative and two days later filed the engineered drawings including revisions discussed with staff in the preliminary review meeting. On May 9th, SCB, Ifland Engineers, and county staff met to review and discuss the submitted Storm Water Plan (revision #1). County staff advised that upon their review, they had reservations about the plan's potential effectiveness in that the then-proposed trench system was an untested management practices for livestock facilities. At that time, staff identified possible revisions for consideration by SCB and its team to address their reservations. A follow-up meeting occurred on May 1 7th with Planning, EHS, and other county departments to further discuss the Storm Water Plan and to provide additional feedback and input. On May 1 8th, SCB filed a revised Storm Water Plan (revision #2) replacing the trench system staff had questioned with a storm water detention basins system that staff recommended in the May 9th meeting. The manure bunkers were also eliminated from the project based upon staff input that less permanent options could be pursued in-lieu of the bunkers.

On May 1 8th, a public workshop was hosted by EHS and Planning that included SCB, Ifland Engineers, SOAL, upstream and downstream neighbors, and third party consultants (SOAL's and/or neighbors). The workshop focused on the managed storm water basin design. It is our understanding EHS requested SOAL to invite several other groups such as Surfriders' Foundation, Surfers' Environmental Alliance, and Save Our Shores, who were unable or declined to come to the May 18 workshop.

Finally, on May 25th, another meeting with county staff occurred to further discuss the project, as well as comments/issues raised at the public workshop. Staff questioned the overall scope of work, namely the extent of grading needed for the managed stormwater detention basins. SCB filed the revised project plans on May 31st (revision #3) for a scaled down project based upon the directives issued by Planning and EHS.

4. PERFORMANCE STANDARDS

The objective of the Storm Water Plan, as noted in Section 2, is to achieve compliance with bacteriological water quality performance standards currently under review by Environmental Health Services. The performance standards will be applicable to the drainages in the vicinity of the Stephenson Ranch, as well as to all drainage ways countywide.

5. PROPOSED MEASURES

The design of this Storm Water Plan utilizes known principles and technologies to address water quality protection. Non-mechanical methods were intentionally selected to minimize risk of failure due to mechanical breakdowns, interrupted power supply, or reliance upon unproven technologies/applications.

The single most important principle in this Storm Water Plan is to separate storm water from areas having potentially concentrated sources of manure. Storm water will not be degraded beyond background levels of E. coli if it does not come into contact with concentrated, fresh livestock manure. If the manure is separated from storm water, then bacteria from livestock manure cannot be transported into drainage ways. It is a simple and straightforward principle that is universally recognized as an effective means to protect water quality from livestock activities. To achieve this goal, barn roof extensions and drainage improvements are necessary elements within the Storm Water Plan.

The following discussion provides more detailed information about each of the measures contained in the Storm Water Plan. As identified by EHS and discussed by the Board at its March 7, 2000 meeting, the installation of a combination of measures is necessary at the Stephenson Ranch. Any one item would not be completely effective by itself in comparison to a combination of comprehensive BMPs.

B. Building Clusters

Barn Roof Extensions – West and East Barn clusters
In both the East and West barn complexes, new roof extensions are proposed for each pair of existing twin barns (Plans, Sheets 6 & 7). There has been quite a bit of discussion about this protective measure in past hearings; however, no reasonable argument has been made to refute this measure's inherent effectiveness to significantly protect water quality. The barns represent a concentrated source of fresh manure since the animals are boarded in the barns each night. Dr. Larry Russell, water quality consultant retained by SOAL (or neighbor), testified before the Board as to the obvious effectiveness of this measure's ability to protect water quality. Simply stated, covering the breezeway between each twin barn complex will provide necessary protection of the interior barn space and will eliminate storm water from penetrating the barn complex and potentially transporting bacteria from the barns' flooring to receiving waters. Within the East Barn cluster, barn siding is also proposed along the eastern wall of the barn to further protect the barn's interior.

Tarps – West Barn cluster
On the south side of Barn 3 (Plans, Sheets 3), tarps will be placed over a portion of the pen area immediately adjacent to the barn to protect the pen area from direct contact with rainfall. The tarps will extend outward approximately 15 feet from the barn and may have side tarps that could be rolled down during storm events to protect the area from wind driven rains. The side tarps could be rolled up in dry weather to expose the area to sunlight to help keep the area dry. If required, all of the tarps could be removed during the dry season and reinstalled prior to the onset of the next wet season.

Tents – Upper Terrace cluster
A third new tent, in addition to recognizing the two existing tents, is proposed on the upper terrace near the existing caretaker's cottage (Plans, Sheet 4). All three tents will be standard Army general-purpose tents approximately 18 feet wide by 52 feet long by 12 feet high. A third tent will provide additional protective covering for the livestock during the wet season and will minimize the potential of manure being transported out of the pen areas by storm water.

Horse Tarps - Upper Terrace cluster
Protective tarps are proposed to cover a portion of each existing horse corral (Plans, Sheet 4). These protective coverings will provide sheltered space within each horse corral and minimize horse manure from being transported out of the corrals by storm water. The tarps can be secured to the existing fence posts within the corrals.

Manure Pads – West Barn, East Barn, and Upper Terrace clusters

To date, Environmental Health Services has not considered the manure stockpiles to negatively affect water quality in the vicinity of the Stephenson Ranch. However, the manure stockpiles will be improved as part of this Storm Water Plan to further safeguard water quality. Elevated earthen pads approximately two to three feet in height will be constructed, along with earthen berms, to completely separate overland flow from the stockpiles (Plans, Sheets 2, 3, and 4). By elevating the pad, the likelihood of possible leachate moving out of the stockpile area further downstream will also be minimized. Each stockpile will be covered with a single, large, continuous tarp. The tarps will be secured over the stockpiles to prevent contact by precipitation. Each stockpile will have protective berming around it to direct sheetflow away from the pad.

In the manure pad areas, thin layers of lime may be spread on the ground and then lightly raked into the soil around the stockpiles. The lime will help kill E. coli bacteria, but will not be added at levels that would significantly effect pH levels in receiving waters. A recent study by scientists at Cornell University and the Agricultural Research Service have found that adding sodium carbonate shows potential for killing E. coli bacteria in manure (Appendix 1). A Cornell research team member advised SCB that adding lime in small amounts could have a beneficial effect in reducing E. coli counts, but more research is needed to validate its effectiveness. Nevertheless, it may potentially help to substantially reduce bacteria levels in the manure pad areas.

Silo – East Barn cluster

One additional silo is proposed for the East Barn cluster to reduce the number of pests (i.e. birds and rodents) that contribute to overall E. coli on the ranch (Plans, Sheet 2). The silo pad currently exists in that it was part of the original barn construction and a silo could be placed on that existing pad. At present, livestock feed is brought to the East Barn Complex in small bags and stockpiled next to the barns. Although the feed bags are tarpped to protect them from rainfall and birds, they are still accessible to rodents. Feed stored in silos is inaccessible to rodents. Rodents are known to potentially transmit harmful diseases to both humans and animals and their fecal matter contributes to overall bacteria counts in the vicinity of the ranch. Additionally, bagged feed versus bulk feed in a silo is inherently more inefficient in that bags get torn, multiple handling steps are required, and feed gets spilled on the ground. The availability of feed resulting from the inefficiencies of bagged feed, despite the best housekeeping practices, attract large numbers of birds to the area. Those birds often seek shelter and refuge in the thick vegetative cover found within the nearby riparian corridors. An abundance of bird life in the riparian areas only exacerbates E. coli levels coming off of the property. Having a feed silo to store feed and eliminate the use of bagged feed will reduce rodent and bird populations as well as bacteria counts.

Pens -- West and East Barn clusters
During the wet season, the internal configuration of the pens may be seasonally reconfigured in order to maintain vegetative cover within the overall pen areas. The footprint of the exterior pen areas associated with each barn complex will not change, only their internal configuration (Plans, Sheets 2 and 3). The intent is to manage the pen areas similar to how pastures are managed by limiting access to certain areas, rotating livestock from pen to pen, and allowing recently grazed pen areas an opportunity to recover. The goal is to maintain a cover of 2-4" of grass in each subdivided pen area to provide increased filtration and entrapment of storm water. In essence, the pens will act as both holding areas and vegetative filter strips.

Livestock will be rotated out of recently used pens and potential bare areas from trailing or congregating will be reseeded and mulched as necessary during the wet season to promote a continuous vegetative cover. Water bars within and around the pens will be restored to direct storm water away from, or out of, the pen areas to further reduce the volume of stormwater moving through the pens. The pens will be cleaned of manure on a daily basis, unless the areas are too saturated to clean, and the manure will be stockpiled in the designated areas. Silt fencing, as necessary may also be used in, or below, the pen areas to slow overland flow and trap suspended materials.

C. Drainage Improvements

West Barn cluster
One fundamental element within this plan is to divert clean water flowing across the pastures from the barn and pen areas. To do this, a series of berms and swales will be strategically placed immediately upslope of the barns/pens to direct clean water flowing from the pastures and/or roads to nearby drainage inlet boxes, or to allow it to sheet flow in appropriate areas. That clean water will be conveyed via underground piping to an area in the proximity of the drainage ways below the barns. Roof runoff from the barns will also be collected and conveyed to clean water outfalls. One clean water outfall located towards the east fork of the Lorenzi drainage will be relocated further upslope.

Berms and drainage improvements will also be used in and around the pen areas to collect water passing through the pens and disperse it as sheet flow across pasture areas for filtration and uptake. The berms will catch pen runoff and direct it into drop inlets. That water will be conveyed via new drainage pipes to a perforated pipe sections located on the upper areas of certain pastures. Each perforated pipe will be placed in a shallow, rock filled trench with the top of the perforated pipe at finished grade. Water exiting the perforated pipe will sheet flow through the pasture where vegetation will filter the water. A series of earthen check darns, or berms, will be used to slow the flow of this water and to increase the rates of percolation and filtration.

East Barn Cluster
As noted above, clean water flowing off of the pastures will be directed around and away from the barn/pen areas by strategically located berms. An earthen berm will be located immediately upslope of the barn/pen area to divert overland flow towards the pastures. A second earthen berm will be located to the southwest of the pens south of the barn to prevent sheet flow passing through that pen area and moving towards a drainage channel next to Back Ranch Road. The second berm will divert storm water back towards the pastures for filtration and uptake.

The existing drainage pipes and outlets associated with the barn area will remain. The roof extension will substantially reduce the amount of water entering the existing drop inlet next to the northwest side of the barn in that the new roof will eliminate runoff from the former central breezeway area. Exclusionary fencing and vegetative filter strips protect the other three inlets on the northeast side of the barn. The outlet of this drainage system, a perforated pipe, will remain in its current location.

Roof runoff from the barn will be collected and conveyed via underground piping to the drainage ditch next to Back Ranch Road.

Upper Terrace Cluster
Again, clean water flowing off of the pastures will be directed around and away from the tent/pen areas, An earthen berm will be located immediately upslope of the tent/pen area to divert overland flow away from the livestock areas. A second earthen berm will be located to the . southwest of the manure pad to prevent the small amount of storm water falling on or near the stockpile from moving beyond the area. To the east and southeast of the tent/pen area, a series of earthen check dams will be installed to slow overland flow, resulting in greater filtration and percolation.

Roadside Drainage Improvements – Lower Terrace
Currently, a roadside drainage ditch along Back Ranch Road outlets in an uncontrolled fashion into a pasture below the Lower Reservoir. The roadside water sheet flows into the pasture, passes through the pasture, and eventually drains out of the pasture at the intersection of Back Ranch Road and Farm Road. Included in this Storm Water Plan is a measure to prevent that significant volume of roadside runoff from washing through the adjacent pasture in an uncontrolled fashion. A simple solution to this situation is to extend the existing roadside drainage ditch further down Back Ranch Road and channel the road runoff in an extended drainage ditch rather than allowing that roadside water from washing through the pasture. The extended roadside drainage ditch would convey roadside runoff in a controlled fashion and release it at the intersection of Back Ranch Road and Farm Road where it will then flow downstream via an existing drainage channel next to the road. This solution will eliminate a

substantial amount of water from washing through an area used by livestock and will further protect water quality.

The area in question within the pasture will continue to be seasonally fenced pursuant to the approved, implemented, and vested permit, Coastal Zone Permit No. 96-0837.

D. Pastures

Fencing -- Lower and Upper Terraces
Pastures will be subdivided with temporary, electric fencing to control grazing activities within certain areas during the wet season (Plans, Sheet 1). In general, seasonal fencing will be used so that livestock are limited to pasture areas that are relatively flat, upgradient from drainage features, and that have the least likelihood of experiencing significant overland flow of storm water.

Grazing - Lower and Upper Terraces
Livestock will be turned out to pasture in between storm events at a greater frequency than in past wet seasons, rather than keeping them in the pen areas until the pastures have thoroughly dried. The intent is to have the livestock out on flat, upslope pastures whenever practical to minimize the amount of time the pens are used. The seasonal fencing noted above will ensure livestock are contained in appropriate portions of the pastures. In past years, livestock were not turned out to pasture as frequently as what is proposed for this upcoming wet season due to concerns of soil compaction. However, experience to date has shown goats do not cause soil compaction compared to that caused be heavier livestock, such as cows or horses. For example, the areas one would expect the most soil compaction to occur from the goats would be in the pen areas.' In fact, SOAL publicly testified last summer that it was their opinion it would take two years or more to revegetate what it labeled as hoof compacted pen areas. To the contrary, those pen areas that were abandoned last summer were successfully revegetated with thick, continuous filter strips within three weeks of their discontinued use. Thus, from this practical experience, having livestock out to pasture under moist conditions and dispersed over a large area would not result in soil compaction.

Pasture Management - Lower and Upper Terraces
Although pastures will be subdivided during the wet season to control grazing to specific areas, each overall pasture will be grazed throughout the year. The intent is to limit use of lower pasture areas that are closer to drainage features to appropriate times (i.e. during dry periods where the five-day forecast predicts little chance of rain). It is recognized that disturbance to a grassland environment, such as that caused by grazing or fire, has a beneficial effect on the grassland composition (Appendix 2, statement by Ray Budzinski, Certified Range Manager). According to Budzinski, "natural disturbance, such as fire or grazing, alters the structure and

species composition of the grassland vegetation and inhibits the dominant plants from monopolizing the landscape.. . . Grassland areas subject to disturbance through fire or grazing generally display a greater diversity and density of plant species than those of unmanaged habitats. The lush and close-knit vegetative cover supports a diversity of plant and animal life, protects the soil, and *minimizes runoff by acting as a filter to trap water and sediments."* (Emphasis added). Past experience has supported Budzinski's opinion in that pasture areas that were excluded from grazing for the duration of a wet season were inferior to grazed pastures. Ungrazed areas allowed storm water to rapidly move across the land's surface in comparison to grazed pastures. Ungrazed pastures showed a predominance of tall clumps of grass surrounded by bare soil and also allowed the colonization of non-native invasive plants such as mustard, hemlock, and thistles within those ungrazed areas. Consequently, experience to date indicates ungrazed pastures were not as effective at slowing and trapping overland flow of stormwater in comparison to grazed pasture areas that contained a dense, thick continuous vegetative cover. Pastures will be managed to ensure a minimum to 2-4" of vegetative cover. It is also proposed that the pastures to the south of the West Barn cluster that were excluded from grazing last summer, be put back into agricultural production year round and grazed in the wet season as discussed above. Grazing those pastures may significantly improve the vegetative filtering of runoff by slowing the overland movement and providing increased entrapment and uptake of by the vegetation before it reaches nearby drainage channels.

Tents – Lower Terrace

During the wet season, it is not uncommon to experience weather that may be characterized as a heavy fog or light drizzle. For example, such weather may produce trace amounts to 0.25" of precipitation in a 24-hour period. Given that livestock will be turned out to pasture more frequently to reduce the amount of time spent in the pen areas, one tent per pasture (4 total, excluding the Upper Terrace cluster tents), is proposed in each of the subdivided upslope pasture areas to provide shelter for the livestock during "drizzly" conditions. The tents will provide an area of refuge for the livestock under such conditions so that they will not have to be returned to the bans/pens. The tent areas will be cleaned on a regular basis to remove accumulated manure. Berms will be placed around the tents to prevent overland flow of storm water passing underneath the tents, and instead direct the sheet flow around the tents. The tents may be moved as part of SCB's rotation of livestock on its pastures and the former tent areas will be immediately reseeded and mulched. If required, the tents may be taken down at the end of the wet season and then reestablished prior to the onset of the following wet season.

6. CONTINGENCY MEASURES

In the event that the Proposed Measures improve water quality but still do not meet the required Performance Standard, one or more of the following contingency measures can be implemented to further improve water quality if determined necessary at a later date in the '00/'01 wet season.

A. Pens –

Tarps/Tents –

Similar to the tarps proposed on the south side of Barn 3, tarps or tents may be installed immediately adjacent to each barn to provide sheltered coverage over a portion of the associated pens. Berms and/or water bars would be installed to control and direct drainage away from the covered pen areas.

Pen Reduction-

If the rotational use of the pens is determined to be ineffective, the pen areas may be seasonally reduced. Rotational pen use is intended to maintain vegetative cover throughout the pen areas, which will increase the overall vegetative filtration of stormwater before moving downgradient. If the pen areas are to be reduced, it should only be done in combination with the above noted tarp/tent contingency measure. Otherwise, concentrating the livestock within a smaller pen area having no protective covering may exacerbate water quality leaving the pen areas.

Use Restrictions-

In the event the pen areas are determined to be too intensively used, use restrictions may be imposed to limit the number of livestock within a certain pen area at any one time. For example, if a certain pen area is determined problematic based upon future monitoring, it may be required that only 2/3 of the livestock be rotated into a given pen at any one time, while the other 1/3 remain within the barn until they eventually may be rotated into the pens.

B. Manure Storage –

Manure Bunkers-

In the event the manure stockpiles are determined to be ineffective, then Environmental Health Services may require the immediate implementation of concrete manure bunker(s).

Manure haul-away –

In the event the manure stockpiles are determined to be ineffective and the manure bunkers are rejected, a manure haul-away program could be considered. The manure stockpiles at the West Barn and Upper Terrace clusters could be accessible during the wet season in their current locations. The manure stockpile at the East Barn cluster would be sealed for the remainder of the wet season and a new storage/haul-away area established in the parking area south of the barn.

C. Pastures –

Pasture tents –

In the event that additional protective shelter is needed for livestock turned out to pasture under moist conditions, four additional field tents could be installed adjacent to the tents initially installed. This will double the amount of coverage initially provided under the Storm Water Plan. Similar to the initial field tents, berming, drainage control, and revegetation would be included as part of this measure.

Pasture fencing –

Additional seasonal fencing may be used to further subdivide pasture areas and limit grazing to more specified locations. For example, zones may be created with additional fencing whereby livestock are pastured in certain smaller subdivided zones within the pastures based on the likelihood of rainfall. For example, livestock could be pastured on the flattest areas immediately after storm events and immediately prior to predicated storm events (e.g. rainfall predicted within 24 hours). Flat to gently sloping pasture areas could be utilized in between storm events (e.g. no rainfall predicted within 3 days), and gently sloping pasture areas grazed during extended dry periods (e.g. no rainfall predicted within 5 days). Of course, during rain events the goats are sheltered in the barns and are not out on the pastures.

D. Livestock –

Livestock relocation/tent-

In the event that the density of livestock in the West Barn cluster is considered high, then some livestock (e.g. 100 goats) could be moved to the Upper Terrace cluster where the topography is flatter. A forth tent would be necessary within the Upper Terrace cluster to shelter the relocated animals.

New barn-

In the event more substantial overhead coverage is needed, an additional barn could be considered to be located on the upper terrace.

E. Drainage

Storm Wafer Detention Basins –

If determined necessary, shallow managed stormwater detention basins may be implemented to collect and filter storm water draining from the pen areas. A pair of detention basins for each barn could collect and retain expected runoff from a 2 year, 24-hour storm event. The detention basins would be approximately three feet deep and will retain storm water onsite. Some settling of solids and percolation of water within the detention basins may occur. Indigenous soil microbes and filtration will quickly eliminate bacteria in the dirty water percolating into the soil. The basin would be managed to maintain its overall capacity by the periodic removal of sediments and vegetation on an as-needed basis. Moreover, the water in basins could be drained

and applied as irrigation at appropriate times in between storms to restore full capacity of the system.

Sand Filtration –
At the downslope edge of the pen areas a "burrito wrap" sand berm could be installed. The "burrito wrap" sand berms would be approximately one foot high and three to five feet wide following topographic contours. Storm water flowing over the surface would back up and migrate through the sand berm, allowing bacteria to be filtered out during this process. Sand is an effective medium in filtering bacteria from water in that bacteria tend to attach themselves to small particles of matter, such as sand grains. If attached to a grain of sand, the bacteria become immobilized and will not move further downstream. Once immobilized in the sand and lacking organic fuel reserves, the bacteria may quickly die off. The "burrito wrap" berm will also filter out other suspended materials from the storm water.

An alternative to the "burrito wrap" sand berm could be sand trenches located below the pen areas. Each sand trench would be approximately five feet deep by five feet wide and run the length of the associated pen area. Storm water flowing through the pens would be intercepted by trench, which would help filter bacteria out of the water and allow for a greater opportunity for percolation to occur.

7. ALTERNATIVES CONSIDERED AND REJECTED

Some of the following alternatives were considered by the project team, but were not selected for various reasons. Other alternatives were rejected based upon direct feedback and corresponding recommendations by staff. A brief description and reasons for rejection of each alternative are described below.

Managed Storm Wafer Detention Basins –
A series of storm water detention basins were considered to detain and/or retain storm water runoff from the pen areas (Storm Water Plan revision #2). A pair of shallow detention basins for each barn was considered to collect and retain the expected runoff of stormwater from a 2 year, 24-hour storm event. The detention basins would be approximately three feet deep and could be drained in between storm events to renew full capacity of the system. This measure is also discussed in Section 6, E. as a contingency measure. This proposal evolved from discussions with staff regarding its review of the Infiltrator Trench with Managed Storm Water Detention Basins discussed below. The measure was rejected based upon comments by staff that the extent of work was too great in the absence of an approved Master Plan and its effectiveness of the 2-year 24-hour design capabilities questionable.

Infiltrator Trench with Managed Storm Water Detention Basins-
A combination of detention basins and infiltrator trenches were proposed at one time (Storm Water Plan revision #1). This design proposed to collect water in an above ground detention basin and then direct the water through an underground infiltrator chamber system that would function similar to a leach field. This proposal is similar to the Stormceptor, Septic, and Infiltrator System discussed below but reduced the infiltrator chamber system roughly in half by using a detention basin instead of relying solely on a more extensive infiltrator chamber system trenches. This proposal evolved from consideration given to the Stormceptor, Septic, and Infiltrator System discussed below. The measure was rejected based upon comments by staff that the extent of work was too extensive in the absence of an approved Master Plan and its untested application in livestock facilities

Stormceptor, Septic, and Infiltrator System-
Ifland Engineers, in concert with Infiltrator Systems Inc., developed a conceptual design plan to utilize an extensive infiltrator chamber system as a large leach field as an element in a septic system concept. In this conceptual design, storm water would flow into a Stormceptor for settling and possible chemical treatment, then flow into a septic tank, and eventually work its way into a large leach field using the Infiltrator Systems chambers. This option was rejected because of the extensive scope of work, extent of grading involved, untested application in livestock facilities, and exorbitant costs.

Ultraviolet system-
An ultraviolet system was considered whereby storm water would be exposed to UV light before reaching receiving waters. Turbidity substantially reduces this system's effectiveness. Settling tanks would be required for this type of system to be effective. This option was rejected because of the high turbidity in dirty water and the large volume of water storage requirements. Lack of real life application in livestock facilities, and exorbitant costs, also contributed to rejection of this system.

Ozone system-
An ozonation system was evaluated but was deemed unsuitable for livestock operations due to turbidity. Both ozone systems and UV systems require clear water to work effectively. Turbidity substantially reduces the system's effectiveness in that suspended particulates can shield E. coli bacteria from contact with ozone thereby leaving the bacteria alive and untreated. Similar to the UV system, this system would require a large volume of water storage capacity for settling and treatment. Even with settling tanks and filter devices, the amount of ozone needed in a system for the ranch would be cost prohibitive and its total effectiveness questionable.

Pump-up Irrigation System-
A pump-up system was considered whereby dirty storm water would be diverted and collected in water storage tanks and then pumped onto the upper pastures as irrigation. This option was rejected in that the water storage tank requirements would be approximately 300,000 gallons. Moreover, application of substantial amounts of irrigation during a storm event could cause other impacts, such as increased erosion.

Storm Water Storage in Reservoirs-
Rather than installing large water storage tanks throughout the lower terrace, the existing reservoirs were considered as a means to detain the stormwater. This option was rejected because the reservoirs typically fill up each year from natural runoff and adding additional water during the rainy season could cause them to overflow. Additionally, the Lower Reservoir is habitat for an endangered species and pumping dirty stormwater into that habitat could be construed as harassment under the Endangered Species Act.

Storm Water Reservoir(s) –
Another option considered was the development of a new large water storage reservoir to pump and retain dirty storm water over the entire wet season. This option was rejected because its scope of work, lack of suitable locations, and potential conflicts with the Endangered Species Act.

Chemical Treatment -
The use of chlorine to kill the E. coli present in storm water was also evaluated. However, 30-minute contact time between the chlorine and storm water is required for it to be effective. Thus, considerable water storage would be required. Also, the expected turbidity would require large amounts of chlorine. Dechlorination would likely be required. Due to large storage volumes, potential unwanted changes to water chemistry, and air pollution concerns, this option was rejected.

Move pens north of Farm Road -
Moving the pens north of Farm Road is not possible without also moving the barns north of Farm Road. The pens are required for managing and caring for the livestock. USDA regulations also require livestock to have accessible outdoor space, or pens. Moving both of the barns and pens north of Farm Road in addition to what was already approved and relocated was rejected due to removal of the property's most productive agricultural land, scope of work required to complete this option, and expected controversy.

Provide berm north of Farm Road –
This measure is included in the Storm Water Plan as part of the drainage improvements. However, the measure by itself would not eliminate possible sources of storm water degradation at the ranch and must be a part of a combination of measures.

8. SUMMARY

The goal of this Storm Water Plan is to improve water quality and achieve compliance with a new water quality performance standard to be adopted by the county. A variety of measures have been considered by a team that includes engineers, hydrogeologists, and agricultural livestock experts. Considerable input in the development of this plan (revision #3) was provided by EHS and Planning. The proposed plan incorporates several different elements, all of which are important components of the overall system design to improve the quality of storm water runoff from the site. The proposed measures include barn roof extensions, livestock tents, horse tarps, manure pads, drainage improvements, filtration, one silo, pasture swales, and seasonal pen modifications. Contingency measures have also been identified and incorporated into this plan in the event that further improvement in water quality is found to be necessary based upon laboratory analysis of future surface water samples.

The measures proposed for implementation in this plan should be successful in reducing the number of fecal coliform/E. coli bacteria flowing off site in surface waters due to livestock operations. However, it should be noted that bacteria are ubiquitous in the environment and other sources exist besides livestock. The proposed measures will not mitigate background concentrations flowing onto the site or wildlife contributions made within site boundaries. Thus, it is important that the performance standard to be implemented accounts for background and wildlife contributions that contribute to overall bacteria concentrations. Nonetheless, it is our opinion that implementation of all measures described in this Storm Water Plan will mitigate' livestock contributions to bacteria concentrations in storm water runoff.

APPENDIX 1

Washing soda can cut E. coli risk from manure

"Cow pie" is a quaint term, to be sure, but precious little else is quaint about cow manure. For one thing, it can contain strains of *E. coli* bacteria that, if they get on fruits or vegetables or in the water supply, can harm people. Composted manure is generally safe (having been heat-treated by the high temperatures generated in the composting process), but raw manure spread on fields or gardens as fertilizer can be a source of *E. coli* contamination.

Now, scientists at Cornell and the Agricultural Research Service (part of the federal Department of Agriculture) have found a promising alternative way to kill microbes in manure. The solution, they say, is to add sodium carbonate, also known as washing soda.

The researchers, who reported on their work in the journal Environmental Science and Technology, made the finding when they mixed urine and manure. Dairy cows usually produce twice as much manure as urine, but when the researchers mixed them in equal amounts they noticed that most of the bacteria in the manure was eventually killed. They identified carbonate, produced through the action of an enzyme in the manure on urea in the urine, as the bacteria killer.

The researchers suggest that much additional study of the idea on farms — not in a lab — is needed. But they said that adding sodium carbonate to manure ponds or tanks could ultimately prove to be an inexpensive way of reducing the bacteria problem.

From Mercury News wire services

APPENDIX 2

Statement of Certified Rangeland Manager
Re: Response of Grassland Vegetative Structure to Minimal or No Management

The differences among plant species in their ability to withstand environmental and competitive influences has an effect on grassland plant composition. Certain grassland plants achieve competitive dominance over other plants by growing faster, producing more foliage, occupying more space, and generating more plant litter than their counterparts. In the absence of a "disturbance" mechanism, such as fire or grazing, the dominant plants of the community produce an expanding mass of foliage concentrated in a dense, elevated layer beneath which the frequency and vigor of smaller plants and seedlings are severely restricted by shading, depletion of water and mineral nutrients, the deposition of leaf litter, and the release of phytotoxic compounds. The accumulation on the ground of old, dried plant material suppresses or shades out smaller and slower-growing grasses and herbs and favors the dominant, taller and faster-growing grasses and herbs which are able to regenerate through the mulch layer. Once established, the dominant plants will persist and reproduce indefinitely and will act to impede the germination, establishment and reproduction of other plants. If the growth of the dominant plants remains unchecked a process of exclusion occurs, which may eventually result in the vegetation approaching a state of monoculture.

The vegetation of grassland and pasture areas often diminishes in density and species diversity in the absence of some form of disturbance to invigorate the plant community and stimulate the growth of. associated species. California annual grassland vegetation, if allowed to lie fallow, will become dominated by a few, select, non-native annual grasses. The succession may proceed to a point whereby undesirable, non-native plants, such as black mustard, poison hemlock, fennel and other tall-growing weeds, become established. These weeds grow in dense clumps and impose growth-inhibiting, allelopathic effects on their neighbors, leaving the soil virtually bare underneath. Unmanaged native grassland areas may diminish in vigor and species density and become increasingly colonized by non-native annual grasses. The vegetation of irrigated pasture land will grow tall and coarse and eventually will become dominated by just a few of the heartier grasses. The pasture grasses and legumes have been developed to withstand and increase under grazing pressure. In its absence the plants become impoverished and stunted.

Grazing by herbivores is generally recognized as a major ecological factor in grasslands and has been suggested as an important evolutionary force. Relationships between plants and animals suggest a mutual evolution between herbivores and their food plants with adaptive strategies having evolved in plants to compensate for the effects of herbivory. Few plants are so well adapted as the grasses to withstand grazing and trampling. The growing part of a grass leaf is near its base and so is not injured when the upper part is grazed, while most other plants have a terminal growing point. Many grasses are provided with ample vegetative means of spreading and reproducing, so that even if continuously cropped short, they nevertheless survive and proliferate. These features of plant physiology and morphology are taken into account in the design of most modern grazing systems, which consider the degree of utilization allowed and the amount of residual material remaining on the plant and the soil surface.

Natural disturbance, such as fire or grazing, alters the structure and species composition of the grassland vegetation and inhibits the dominant plants from monopolizing the landscape. The expression of plant dominance can be modified through the use of some disturbance mechanism to impair the growth of the dominant grasses and herbs and allow smaller and slower-growing plants to regenerate and coexist with them. Grazing, for example, shifts the balance of plant species abundance and density to include plants that would otherwise be excluded by the more dominant members of the community. Many of the grassland plants evolved under periodic fire and grazing and have the ability to effectively compete with their neighbors in a "disturbed" environment, aggressively colonize available space, and respond to defoliation by the renewed growth of severed leaves or the expansion of new shoots.

The activation of quiescent buds after defoliation is a widespread phenomena in both herbaceous and woody plants. In perennial grasses the effect of repeated defoliation is to stimulate the development of a very large number of tillers, reproductive and vegetative stems that arise from the base of the plant and cause it to expand in size and fragment into new plants. Other plants reproduce vegetatively by means of stolons and rhizomes, above-ground and underground stems respectively, that produce new roots and shoots along their length. These grazing response mechanisms allow plants to effectively colonize open ground and to maintain a vigorous plant cover in the presence of grazing.

The overall intent of grassland management, then, is to perpetuate a diverse plant cover that includes species with a wide range of competitive ability and grazing resistance. This is usually accomplished by maintaining plant succession in a mid-seral stage of development through some disturbance factor, as opposed to allowing the vegetation to reach a less dynamic and biodiverse climax stage as an end product. The process of burning or grazing reduces vegetative competition, minimizes the expression of plant dominance and allows plants of different biologies to establish and survive in close proximity to one another. Grassland areas subject to disturbance through fire or grazing generally display a greater diversity and density of plant species than those of unmanaged habitats. The lush and close-knit vegetative cover supports a diversity of plant and animal life, protects the soil, and minimizes runoff by acting as a filter to trap water and sediments.

Ray Budzinski
California Board of Forestry
Certified Rangeland Manager # 36

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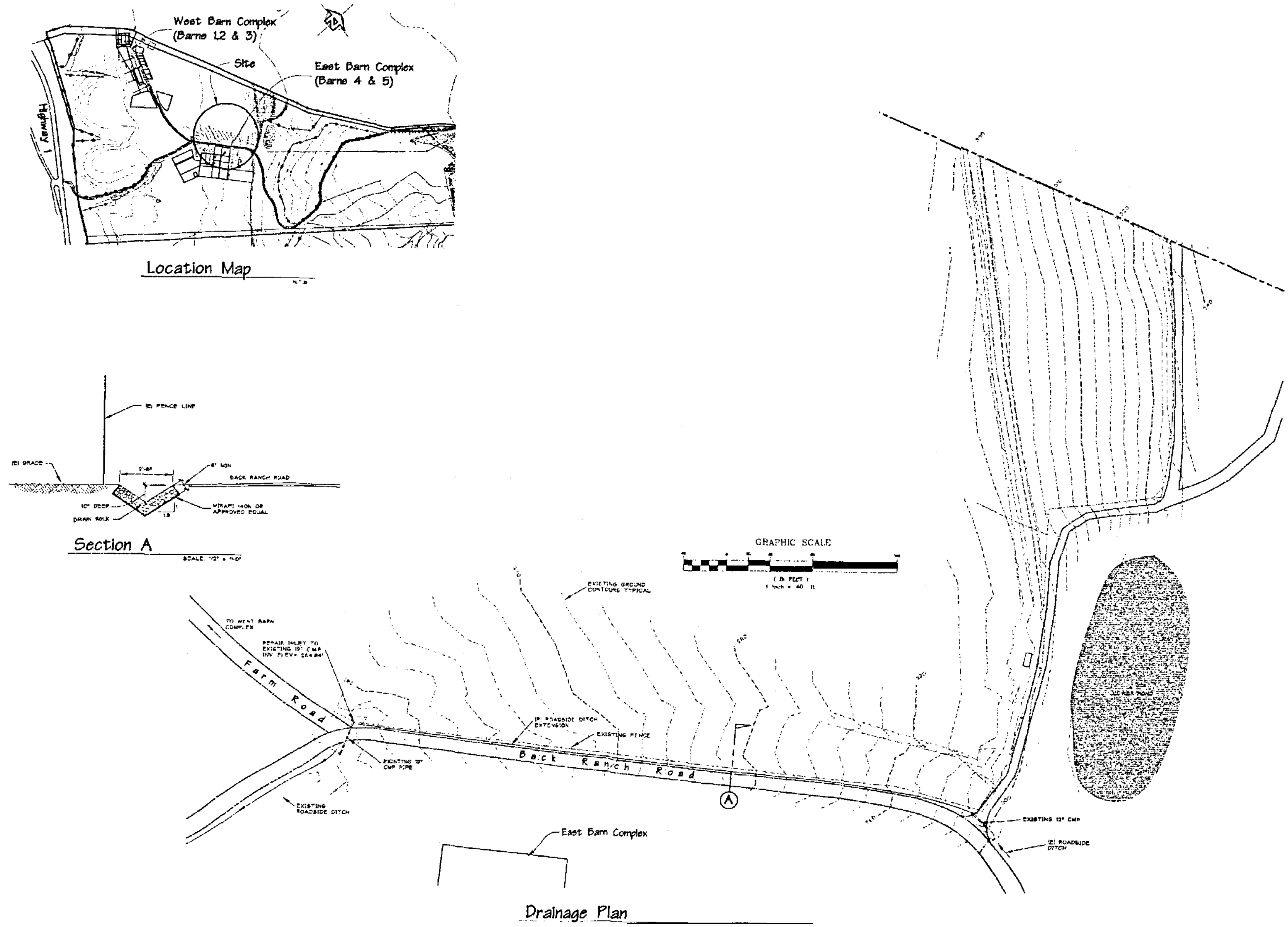


APN 058-021-08
APN 062-151-03

DATE 5/31/00 | DESIGN Duane
SCALE As Noted | DRAWN Steve

Drainage Plan West side of Barns 4 & 5

Stephenson Ranch

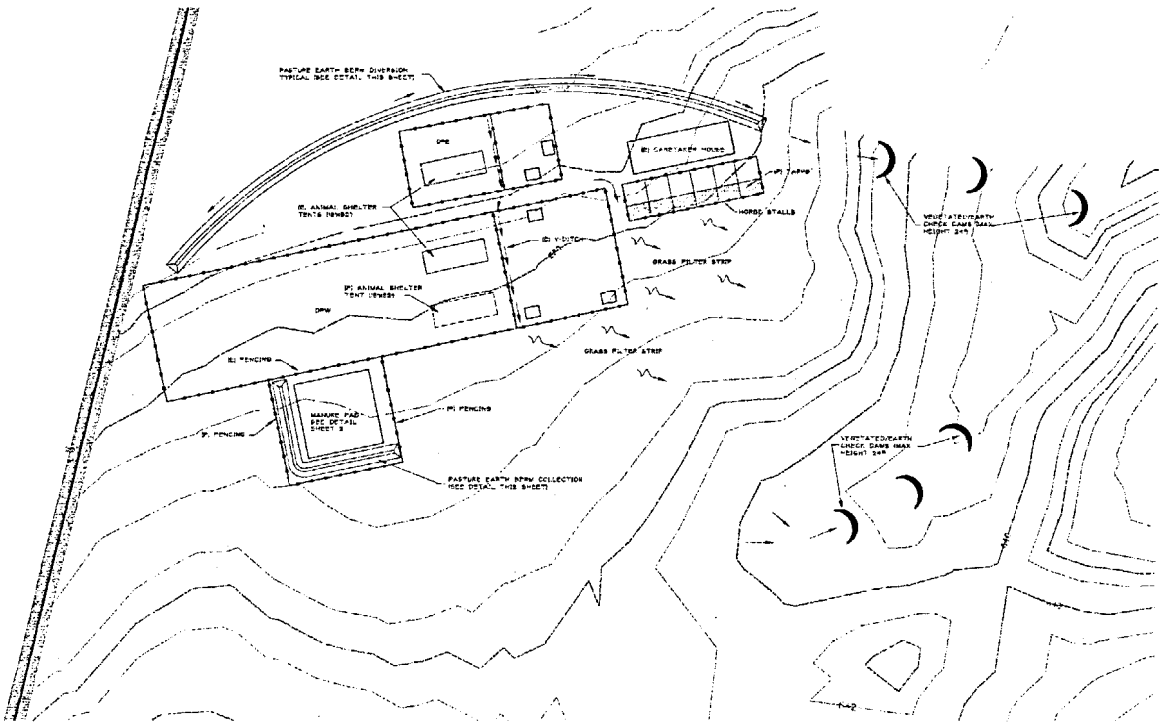
5322 Coast Highway 1, Santa Cruz, California

ifland ENGINEERS, INC.
CIVIL ENGINEERING • LAND SURVEYING • STRUCTURAL DESIGN
1100 WATER STREET
SANTA CRUZ, CA 95062
TEL (408) 426-5313
FAX (408) 426-1783

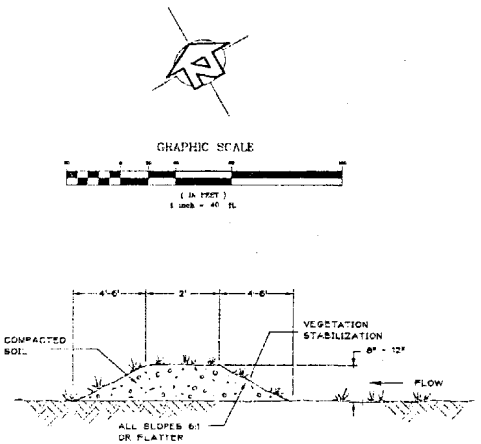
REVISIONS

APPROVED

SHEET 5 of 7 SHEETS



Upper Terrace Site Plan



TYPICAL PASTURE EARTH BERM

BARN COMPLEX

NOTES:
1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE BERM SHALL BE STABILIZED WITH PERMANENT SEEDING.
4. LOCATIONS & NUMBER OF CHECK DAMS APPROXIMATE. FINAL LOCATIONS & NUMBERS TO BE DETERMINED IN THE FIELD.

1100 WATER STREET
SANTA CRUZ, CA 95062
TEL (408) 429-5313
FAX (408) 426-1763

Alan Engineers, Inc.

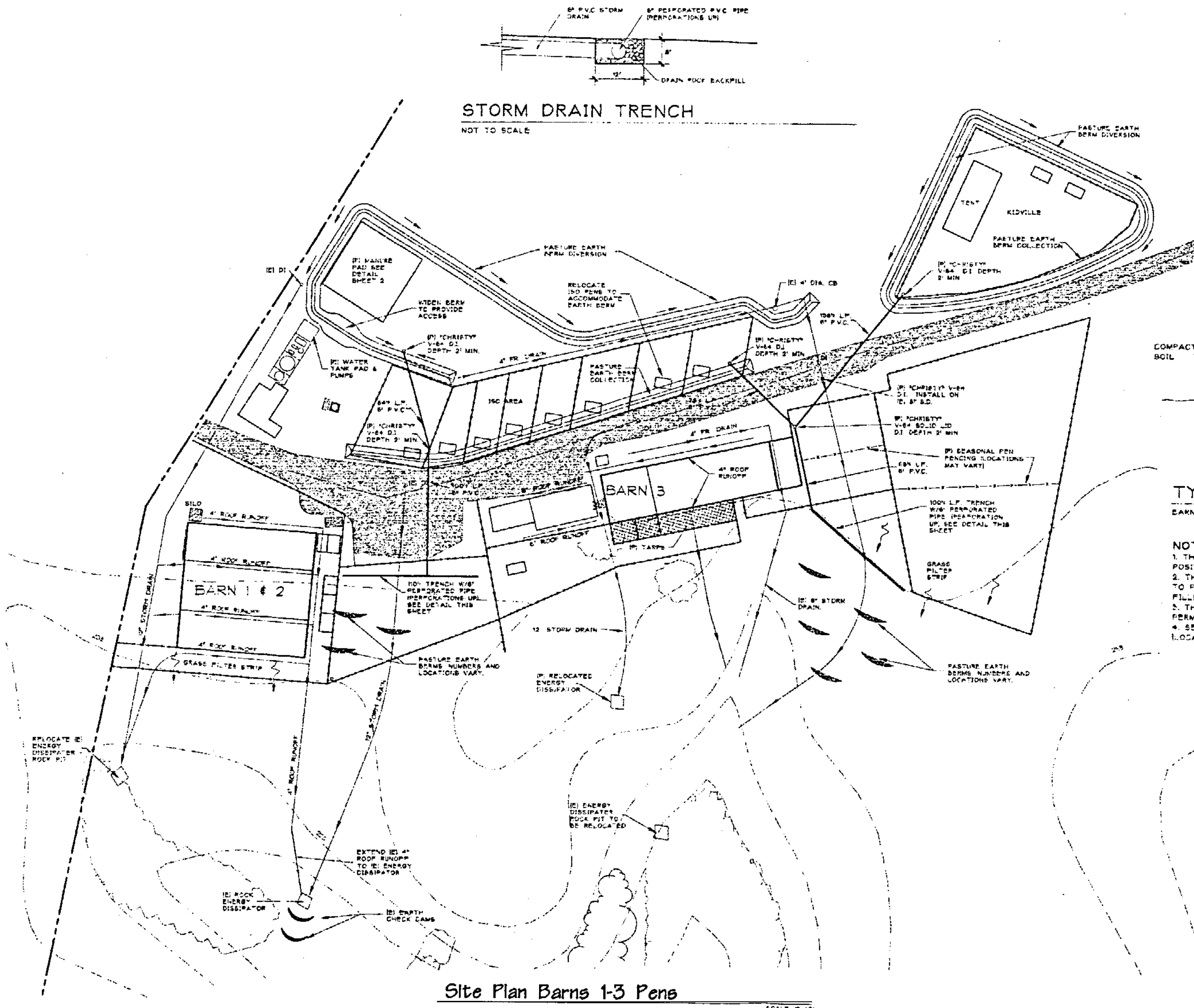
Upper Terrace Drainage Plan

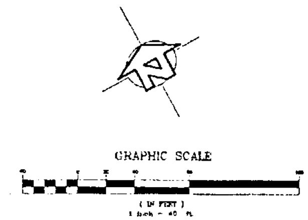
Stephenson Ranch

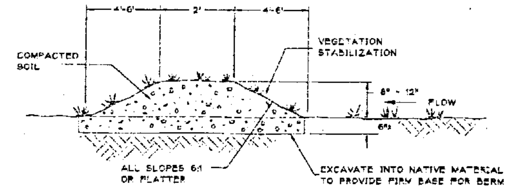
APN 059-021-08
APN 062-151-03

DATE 5/31/00 DESIGN Duane

SHEET 4 OF 7 SHEETS







TYPICAL PASTURE EARTH BERM

BARN COMPLEX

NOTES:

1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE (GOPHER HOLES SHALL BE FILLED AND COMPACTED)
3. THE BERM SHALL BE STABLILIZED WITH PERMANENT SEEDING.
4. SEASONAL FENCING WITHIN PENS MAY BE USED (LOCATIONS MAY VARY)

APN 059-021-08
APN 062-161-03

DATE 5/31/00 | DESIGN Duane | SCALE As Noted | DRAWN Steve

Site Drainage Barn & Pen Areas

Stephenson Ranch

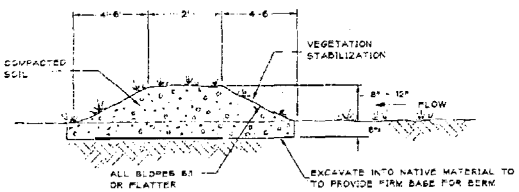
5322 Coast Highway 1, Santa Cruz, California

ifland ENGINEERS, INC.
1100 WATER STREET
SANTA CRUZ, CA 95062
TEL (408) 426-5313
FAX (408) 426-1763
CIVIL ENGINEERING • LAND SURVEYING • STRUCTURAL DESIGN

REVISIONS

APPROVED

SHEET 3 OF 7 SHEETS



TYPICAL PASTURE EARTH BERM

BARN COMPLEX

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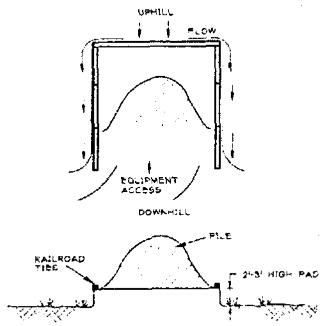
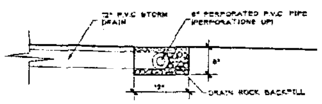
3. THE BERM SHALL BE STABILIZED WITH PERMANENT SEEDING.
4. SEASONAL FENCING WITHIN PENS MAY BE USED. (LOCATION MAY VARY)



Manure Pad

NOT TO SCALE



STORM DRAIN TRENCH

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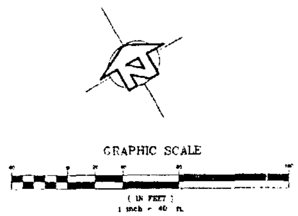
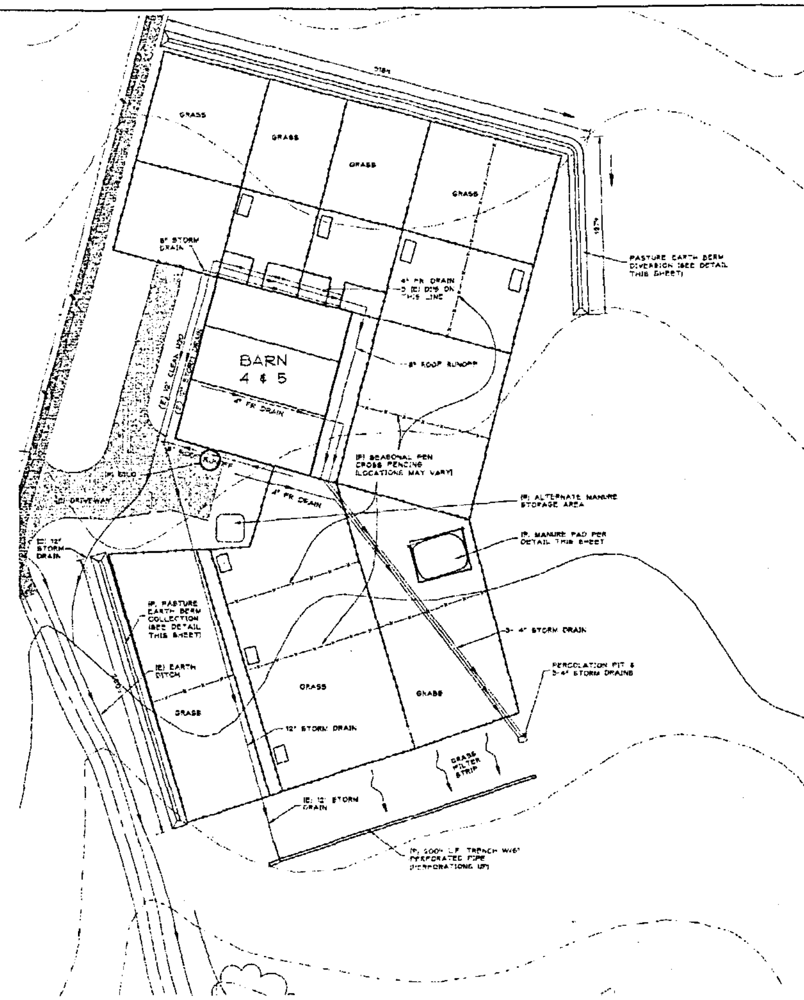




Site Plan Barns 4-5 Pens

Site Drainage Barn & Pen Areas

Stephenson Ranch

Ifland Engineers, Inc.

1100 Water Street
Santa Cruz, CA 95062
Tel (408) 426-5313
Fax (408) 426-1763

APN 059-021-08
APN 062-151-03

Date 5/31/00 | Drawn Duane

Sheet 2 of 7 sheets

Job No. 96187

Notes

A topographic survey was performed for much of the area above the upper reservoir. All other contours were digitized or scanned from plans by others. The survey is on an assumed datum.

Planimetric features in unsurveyed areas are shown based on information supplied by the owner or plans by others.

Required setbacks are 20' from property lines.

This is not a boundary survey. Property lines are shown for reference only.

Legend

(P) Proposed

(E) Existing

Existing Fence

Proposed Fence

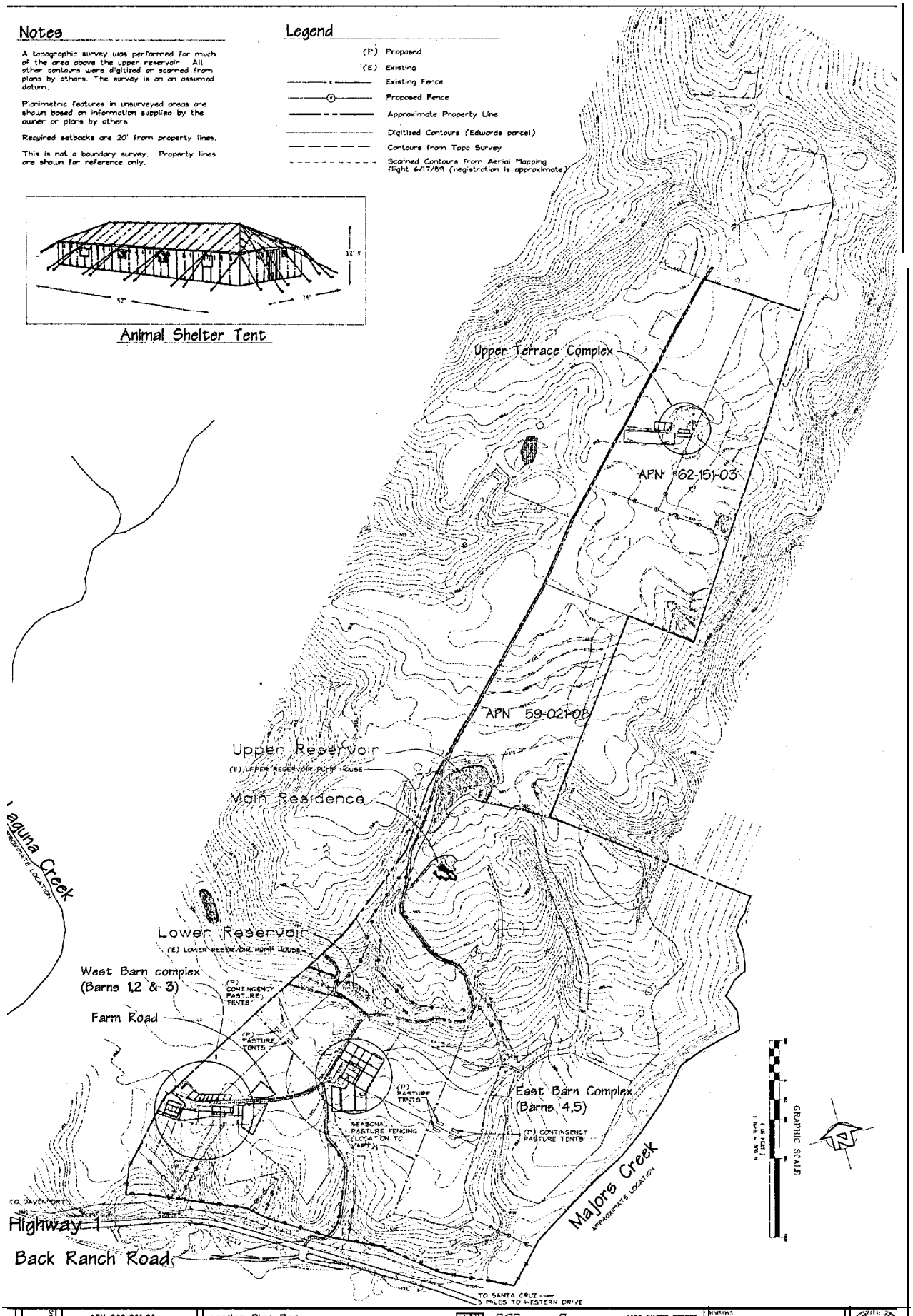
Approximate Property Line

Digitized Contours (Edwards parcel)

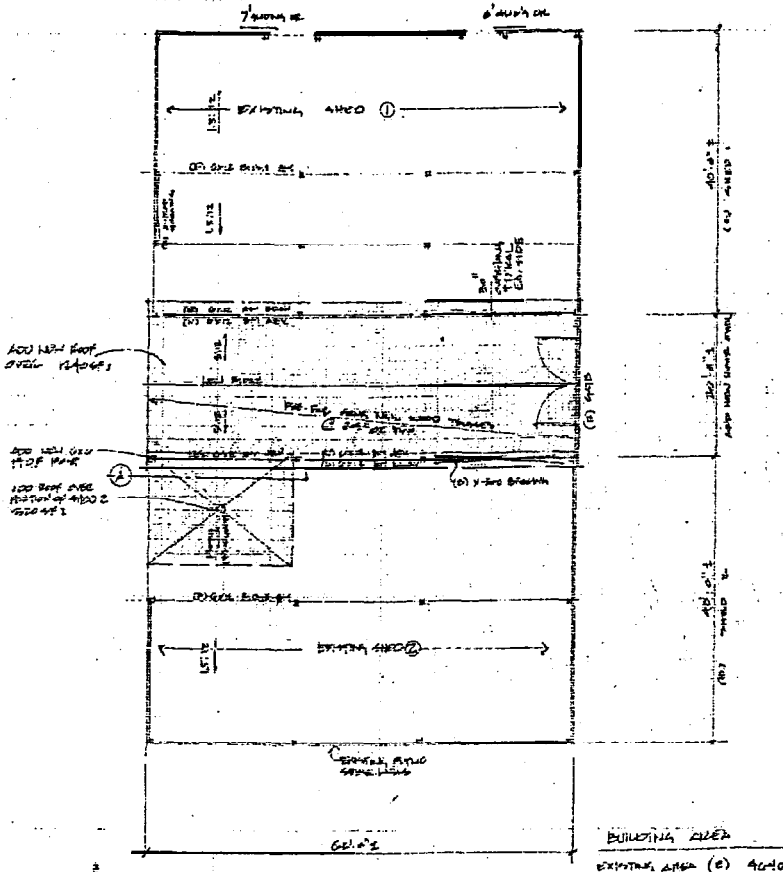
Contours from Topo Survey

Scanned Contours from Aerial Mapping flight 6/17/89 (registration is approximate)

Animal Shelter Tent



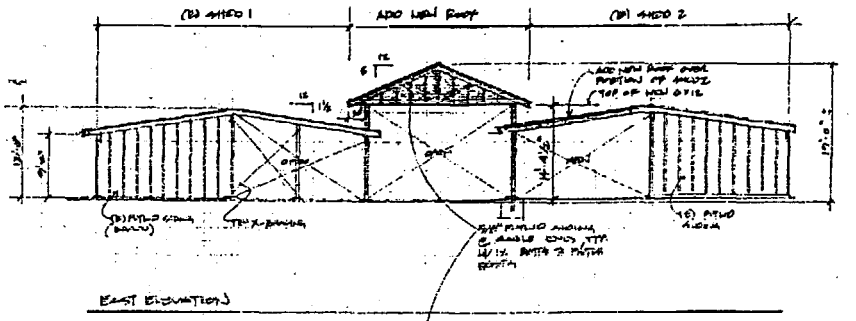
SHEET 1 OF 2 SHEETS	APN 059-021-08 APN 062-181-03	Location Plan For: Stephenson Ranch 5322 Coast Highway 1, Santa Cruz, California	ifland ENGINEERS, INC. CIVIL ENGINEERING • LAND SURVEYING • STRUCTURAL DESIGN 1100 WATER STREET SANTA CRUZ, CA 95062 TEL (408) 426-5313 FAX (408) 426-1763
	DATE 8/31/00 DESIGN Duane		REVISIONS
	SCALE As Noted DRAWN Steve		APPROVED



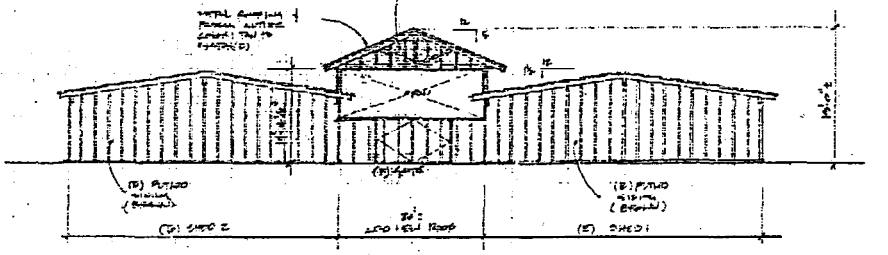
PLAN
1/8"=1'-0"

BUILDING AREA

EXISTING AREA (E)	4040 SF
PROPOSED AREA (P)	1500 SF



EAST ELEVATION



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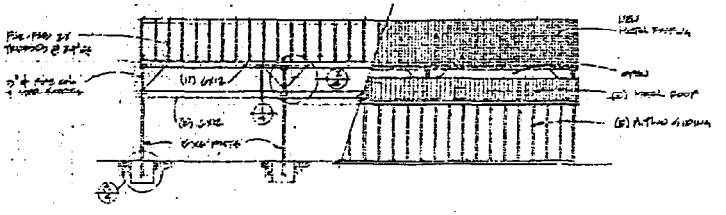
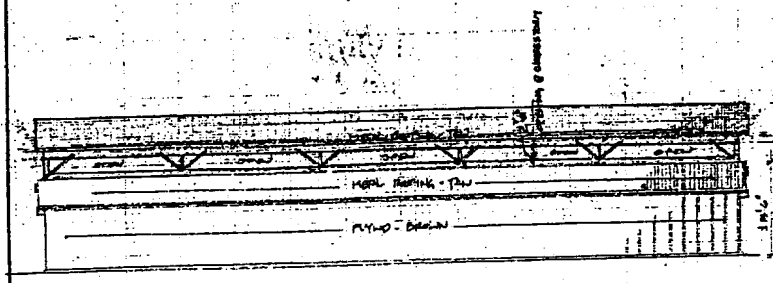
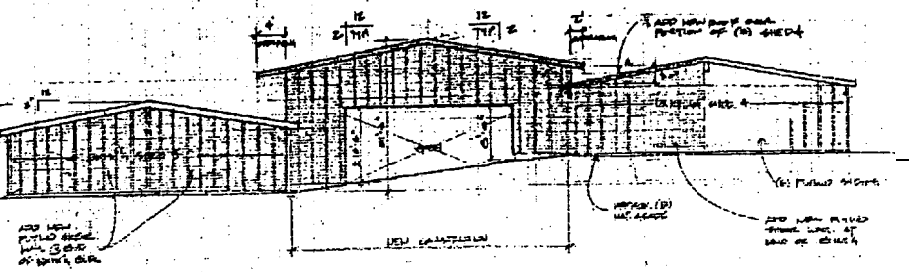


A SECTION / SHED ELEVATION (SIMILAR)

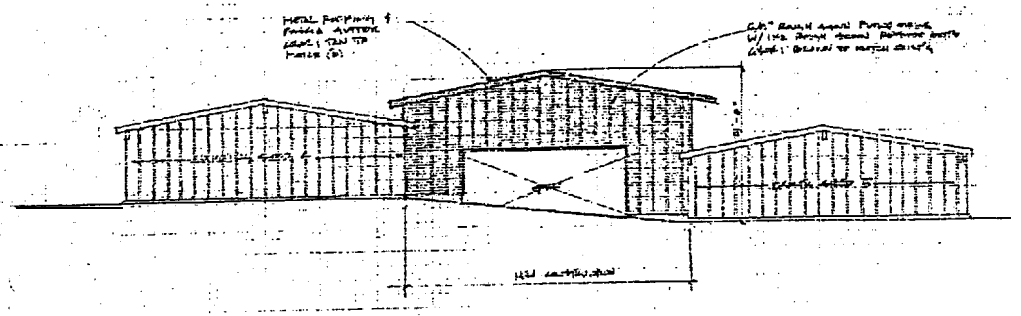
MODIFICATION TO EXISTING AGRICULTURAL BARNS
STEDJENSON RANCH
Michael Helm, AIA Architect & Associates



PROPOSED SOUTH - SHED 5
(PROPOSED NORTH - SHED 4 SIMILAR)



PROPOSED WEST ELEVATION



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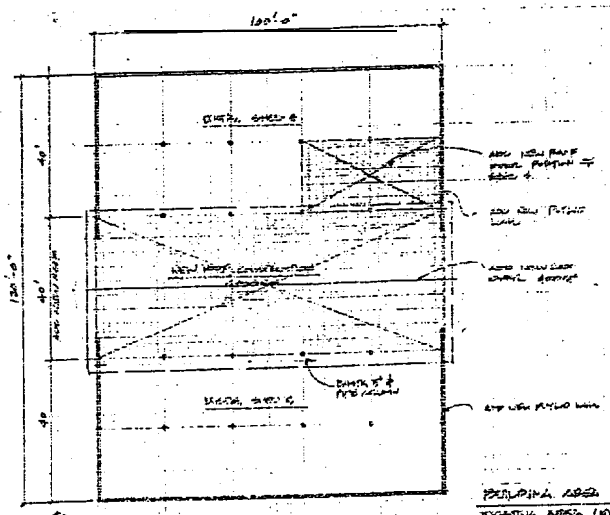

PROPOSED AREA

EXISTING AREA (E)	7200 SF
PROPOSED AREA (P)	4000 SF

SITE PLAN