

APPENDIX D

Creek Enhancement Plans

CREEK ENHANCEMENT PROPOSAL

Plan 1:

Applicant to design, implement, and install per approved plans by LSA (as submitted) and maintain per agreement with City (per LSA proposal).

← Rose Garden Project

Plan 2:

Applicant to design, implement, and install per approved plans by LSA (as submitted).



Upland Habitat

Applicant

City

Creek

HOA Maintenance Agreement

City Access and Maintenance Easement

Leakspur Creek Habitat Enhancement Plan

Native Restoration Plan
Standard D-62A
Specific Plan
PG. 7-27

Creek Buffer
(25 ft E/W; 50 ft N/S)

Policy D-664
Specific Plan
pg. 7-24

Upland Habitat Buffer
Enhancement Plan

Specific Plan
pg. 8-14

Plan 3:
Applicant to design, implement, and install per approved plans by LSA (as submitted).

Upland Habitat

③

LSA 1. Restoration Plans are a condition of approval

FIGURE 1

CLASP-Subarea 3 Project
Locations of Creek Corridor Areas Addressed
by LSA's Restoration/Enhancement Plans

MAY 13 2009

NOT TO SCALE

**NATIVE PLANT RESTORATION PLAN
FOR THE
CENTRAL LARKSPUR AREA SPECIFIC
PLAN (CLASP) – SUBAREA 3**

LARKSPUR, MARIN COUNTY, CALIFORNIA

JUL 16 2009

Submitted to:

Larkspur Housing Partners, LLC
1800 Alma Avenue, #311
Walnut Creek, California 94596

Prepared by:

LSA Associates, Inc.
157 Park Place
Point Richmond, California 94801
(510) 236-6810

LSA Project No. LHP0701

LSA

July 14, 2009~~December 19, 2008~~

TABLE OF CONTENTS

INTRODUCTION	1
RESPONSIBLE PARTIES.....	1
LOCATION OF PROJECT SITE.....	1
DESCRIPTION OF PROJECT AREA	2
PLANTING PLAN IMPLEMENTATION	3
SITE PREPARATION.....	3
PRESERVATION OF EXISTING NATIVE TREES	8
NATIVE CONTAINER PLANTING	8
MANAGEMENT AND MAINTENANCE ACTIVITIES.....	11
WEED CONTROL	11
BROWSE PROTECTION.....	11
MAINTENANCE OF PLANTS	12
MAINTENANCE OF IRRIGATION SYSTEM	12
TRASH REMOVAL.....	12
MONITORING.....	12
REFERENCES	14

Field Code Changed

FIGURES AND TABLES

FIGURES

(All figures are presented at the end of the report.)

Figure 1: Regional Location

Figure 2: Project Site Vicinity

Figure 3: Planting Plan

Figure 4: Conceptual Cross-section Through Upland Habitat Plantings Adjacent to Biofiltration Area

Figure 5: Typical Tree and Shrub Planting and Browse Protection Detail

TABLES

Table A: Native Plant List	8
Table B: Upland Seed Mix	10

INTRODUCTION

On behalf of Larkspur Housing Partners, LLC, LSA Associates, Inc. (LSA) submits this updated Native Plant Restoration Plan (Restoration Plan) for the Central Larkspur Area Specific Plan (CLASP) – Subarea 3 project in Larkspur, Marin County, California; this plan represents a revision to an update of the original document (dated April 18, 2007) and previous updated document (dated December 19, 2008) to reflect the current land use plan, consisting of 20 additional tree and shrub including plantings in and around the proposed upland habitat buffers, including the biofiltration area. A conceptual cross-section through the biofiltration area of the upland habitat buffer plantings following plant installation and after 10 years is included in this updated document. A more detailed weed eradication program is also presented below. Finally, this document presents an evaluation of the option of protecting several large, non-native trees in the upland habitat buffers as requested by the City.

-The Central Larkspur Specific Plan (Specific Plan; City of Larkspur 2006) requires the developer of Subarea 3, which consists of the existing Niven Nursery site, to prepare a native plant restoration plan for the upland habitat buffers along Larkspur Creek. Specifically, Standard D-62A of the Specific Plan requires the establishment of an upland habitat buffer along Larkspur Creek that is 50-feet-wide from the top of bank on the north/south reach and 25-feet-wide from the top of bank on the east/west reach. The upland habitat buffer areas will be restored and planted with native trees and shrubs. This Restoration Plan describes the proposed methods to eradicate non-native plant species, methods for planting native species, locations of native container plants, maintenance and monitoring schedule, and performance standards. -The Restoration Plan will be implemented in a way that does not conflict with any necessary drainage improvements in the upland habitat buffer areas.

RESPONSIBLE PARTIES

The applicant, Larkspur Housing Partners, LLC or the Surviving Master Homeowners Association, will retain responsibility for performance and compliance with the provisions of this Restoration Plan until the five-year maintenance and monitoring period is completed.

LOCATION OF PROJECT SITE

The CLASP-Subarea 3 project site is situated in Larkspur, Marin County California (see Figures 1 and 2). The project site is bordered by Doherty Drive and Hall Middle School to the north, commercial development to the west, Ward Street and residences to the southwest, Larkspur Creek and residences to the south, and Larkspur Creek and Tamalpais High School District facilities to the east. Larkspur Creek is a tributary to Corte Madera Creek, located approximately 0.25 mile north of the site, which is a tidally influenced creek that flows into San Francisco Bay. The project site is located in Township 1 North, Range 6 West, Sections 8 and 9 on the USGS 7.5-minute San Rafael quadrangle. Elevations on the relatively flat site range from approximately 8 to 23 feet National Geodetic Vertical Datum. The 16.8-acre Niven Nursery, which contains several abandoned greenhouses and accessory structures, is located at 2 Ward Street and occupies the majority of the project site.

DESCRIPTION OF PROJECT AREA

The project site contains two reaches of Larkspur Creek: the north/south reach along the eastern boundary and the east/west reach along the southern boundary. The area above the top of bank along these two reaches of the creek are the focus of the Restoration Plan. Existing upland vegetation along these two reaches consists of non-native, invasive species intermixed with native trees and shrubs. Dominant non-native plants include French broom (*Genista monspessulana*), fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus discolor*), and Bailey acacia (*Acacia baileyana*). Native species along the creek include coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), poison oak (*Toxicodendron diversilobum*), California bay (*Umbellularia californica*), box elder (*Acer negundo*), and yellow willow (*Salix lucida* ssp. *lasiandra*).

PLANTING PLAN IMPLEMENTATION

SITE PREPARATION

Weed Eradication

This section describes general invasive weed eradication activities that will be implemented at the project site. Invasive weed species will be aggressively removed with grubbing and clearing techniques and disposed of off-site prior to the installation of any native plant and seed material. Weed eradication will be implemented in the following phases:

- A silt fence will be properly installed along the top of bank of the northern (east-west reach) and western sides (north-south reach) of Larkspur Creek;
- Heavy equipment (i.e., bulldozer, excavator, tire-mounted bobcat) will be used to grub and clear non-native trees and shrubs in the upland habitat occur via grubbing and clearing within the buffer areas up to 10 feet from the silt fence boundary. Four of the native trees referred to in the project tree inventory report (Landwatch, Inc. 2007) will be saved during the grubbing and clearing process. Where feasible, other native trees and shrubs will also be saved;
- The upland habitat buffer areas in the remaining 10-foot-wide area along the silt fence will be grubbed and cleared by hand, use of a tire-mounted bobcat, and/or with the bucket of a backhoe/excavator operating from beyond the 10 foot limit;
- Approximately, in addition to the clearing of the non-native trees and shrubs, approximately 8 inches of topsoil will be removed during the grubbing and clearing process;
- Fill material will be added to the 25-foot-wide upland habitat buffer area along the southern property boundary to establish a 2 percent grade from the outer edge of the habitat/development down to the silt fence/top of bank of the northern side of the east-west reach of Larkspur Creek;
- Grading for the 50-foot-wide upland habitat buffer area along the eastern property boundary will entail as-needed grading for the biofiltration basin and surrounding upland habitat buffer plantings to the silt fence/top of bank of the western side of the north-south reach of Larkspur Creek;
- Following completion of necessary grading activities in the upland habitat buffer areas, orange construction fencing will be installed between the limit of the upland habitat buffer areas and the edge of development (25 feet from edge of silt fence along east-west reach of Larkspur Creek; 50 feet from edge of silt fence along north-south reach of Larkspur Creek);
- A qualified restoration ecologist, landscape architect, or other professional familiar with native plant restoration (= the project restoration specialist) will inspect the site prior to seeding and plant installation to document that weeds have been removed; and-
- Plantings will be installed in the upland habitat buffer areas according to this Restoration Plan.

Formatted: LSA Bullet

Follow-Up/Long-Term Weed Eradication and As-Needed Hand Removal

Follow-up/long-term weed eradication, as well as for as-needed removal of weeds within the dripline of the preserved trees, will be implemented by hand using a variety of methods.

Options for weed removal methods for Himalayan blackberry, broom (French broom [*Genista monspessulana*], Scotch broom [*Cytisus scoparius*], and Spanish broom [*Spartium junceum*]), fennel, Bailey acacia, pampas grass, oleander, and fruit trees are described below. Methods for removing Himalayan blackberry, broom, fennel, acacia, and pampas grass are adapted from the Weed Workers' Handbook (TWP & CIPC 2004).

Himalayan Blackberry:

Follow-Up/Long-Term Removal Methods.

- After blackberry canes are removed, one option is to hoe the soil or use a rototiller. This method will clear out any roots, but is practical only for small infestations.

As-Needed Hand Removal Methods.

1. Cut stems with loppers close to the ground. Dig out rootball with a pulaski or shovel and remove as much of the root as possible. Interconnecting roots reaching over 30-feet-long and 2 to 3-feet-deep make pulling up all the roots difficult. Therefore, aim to remove the main rootball and the large lateral roots.
2. Brushcut the canes and use rakes and hoes to clear the vegetation when flowers are in bloom but before the fruit sets. Cutting encourages new growth but may be effective if repeated over a number of years.
3. Cut stems to about 1 foot above ground level and treat stumps with a 25-50 percent concentration of glyphosate (as approved by the Environmental Protection Agency [EPA] for an aquatic setting) immediately after cutting.

Long-term Removal Methods.

- After the canes are removed, one option is to hoe the soil or use a rototiller. This method will clear out any roots, but is practical only for small infestations.

Broom:

Follow-Up/Long-Term Removal Methods.

- Emerging seedlings will likely have to be removed for 5-8 years or perhaps longer. In the first year after removing mature plants, the next generation will be too small to pull, but this dense flush of seedlings is effectively controlled by flaming with a propane torch. A single pass with the torch will wilt and kill seedlings. Controlling broom plants when they are seedlings will reduce a great deal of work in pulling plants the second year after removing mature broom. Remove the broom before the seed pods mature. Broom resprouts from the base when cut; therefore, all broom except seedlings and old, senescent plants can resprout after cutting if not treated with herbicide. Resprouting stump shoots can be cut or weed-whipped the following year, either in late spring or in the dry season. Repeat this treatment annually until the plants' energy resources are depleted.

Formatted: Font: Bold, Font color: Custom Color(RGB(35,31,32))

Formatted: Indent: Left: 0.25", Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

Formatted: Font color: Auto

Formatted: Indent: Left: 0", Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

Formatted: Font: Bold

Formatted: Indent: Left: 0.25"

As-Needed Hand Removal Methods.

1. Pull shrubs by hand or with a weed wrench, or dig with a pulaski, pick, or shovel between January and May, when the moist ground makes it easier to remove the roots and before another generation of seeds has developed. Repeated pulling of successive generations is currently thought to be the single most effective method of removing broom.
2. Cut shrubs to just above ground level using a pruning saw, loppers, or brushcutter, ideally during the dry season so that the stumps become more stressed. Cutting, rather than pulling, has the advantage of minimizing soil disturbance. Untreated cut stumps will resprout and must be cut repeatedly. Alternatively, cut the stems about 2 inches above ground level, then girdle the stump by peeling the bark off the stems down to ground level. This method reduces resprouting and works best on medium to large broom plants.
3. Cut stems, using loppers, to about 2 inches above ground level and grub out the roots.
4. Cut and treat the stumps with herbicide approved by EPA for an aquatic setting.
5. Girdle the trunk of large broom plants with a small hand ~~tools~~ such as a paint scraper. (Warning: while girdling minimizes soil disturbance, standing dead broom will increase, not reduce, fire hazards. In addition, broom left standing will interfere with future weed removal activities.)
6. Scrape seedlings with a hula hoe.
7. Flame seedlings in monoculture with a propane torch (weed blancher). This method is most effective and efficient when the seedlings have only their two seed-leaves, but can also work on seedlings with true leaves up to a few inches tall.

Formatted: Indent: Left: 0"

Long-Term Removal Methods.

- ~~Emerging seedlings will likely have to be removed for the next 5-8 years or perhaps longer. In the first year after removing mature plants, the next generation will be too small to pull, but this dense flush of seedlings is effectively controlled by flaming with a propane torch. A single pass with the torch will wilt and kill seedlings. Controlling broom plants when they are seedlings will reduce a great deal of work in pulling plants the second year after removing mature broom. Remove the broom before the seed pods mature. Broom resprouts from the base when cut; therefore, all broom except seedlings and old, senescent plants can resprout after cutting if not treated with herbicide. Resprouting stump shoots can be cut or weed-whipped the following year, either in late spring or in the dry season. Repeat this treatment annually until the plants' energy resources are depleted.~~

Fennel:

Follow-Up/Long-Term Removal Methods.

- Remove any ripe seeds from the site by brushcutting and bagging the flower heads. This method is also a useful stop-gap measure to contain the spread of fennel on sites where elimination is not possible. Check for seedling growth twice a year, particularly in late winter/early spring, and follow up on resprouts to exhaust energy stored in the roots.

As-Needed Hand Removal Methods.

1. Pull small seedlings by hand when soil is soft and moist. Hand tools, such as a soil knife or trowel, can also be used to uproot seedlings. A thick taproot frequently makes pulling mature fennel impracticable.
2. Dig out individual plants with shovels, hand picks, and pulaskis, preferably when the soil is still moist. If the entire root mass cannot be removed, remove at least the upper portion of the root crown (generally the top 3-6 inches). Cutting into the root just before the plant sets seed reduces the number of resprouts. If following up with herbicides is not planned, dig only in light infestations, because the soil disturbance will expose seeds and increase germination. The deep taproot and bulb store the plant's energy and will regenerate quickly if cut. Cutting alone will not kill fennel, so follow up on resprouts frequently to exhaust the roots.
3. Mow fennel 4 times per year, about every 3 months, beginning in March-April. Some seed heads lie prostrate and are therefore easier to miss. Mowing during seed set encourages seed spread and should therefore not be conducted. Mowing too soon before seed set appears to increase vegetative growth. Reports suggest that this repeated mowing technique can eradicate fennel within 4 years.
4. Mow and wait for resprouts to appear, then apply glyphosate (foliar spray approved by EPA for an aquatic setting) to the bushy resprouts.
5. Foliar spray a 2 percent solution of glyphosate (approved by EPA for an aquatic setting) on the leaves of green seedlings emerging after dormancy (March-May). Spray before the plant bolts (around June). Repeat application may be needed.

Long-Term Removal Methods:

- ~~5. Remove any ripe seeds from the site by brushcutting and bagging the flower heads. This method is also a useful stop-gap measure to contain the spread of fennel on sites where elimination is not possible. Check for seedling growth twice a year, particularly in late winter/early spring, and follow up on resprouts to exhaust energy stored in the roots.~~

Formatted: Numbered + Level: 1 +
Numbering Style: 1, 2, 3, ... + Start at: 1 +
Alignment: Left + Aligned at: 0.25" + Tab
after: 0.5" + Indent at: 0.5"

Acacia:

Formatted: Font: Bold

Follow-up/Long-Term Removal Methods.

- Return to the site to inspect for seedling growth and resprouts at least twice a year. Dig out or cut and treat the resprouts.

As-Needed Hand Removal Methods.

1. Pull seedlings and small saplings by hand or with a weed wrench, preferably when the soil is moist.
2. Cut larger saplings and mature trees and treat with herbicide approved by EPA for an aquatic setting.
3. Cut to 1 foot above ground level and cover stump with black plastic or fabric shade cloth.
4. Cut to 1 foot above ground level and macerate stump.
5. Girdle or frill.
6. Drill and inject with herbicide (approved by EPA for an aquatic setting).

Formatted: Font color: Auto

Formatted: Indent: Left: 0", Adjust space
between Latin and Asian text, Adjust space
between Asian text and numbers

Pampas Grass:

As-Needed Hand/Long-Term Removal Methods.

Formatted: Adjust space between Latin and
Asian text, Adjust space between Asian text and
numbers

- ~~Return to the site to inspect for seedling growth and resprouts at least twice a year. Dig out or cut and treat the resprouts.~~

Pampas Grass:

1. Pull seedlings by hand or with the help of a pick, pulaski, or shovel.
2. Cut larger plants and remove the root mass. First, carefully cut and dispose of all seed plumes, including immature ones that have yet to emerge from their sheath because they may be able to mature. Next, cut stems and leaf blades to near ground level with a pulaski, Swedish brush ax, or chainsaw. Some practitioners prefer to use a chainsaw to remove the mass of leaves, while others caution that this method is dangerous (the chainsaw user must kneel and cannot see the blade) and slow (the grass quickly clogs the chainsaw guard). An expertly sharpened machete is also effective, but like a chainsaw, is an appropriate tool only for experienced professionals. Finally, remove the root mass. If it is very large, use the ax side of the pulaski to chop it into 4- or 5-inch squares, then use the flat side of the pulaski to hoe out the pieces.
3. Pull very large plants with a truck hitch. This method is possible if the pampas grass is near a road and a strong truck is available. Place a choker cable around the plant, digging it into the ground a little behind the plant so it won't slip off. Secure the cable to the truck hitch and pull the plant out easily.
4. Cut the plumes of plants that are unable to be removed as a temporary containment measure. Cut the plumes while they are still pink or purple (prior to producing seeds), typically in August to October. However, cut plumes can produce another seed plume from the same stalk in as little as 1-2 weeks.
5. Foliar spray 2 percent glyphosate (approved by EPA for an aquatic setting) on all green growth during the active growth period (November–July). Spraying minimizes soil disturbance, but the herbicide must contact the entire leaf surface which is a difficult task for large plants. An additional caution: plants that appear dead soon after spraying may survive and regrow the following year.
6. Cut away the stems and leaves and then apply herbicide to the cut stems near the root mass. Practitioners report mixed results with this technique.

Oleander and Fruit Trees:

As-Needed Hand Removal Methods.

1. Cut the trunk of larger trees at approximately 1 foot above ground level and paint the stump with herbicide (approved by EPA for an aquatic setting).
2. Spray or hand-pull seedlings.

Trash and Debris Removal

All trash and inorganic debris will be removed prior to installation of plants. All trash and debris removed will be legally disposed of at an off-site location.

PRESERVATION OF EXISTING NATIVE TREES

According to the tree inventory report for the project (Landwatch, Inc. 2007), two valley oaks, one coast live oak, and one California bay tree will be preserved along Larkspur Creek within the upland habitat buffer areas. Care will be taken when removing non-native plants and trees that are within the dripline of the preserved trees. To protect the trees during construction, fencing will be installed around the perimeter of the trees' dripline after the initial weed eradication. No new native trees or shrubs will be planted within the dripline of the preserved trees.

NATIVE CONTAINER PLANTING

The upland habitat buffer areas will be planted with native trees and shrubs that are known to occur in the vicinity of Larkspur Creek. A total of ~~11090~~ native tree and shrubs will be planted in the upland habitat buffer areas. These native plant species will consist of ~~5550~~ coyote brush (*Baccharis pilularis consanguinea*), ~~12~~^{nine} toyon (*Heteromeles arbutifolia*), ~~14~~^{ten} coast live oak, ~~14~~^{ten} valley oak, ~~five~~^{three} California buckeye (*Aesculus californica*), ~~eight~~^{six} California bay, and two box elder. Details and locations of the plants are provided in Table A and depicted on Figure 3. A conceptual cross-section through upland habitat plantings adjacent to the biofiltration area is depicted on Figure 4.

Table A: Native Plant List

Plant Species	Plant Type	Container Size	Minimum Spacing	Quantity
Coyote Brush (<i>Baccharis pilularis</i>)	Shrub	1-5 gallon	5 feet	5550
Toyon (<i>Heteromeles arbutifolia</i>)	Shrub	1-5 gallon	5 feet	129
Coast Live Oak (<i>Quercus agrifolia</i>)	Tree	1-5 gallon	20 feet	1410
Valley Oak (<i>Quercus lobata</i>)	Tree	1-5 gallon	20 feet	1410
California Buckeye (<i>Aesculus californica</i>)	Tree	1-5 gallon	20 feet	53
California Bay (<i>Umbellularia californica</i>)	Tree	1-5 gallon	20 feet	86
Box Elder (<i>Acer negundo</i>)	Tree	1-5 gallon	20 feet	2
Total	----	----	----	11090

Formatted: Normal

Planting Guidelines

- The guidelines presented below will be employed during installation to promote successful plant establishment. These guidelines may be modified and refined based on input from the project restoration specialist. -Figure 54 provides specification details for a typical tree or shrub planting.
- Plantings will be installed on the project site in natural groupings under the supervision of the project restoration specialist. Planting holes may be either dug by hand or augured with a hand-held auger. Holes will equal the depth of the root ball and be 1.5 times the width.
- Plants will be placed with the roots untangled and laid out in the planting hole to promote good root growth and prevent the plant from becoming root bound.
- Roots will be adequately protected at all times from sun and/or drying winds.

- After excavation and before planting, the planting hole will be filled approximately half full with water, backfilled with 70 percent thoroughly broken-up native topsoil and 30 percent organic mulch, and then completely filled with water to minimize soil settling after installation.
- Plants will be set in the planting hole so that the crown of the root ball is 1.0 inch above finished grade. The crown of the plant will not be depressed.
- A watering basin approximately 4 feet in diameter with a 3-inch berm will be provided around each plant.
- Each plant will be individually watered sufficiently to reach the lower roots (12 inches) at the time of planting.
- Biodegradable moisture barrier/weed control fabric (6 feet by 6 feet) will be installed around each plant. After planting, the fabric will be tacked flush to grade using wire staples.
- Browse protection cages (4-foot tall, 4-inch by 4-inch hog wire cages) will be installed, as needed, around the 31 planted trees.

Irrigation

All plants will be irrigated directly after planting. Shrub and tree plantings will be equipped with a temporary drip irrigation system. Two drip emitters will be installed upslope of each plant to ensure thorough and even irrigation. Two-gallon emitters will be used for trees and one-gallon emitters will be used for shrubs.

Irrigation will be applied during dry winters to supplement any deficiency in rainfall that may occur during the first three years. Irrigation will also be applied during the first three summers after planting to ensure the successful establishment of the plants. The need for supplemental irrigation during subsequent years will be determined by the project restoration specialist.

The amount and frequency of irrigation will be determined by conducting a test application in the late spring prior to each dry season. The test irrigation will entail monitoring the percolation rate and level of saturation of the soil. After the soil has reached its saturation point, the soil around the root zone will be augered to determine if the water has percolated below the root zone. If not, the process will be repeated until the desired results are achieved. The time required to achieve the goal will determine the duration of each application. The frequency of application will be determined by monitoring the soil moisture content. After the first irrigation application, the project restoration specialist will auger the root zone of several plants every three to four days to determine the amount of moisture. When the soil is relatively dry, the irrigation application will be repeated.

Soil Amendment in Seeding Areas

After the buffer areas have been grubbed, an amendment will be lightly tilled into the soil. The amendment will be composed of nitrolized organic woodchips or ash with medium pH.

Upland Seeding

An upland seed mix (see Table B) will be broadcast evenly in areas of the buffer areas that are disturbed by activities and exotic plant removal. The application procedure will involve scarifying the soil to a depth of 6 inches in the areas to be seeded. The seedbed area will be weed- and clod-free and raked smooth. The seed will be broadcast in specified areas and thoroughly raked into the soil. The seed will be applied in a whirly-bird type seeder. All installed plants will be protected from over-seeding. Coir fabric matting as specified will then be placed on top of the seeded areas. Mulch will not be added on top of seeded areas. The seeded area will then be watered in thoroughly to soak the soil, improve seed to soil contact, and eliminate air pockets.

Table B: Upland Seed Mix

Seed Species	Function	Lbs. Per Acre
California Brome, Native Variety (<i>Bromus carinatus</i>)	Perennial	6 lbs.
California Poppy (<i>Eschscholiza californica</i>)	Annual	3 lbs.
California Goldfields (<i>Lasthenia californica</i>)	Annual	3 lbs.
Arroyo Lupine (<i>Lupinus succulentus</i>)*	Nitrogen Fixing	2 lbs.
Meadow Barley (<i>Hordeum brachyantherum</i>)	Perennial	10 lbs.
Small Three-Week Fescue (<i>Vulpia microstachys</i> / <i>myerostachys</i>)	Cover Crop	10 lbs.
California melic grass (<i>Melica californica</i>)	Annual	4 lbs.
Total Seed		38 lbs.

* Seed treated with nitrogen-fixing bacteria inoculate by the seed supplier on the seed supplier's recommendation

MANAGEMENT AND MAINTENANCE ACTIVITIES

The activities described below will be implemented within the Larkspur Creek upland habitat buffer areas to ensure appropriate long-term management and maintenance. Management and maintenance activities will occur in the buffer areas on both an as-needed and routine basis during the first three years following installation of the plantings. In general, management and maintenance activities will be conducted by the applicants or designated subcontractors and will consist of activities that are conducted according to an established schedule. Maintenance and management activities within the buffer areas may consist of the following: weed control, browse protection, native planting maintenance, irrigation system maintenance, and trash removal.

WEED CONTROL

Weed control will be implemented around the installed native plants; such control will consist of weeding inside the watering basins and weeding immediately around the plants (outside of the weed fabric). Weed control will be performed in early Spring, late Spring, and mid-Summer.

Weed control will be implemented using hand removal techniques unless the weed infestation is so severe that herbicide application is necessary. Weed control activities will be timed to occur just prior to the flowering period of the target species to prevent seed development and dispersal. If herbicide application is necessary, it will be accomplished in accordance with the following standards:

- Only the use of EPA-approved herbicides suitable for aquatic settings (*e.g.*, Rodeo, or other herbicide(s) approved for use in aquatic settings) will be permitted.
- Herbicide will be applied by a licensed applicator.
- No spraying will be permitted if wind speed exceeds 3 miles per hour.
- Application equipment will be limited to hand-held sprayers, backpack sprayers, and/or wick applicators.
- Once non-native species are determined to be under control, hand-removal techniques will be the primary method of control.
- All non-native plant material removed from the mitigation areas will be disposed of at an appropriate off-site location.

BROWSE PROTECTION

Browse protection cages will be installed to the planted trees during the time of installation; however, browse protection for the planted shrubs and other types of browse protection for trees will be installed on an as-needed basis. Figure 54 shows details for two types of browse protection that could be installed around the plants: 1) browse protection cages (4-foot-tall with welded wire grid) will be installed to the plants that have been browse damage by deer; and 2) hardware cloth will be installed to plants that have been browsed by small mammals (*i.e.*, voles).

MAINTENANCE OF PLANTS

The native plants will be inspected annually and properly maintained. Structurally compromised trees will be trimmed as necessary to remove structural damage that has the potential to cause mortality.

MAINTENANCE OF IRRIGATION SYSTEM

The irrigation system will be inspected on a regular basis during the dry season. Irrigation equipment will be properly maintained to ensure the appropriate amount of water is being delivered to the plants.

TRASH REMOVAL

Trash will be removed from the enhancement area on a semi-annual basis. Undesirable litter that can smother establishing plants and/or injure wildlife will be targeted (e.g., plastic, styrofoam, etc.). All trash removed from the planting areas will be disposed of at an appropriate off-site location.

MONITORING

The native plants will be monitored for a minimum of five years. An annual monitoring report will be submitted to the City of Larkspur for five years. The first annual report will be submitted 12 months after the start of implementation of the Restoration Plan. These annual reports will include the survival and condition of the plants and an overview of the planting effort, including the need for irrigation of the plants and methods used for installation of any replacement plants. The reports will compare data to previous years and detail progress toward meeting the performance standards. Photographs from four permanent photo-documentation points (see Figure 3) will be included to document progress of the plants. Photographs from these locations will be taken on an annual basis for five years. At the end of five years, a final report will be prepared that includes summaries of the monitoring data and representative photographs from the photo-documentation points. Performance standards for the project consist of the following:

- After five years, a performance standard of 80 percent survival rate of all the container plants installed must be achieved. If 80 percent survival is not achieved, dead plants will be replaced in kind, unless the project restoration specialist determines that site conditions are not conducive to the survival of a particular plant species, in which case, an alternate native plant species will be planted. The replacement plants will also have to achieve 80 percent survival and the mitigation monitoring period would be extended as necessary to ensure establishment of the plants. Replanting would occur in October to November.

PROJECT OPTION – PROTECT NON-NATIVE HERITAGE TREES

In response to input from the public and Planning Commission, this Restoration Plan may be modified to include the protection of several large, "heritage-sized" non-native trees, such as Acacias, which currently provide shade and structure along the east-west reach of Larkspur Creek, especially at the upstream end. The additional trees to be protected are located along the 25-foot-wide upland habitat buffer area, as well as along the creek slopes.

This Restoration Plan can be implemented in conjunction with protecting the large, non-native trees, with the following implications:

- From a native plant restoration approach, removal of all non-native trees is a standard component of the start of project implementation to deter their colonization of cleared areas that have been planted with target native vegetation. Therefore, protection of the large, non-native trees could potentially compromise the success of this Restoration Plan.
- For work around sensitive areas, such as around the four native oaks to be preserved and in the 10-foot-wide area along the silt fence, this Restoration Plan includes procedures that can be used for the clearing and grubbing work around the large, non-native trees to be protected.
- As presented above, this plan includes a long-term maintenance program for control of non-native trees, such as Acacia seedlings. This component of the Restoration Plan will need to be aggressively implemented in the vicinity of the protected, non-native trees.

REFERENCES

- City of Larkspur. 2006. Central Larkspur Specific Plan. Larkspur, California. September 2006.
- EDAW. 2003. Revised Draft Environmental Impact Report, Central Larkspur Specific Plan (SCH #2001112092, Volume 1 -- DEIR Text). Prepared for the City of Larkspur by EDAW, Sacramento, CA. dated November 14, 2003.
- Landwatch, Inc. 2007. Tree Inventory Report for CLASP-Sub-Area 3, 2 Ward Street, Larkspur, California. Prepared for Larkspur Housing Partners by Douglas E. Nix, Landwatch Inc., San Mateo, CA. dated April 2, 2007.
- Renshaw, D.L. 1999. Preliminary Wetland Delineation, Central Larkspur Specific Plan Area, Larkspur, California. Prepared for Lamphier & Associates by Diane L. Renshaw, Los Altos, CA. dated November 29, 1999.
- The Watershed Project and California Invasive Plant Council (TWP & CIPC). 2004. The Weed Workers' Handbook, A Guide to Techniques for Removing Bay Area Invasive Plants. Prepared by The Watershed Project, Richmond, CA and California Invasive Plant Council, Berkeley, CA.
- Zander Associates. 1998. Preliminary Biological Assessment, Niven Nursery Project Site, Larkspur, California. Letter to Steve Seely of Larkspur Housing Partners, Inc., dated April 9, 1998.

FIGURES

Figure 1: Regional Location

Figure 2: Project Site Vicinity

Figure 3: Planting Plan

Figure 4: Conceptual Cross-section Through Upland Habitat Plantings Adjacent to Biofiltration Area

Figure 5: Typical Tree and Shrub Planting and Browse Protection Detail



FIGURE 2

LSA



CLASP - Subarea 3 Project

Project Site Vicinity

SOURCE: USGS 7.5' Quad, SAN RAFAEL

I:\LHP070\GIS\Maps\Figure2-ProjectVicinity_USGS.mxd (04/10/2007)

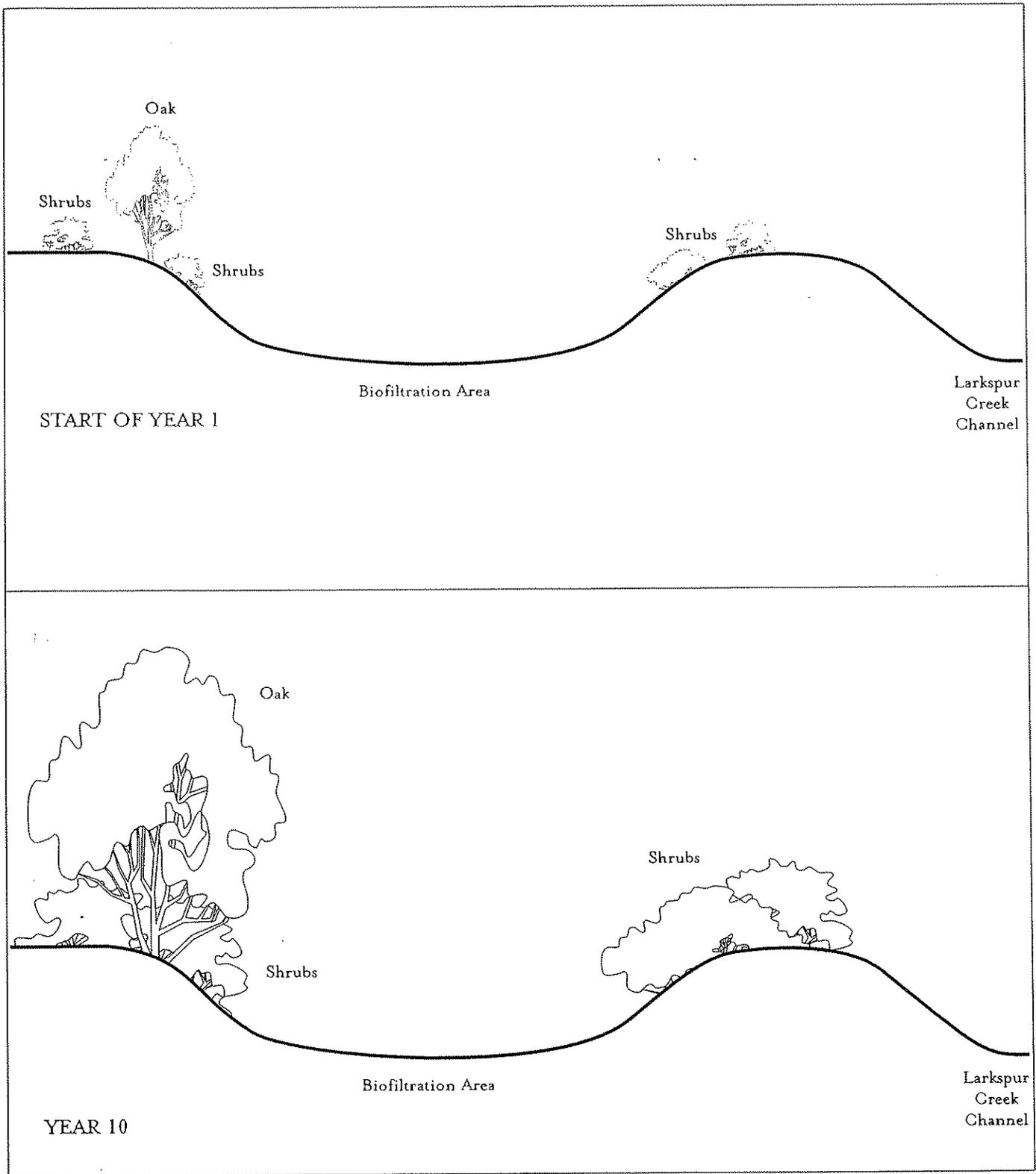


FIGURE 4

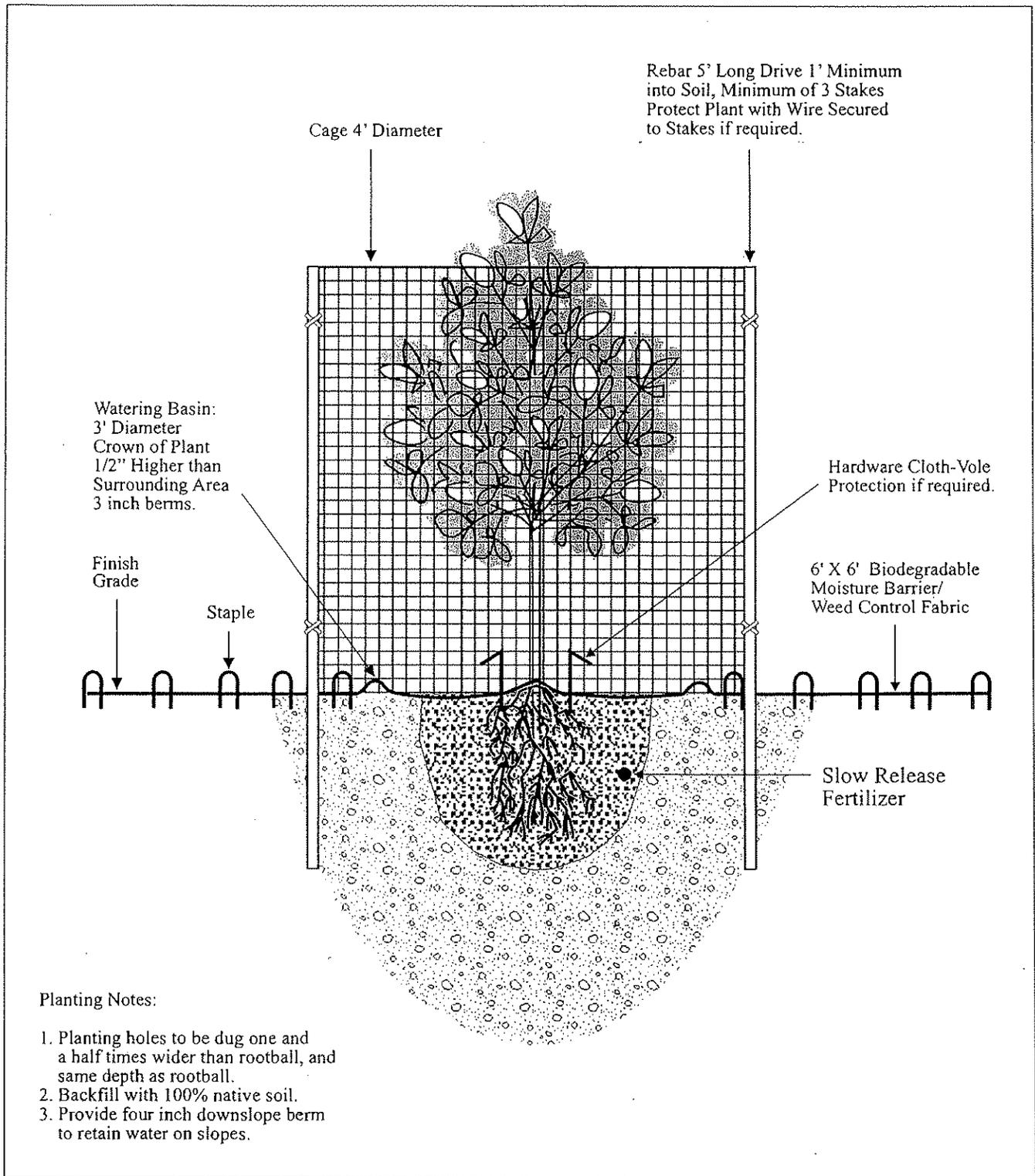
LSA

Note: See Figure 3 for location of cross-section through biofiltration area.

CLASP-Subarea 3 Project

NOT TO SCALE

Conceptual Cross-section Through Upland Habitat Buffer Plantings Adjacent to Biofiltration Area



Planting Notes:

1. Planting holes to be dug one and a half times wider than rootball, and same depth as rootball.
2. Backfill with 100% native soil.
3. Provide four inch downslope berm to retain water on slopes.

LSA

FIGURE 5

CLASP-Subarea 3 Project
 Typical Tree and Shrub Planting
 and Browse Protection Detail

April 25, 2007

Steve Seely
Larkspur Housing Partners, LLC
1800 Alma Avenue, #311
Walnut Creek, Ca 94596

Subject: Proposal for Upland Habitat Buffer Enhancement Measures along Larkspur Creek
Opposite of the CLASP-Subarea 3 Project Site, Larkspur, Marin County, CA

Dear Steve:

Per your request, LSA Associates, Inc. (LSA) presents this letter for the enhancement of the upland habitat along Larkspur Creek on the opposite sides (eastern and southern sides) of the above-referenced project. Specifically, this letter responds to page 8-14 of the Central Larkspur Specific Plan, which requires the developer (Larkspur Housing Partners) to prepare a native plant restoration plan for upland habitat on both sides of Larkspur Creek along both the north/south and east/west reaches of the creek. The *Native Plant Restoration Plan for the Central Larkspur Specific Plan (CLASP) Subarea 3*, dated April 18, 2007, proposes the enhancements for the upland habitat buffers along the northern and western sides (the sides of the creek within the CLASP-Subarea 3 project site) of Larkspur Creek. This letter proposes enhancements for the upland habitat buffers on the sides of the creek opposite the project site.

Existing Conditions

The southern bank of Larkspur Creek along the southern property boundary and the eastern bank of Larkspur Creek along the eastern property boundary have been previously enhanced through the removal of non-native vegetation and the planting of native trees and shrubs. Enhancement efforts by Friends of Corte Madera Creek Watershed have been on-going along the opposite sides of the creek since 1996 (as cited in the 2003 *Revised Draft Environmental Impact Report* by EDAW). Native plants installed along the opposite banks and adjacent upland habitat buffer areas of the creek include California buckeye (*Aesculus californica*), coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), box elder (*Acer negundo*), cottonwood (*Populus fremontii*), toyon (*Heteromeles arbutifolia*), coyote brush (*Baccharis pilularis consanguinea*), and willow (*Salix* sp.). Browse protection tubes or cages have been installed to some of these native plants. Although non-native vegetation has been largely removed from these areas, patches of fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus discolor*), English ivy (*Hedera helix*), tree-of-heaven (*Ailanthus altissima*), wild radish (*Raphanus sativa*), fruit trees (*Prunus* spp.), and other weeds are present along the banks and upland areas adjacent to the creek. A City-owned dirt, pedestrian trail is located on the upland habitat buffer adjacent and parallel to the east/west and north/south reaches of Larkspur creek. Native trees and shrubs have been planted near the top of the bank of these reaches and in some cases, the plants or portions of the canopy of these plants are situated within the upland habitat.

Proposed Enhancement Measures

Presented below is a list of proposed enhancement measures that could be implemented along the upland habitat buffer areas along the south and east sides of Larkspur Creek:

- Remove patches of non-native plants and invasive weeds.
- Remove browse protection tubes from the larger existing restoration plants that are situated or have portions of their canopy above the top of bank.
- Along the south side of Larkspur Creek, plant approximately 20 snowberry (*Symphoricarpos albus* var. *laevigatus*) in the area south of the pedestrian trail between the trail and the fence bordering the adjacent residences.
- Along the east side of Larkspur Creek, plant approximately 25 native trees and shrubs (including California buckeye, coast live oak, valley oak, box elder, toyon, and coyote brush) in the upland habitat buffer areas east of the pedestrian trail.

Please contact me if you have questions and/or require further information regarding this letter for habitat enhancements on the upland habitat buffer areas along Larkspur Creek opposite of the CLASP-Subarea 3 project site.

Sincerely,

LSA ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Ross A. Dobberteen". The signature is fluid and cursive, with a large initial "R" and "D".

Ross A. Dobberteen, Ph.D.
Principal

August 2, 2007

Steve Seely
Larkspur Housing Partners, LLC
1800 Alma Avenue, #331
Walnut Creek, CA 94596

Subject: Proposal for Creek Enhancement Measures along Larkspur Creek for the CLASP-Subarea 3 Project, Larkspur, Marin County, CA

Dear Steve:

Per your request, LSA Associates, Inc. (LSA) presents this letter as a proposal for a habitat enhancement program that could be implemented along Larkspur Creek which borders the above-referenced project. Specifically, this letter responds to Specific Plan Policy D-64 which states “the applicant (Larkspur Housing Partners) should undertake a cooperative effort with the City of Larkspur” to submit a plan with potential habitat enhancement actions that could be implemented along Larkspur Creek in order to enhance the natural habitat value of the watercourse and bordering open space corridors. This creek enhancement proposal on behalf of Larkspur Housing Partners is based on LSA’s site visits on March 7 and 20, 2007 and our on-going communications with you, as well as LSA’s extensive experience with creek enhancement projects in Marin County and throughout the Bay Area.

Existing Conditions

The northern bank of Larkspur Creek along the southern property boundary and the west bank of Larkspur Creek along the eastern property boundary are composed of mostly non-native grass and woody plant species. The banks along these two reaches of the creek are relatively stable with approximately 2:1 slopes (horizontal:vertical). Conversely, the opposite sides of the creek (southern and eastern banks) have been enhanced through the removal of non-native vegetation; in addition, based on their locations and presence of browse-control structures, native shrubs (oaks and coyote brush) have recently been installed and are being maintained. There are also several small areas along the southern bank of Larkspur Creek where erosion has occurred at the toe of the creek slopes and bare dirt has been exposed.

The east-west reach of Larkspur Creek provides several opportunities for creek enhancement activities, such as creating creek bank inlets with more gradual side slopes and repairing areas of erosion, as well as establishing woody vegetation, such as willows and cottonwoods, which grow well in freshwater influenced environments. Conversely, the north-south reach along Larkspur Creek currently has relatively gradual side slopes bordered by well-developed, tidally-influenced terrace areas with 100% cover of wetland vegetation (e.g., pickleweed, saltgrass, etc.). In addition, compared to the east-west reach of Larkspur Creek, there are no visible areas of erosion along the toe of slopes in need of repair. Due to the presence of desirable native vegetation and limited patches of

non-native plants, there are no significant opportunities for enhancement measures, including enhancement plantings, compared to the east-west reach of Larkspur Creek. Accordingly, based on LSA's field observations and experience with relevant creek enhancement projects, this proposal for creek enhancement measures focuses on the east-west reach of Larkspur Creek along the southern property boundary of CLASP-Subarea 3 Project.

Proposed Enhancement Measures

Presented below is a list of proposed enhancement measures that could be implemented along the east-west reach of Larkspur Creek. The attached Figure 1 represents a cross section through Larkspur Creek along the reach that borders the southern property boundary and depicts the various components of the enhancement measures.

- Similar to the efforts that have been implemented along the southern and eastern banks of Larkspur Creek, non-native grass and woody vegetation species could be removed along the northern bank of the east-west reach of Larkspur Creek that borders the project and replaced with more desirable native grass species and woody vegetation, such as willows and cottonwoods. This effort would be similar to the enhancement program that was recently implemented along the southern and eastern banks of Larkspur Creek.
- In order to further control erosion and associated deposition of sediment into the creek, rock rip-rap could be placed by hand in regions where erosion has occurred along the toe of slope along the southern banks of the creek.
- Portions of the existing 2:1 creek slopes along the southern property boundary could be graded and laid back to create small inlets with more gradual slopes of approximately 3:1 (see attached Figure 2). The purpose of the small inlets are to: 1) increase topographic variation along the along the northern bank of the east-west reach of Larkspur Creek that is currently a homogeneous, trapezoidal-shaped channel; 2) establish new areas for plant establishment to increase diversity of vegetation; and 3) create small ponding areas in the new inlets for insect and amphibian breeding opportunities.

This enhancement measure could be implemented along specific sections of the southern property boundary as long as the new inlets with 3:1 slopes would not conflict with the proposed development configuration, any on-site drainage mitigation requirements, and/or associated establishment of the 25-foot-wide buffer areas. The new more gradual creek slopes could then be revegetated with native grasses and woody vegetation as described above.

Cost Estimate For Proposed Enhancement Measures

The proposal for the creek enhancement measures described above for the east-west reach of Larkspur Creek equals approximately \$40,000. This cost estimate consists of the following activities: 1) remove non-native woody vegetation and exotic/weed plants - \$6,000; 2) excavate four approximately 15-foot-wide creek bank inlet areas - \$13,500; 3) apply seed mix and erosion control fabric to exposed banks - \$2,000; 4) plant willow and cottonwood pole cuttings (groups of five pole cuttings every 20 feet) - \$2,500; 5) install rock rip-rap in small eroded areas along toe of southern

creek bank - \$2,000; and 6) hand-irrigate pole cuttings for two years - \$14,000. This overall cost estimate does not include any work or fees associate with as-needed local, state or federal permits.

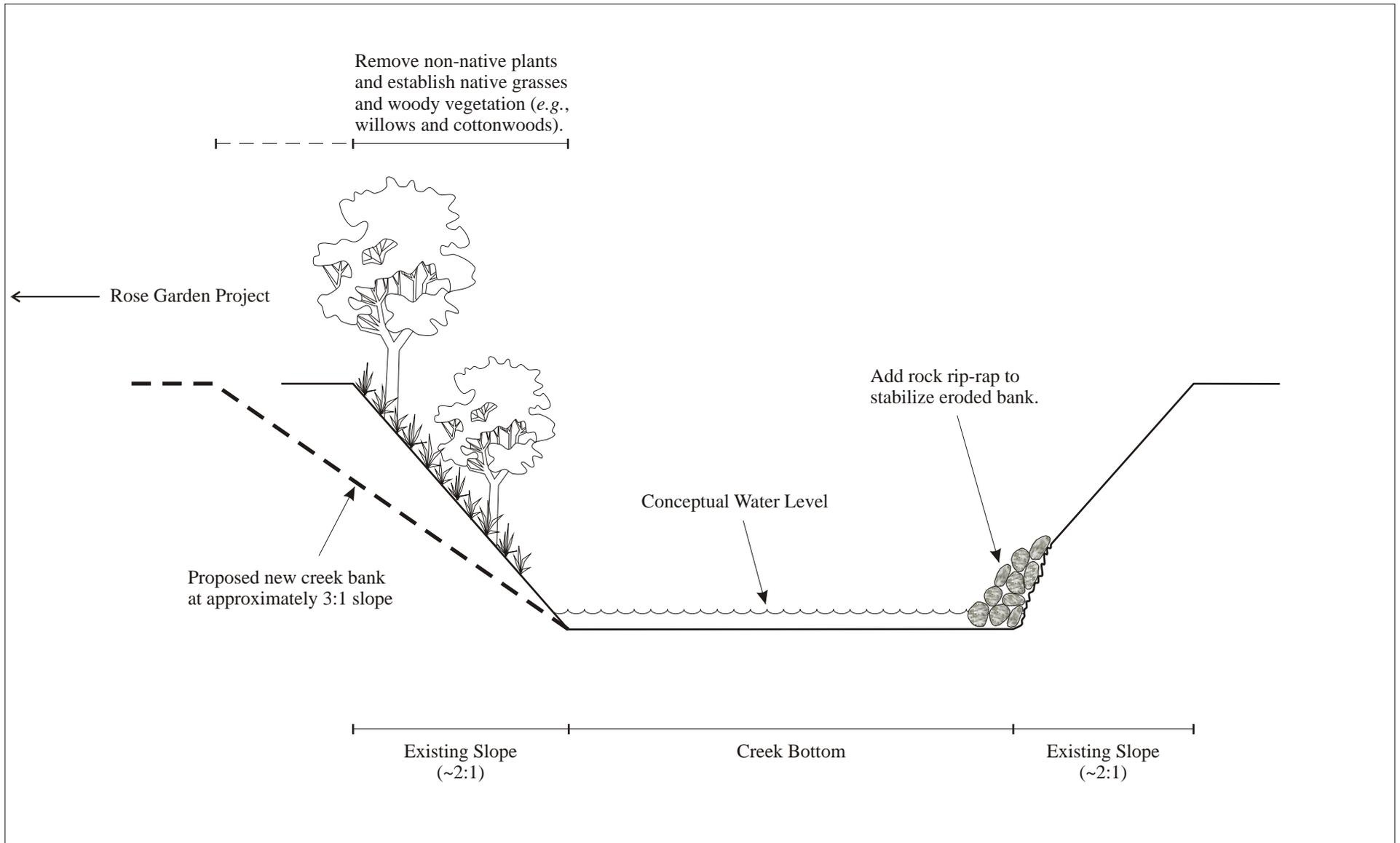
Please contact me if you have questions and/or require further information regarding this proposal for a habitat enhancement program that could be implemented along Larkspur Creek bordering the CLASP-Subarea 3 project.

Sincerely,

LSA ASSOCIATES, INC.

Ross A. Dobberteen, Ph.D.
Principal

Attachment: Figure 1 – Proposed Creek Enhancement Measures for Larkspur Creek
 Figure 2 – Conceptual Locations for Proposed Creek Bank Inlets



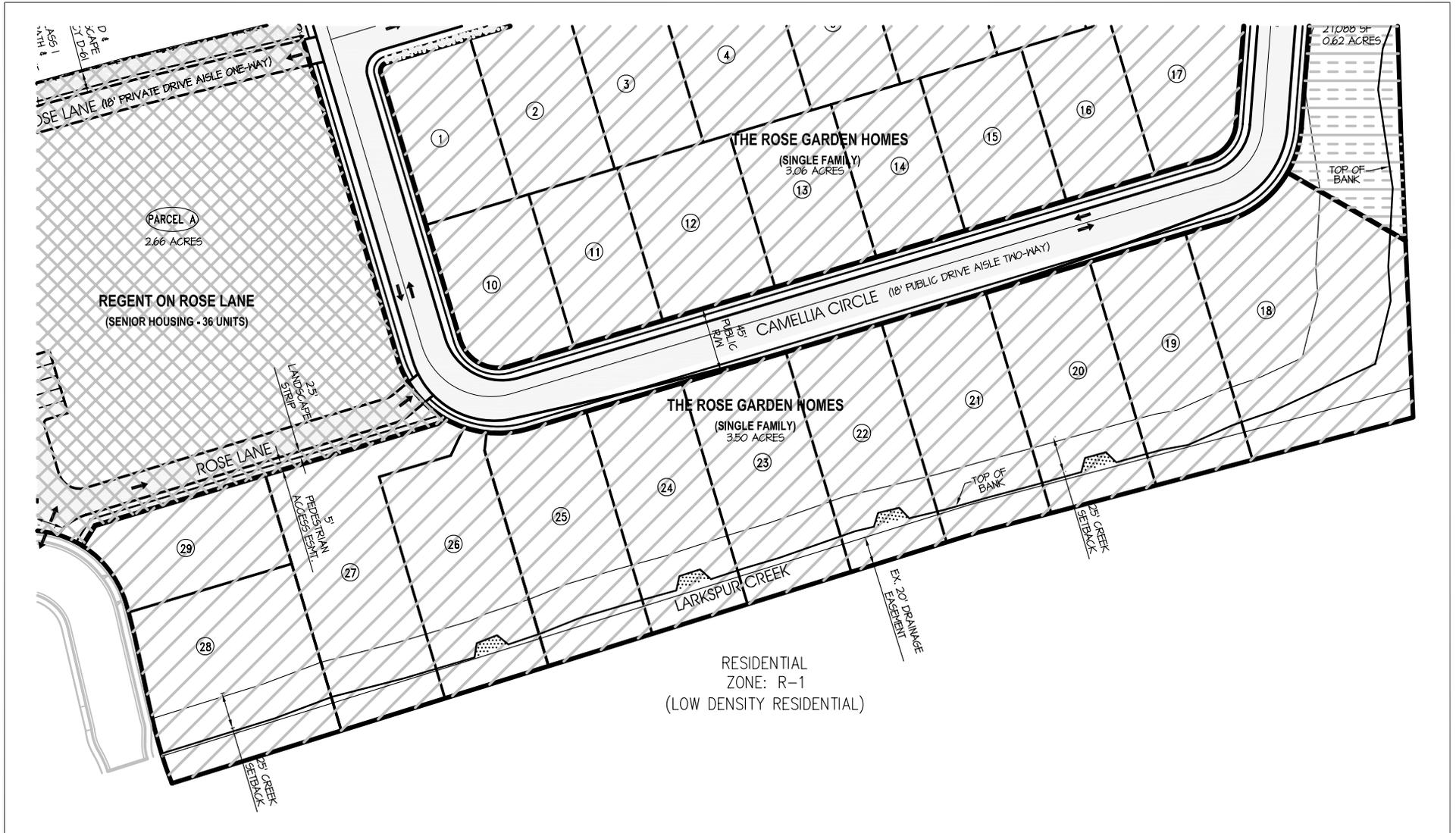
LSA

FIGURE 1

Note: Some or all of the above enhancement measure could potentially be implemented.

CLASP-Subarea 3 Project
Proposed Creek Enhancement Measures
for Larkspur Creek

NOT TO SCALE



LSA



0 100
FEET

CONCEPTUAL LOCATION OF
15-FOOT-WIDE CREEK BANK INLET

Note: Actual location of creek bank inlets to be determined
at a later date in coordination with final drainage and
Native Restoration Plan for 25-foot-wide buffer area.

FIGURE 2

CLASP-Subarea 3 Project
Conceptual Locations for
Proposed Creek Bank Inlets

SOURCE: LDSI, SHEET C3, DATED 1/31/07

P:\LHP0701\g\Figures\Fig2_ProposedCreekBankInlets.dwg (4/6/07)