Longview Oaks Nature Preserve
Monitoring and Maintenance Plan
Del Paso Regional Park
City of Sacramento

Prepared for: City of Sacramento

Department of Parks and Recreation

FOOTHILL ASSOCIATES

ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Table of Contents

FIGURES

TABLES

1.0 LONGVIEW OAKS – MONITORING & MAINTENANCE PLAN

1.1 Introduction

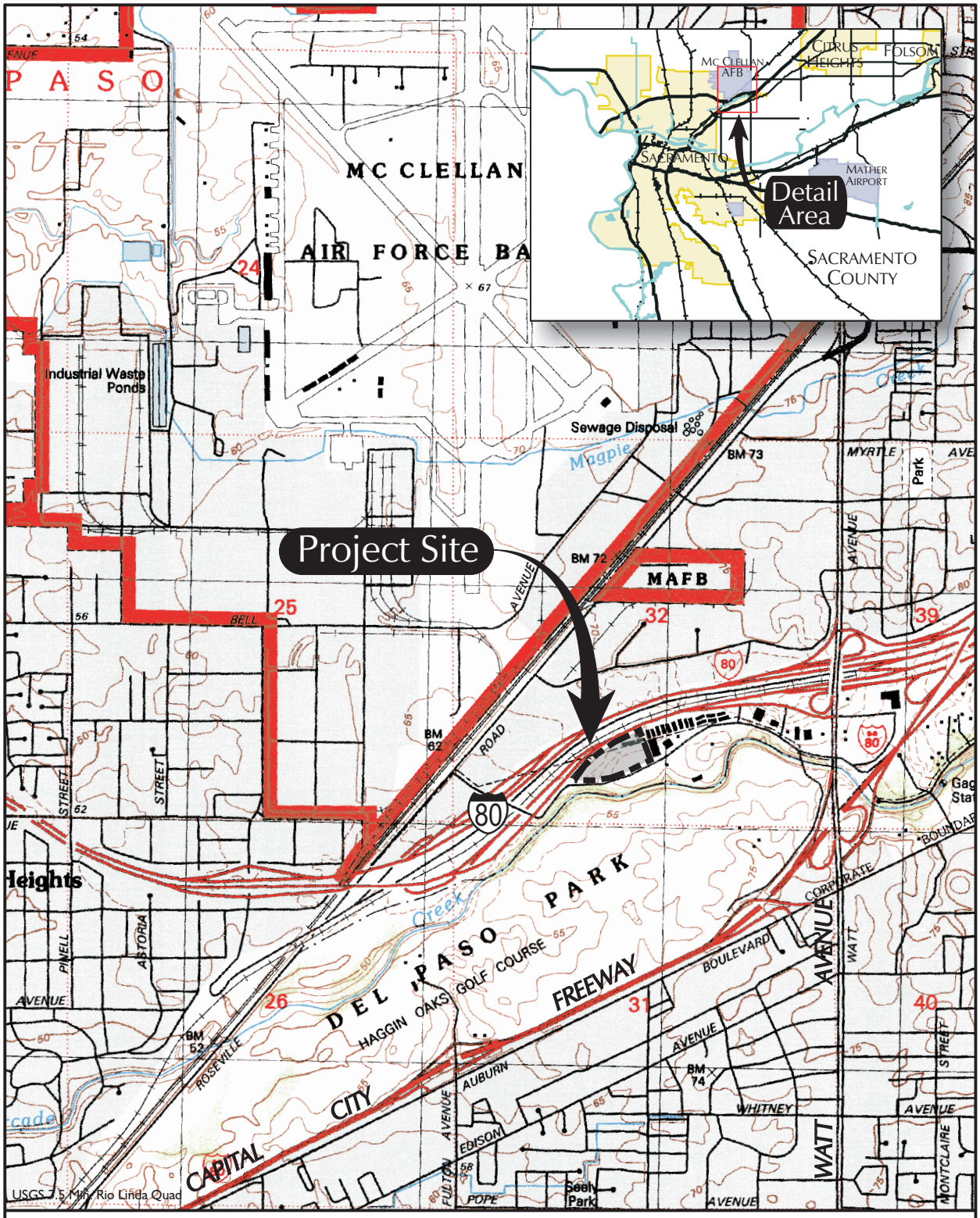
The Longview Oaks Nature Preserve encompasses 7.45 acres and is located between Longview Drive and Interstate 80, approximately one mile west of Watt Avenue in Sacramento, California (Figure 1). The Preserve is contained within the City of Sacramento's Del Paso Regional Park, a 360-acre recreation resource that provides a variety of active and passive recreation opportunities, including the Haggin Oaks Golf Complex, the Sacramento Softball Complex, natural areas, equestrian trails and the Discovery Museum. The Longview Oaks Nature Preserve was annexed to the Regional Park in 2002 in order to protect the remnant oak woodlands, grasslands, and wetlands located within the Preserve site. The Preserve will be managed as a passive recreation use area, with a trail system and interpretive signage highlighting the sensitive natural resources and ecosystem dynamics of the site.

The Longview Oaks Nature Preserve is significant because it has the potential to support a variety of habitat types that were characteristic of the Central Valley prior to 1850. These are oak woodland, grassland, vernal pools and seasonal riverine wetlands. The site currently has approximately 170 native oaks (blue oak, valley oak and interior live oak) and a few non-native tree species. It is bisected by an ephemeral, unnamed tributary to Arcade Creek and associated seasonal wetlands. Historically, the site also supported several vernal pools, although the function of these wetland features has been lost due to significant alterations in adjacent land use, grading and hydrography. Several acres of the Preserve are open grassland, dominated by non-native annual grasses and forbs. These species have largely replaced the native bunchgrasses and forbs that would typically have been found in such conditions before the introduction of non-native species associated with intensive grazing and agriculture.

The plan for the Longview Oaks Nature Preserve is to restore vernal pools to the site, re-establish an area of native grassland, preserve the existing ephemeral drainage and seasonal wetlands, and enhance the oak woodland with additional plantings. In addition, a trail system and interpretive signage will be installed to encourage passive recreational use of the area and help educate visitors about the Preserve ecosystems (Figure 2). The purpose of this Maintenance and Maintenance Plan is to provide direction on the proper methods to care for these sensitive habitats and recommend monitoring protocols to insure that the viability and function of the represented ecosystems is preserved and enhanced aver time. This plan addresses specifically the existing and newly planted native oaks and the other existing vegetation on the site, the created vernal pools, seasonal wetlands located along the drainage swale, the created detention basin to treat the surface runoff from the adjacent parking lot to the north, the proposed looped pedestrian trail, and the native grassland.

The success of the Longview Oaks Nature Preserve will require a variety of coordinated monitoring and maintenance practices including debris removal, trail maintenance, native vegetation protection, exotic vegetation removal, fire management, and public access

controls. Care of the preserve resources is intended to be adaptive, changing as necessary to address the evolution of the site over time, and as monitoring indicates potential issues. The management practices and techniques outlined in this plan will help to balance the needs of managing the natural resources of Longview Oaks, educating the public about preserving native oaks, seasonal wetlands, vernal pools and native grasslands, and providing an enjoyable outdoor recreation experience for the community.



SITE AND VICINITY

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING
LANDSCAPE ARCHITECTURE

N

0 1000 2000
SCALE IN FEET

FIGURE 1

INTERSTATE FREEWAY 80

Oak Screening

Existing Wetlands

Detention Basin

Vernal Pools

VP-7

VP-5

VP-6

VP-4

Boardwalk

Staging Area

Topsoil storage area

VP-2

VP-3

VP-1

Bridge

Native

Grassland

LONGVIEW DRIVE

WPA Culvert

Existing Trees

Loop path

AREA CALCULATIONS:

Detention Pond: .07 acre
Vernal Pools : .33 acre

Sheet Title
BASE SHEET
LONGVIEW OAKS

Project Title
Longview Oaks Nature Preserve
CONCEPT PLAN
CITY OF SACRAMENTO
DEPARTMENT OF PARKS AND RECREATION

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTANTS
2150 Professional Drive, Suite 120
Roseville, California 95661
(916) 782-1011

N

1" = 80'

Figure 2

2.0 GOALS AND OBJECTIVES

2.1 Monitoring Goals

Monitoring at the Longview Oaks Nature Preserve will be used to provide information about how well the various habitats are functioning so that activities and maintenance at the Preserve can be adjusted to prevent adverse impacts and to promote habitat enhancement. The specific monitoring goals are to:

- Observe the successional changes of the vegetation and wetlands in order to implement management strategies to preserve the four representative habitat types (vernal pools, seasonal wetlands, oak woodland and native grassland).

- Detect changing conditions at Longview Oaks that may require attention or modifications in management practices to preserve the habitats' function and health.

- Note public use patterns that occur at Longview Oaks and make recommendations regarding public use restrictions or changes to management practices.

2.2 Monitoring Objectives

Achieving the Preserve monitoring goals will be facilitated by the implementation of specific monitoring objectives. These include:

- Monitoring surveys will be conducted on a regular basis as identified in this plan to make sure changes in habitat conditions and are detected early so that meaningful steps can be taken to prevent potentially adverse impacts.

- Data collected by preserve monitors will be gathered in a consistent format as described in this plan to facilitate comparative analyses of habitat conditions over time.

- Monitors will be trained in correct field techniques for qualitative and quantitative habitat evaluation.

- The monitoring effort will involve both volunteers and Department of Parks and Recreation maintenance staff. Volunteer monitors shall be coordinated by the California Native Plants Society. Monitoring by City staff shall be integrated with regular site maintenance activities.

- Monitoring reports will be compiled according to the schedule described in this plan and provided to the City of Sacramento Department of Parks and Recreation. The Department will keep these reports on file as a record of changing conditions at the Preserve and response to management and maintenance activities.

- The of City of Sacramento Department of Parks and Recreation staff responsible for maintenance at the Del Paso Regional Park will meet with the California Native Plant Society at least annually, and more frequently as needed, to review monitoring results and discuss management and maintenance adaptations to best support the conservation and enhancement of the Preserve habitats.

2.3 Maintenance Goals

The goals for maintenance of Longview Oaks Nature Preserve reflect the priority of sustaining and promoting the natural resource values of the site while providing appropriate levels pf public access through passive recreation to foster environmental awareness and stewardship. The management goals are:

- Preserve and protect the existing natural habitats and enhance the habitats through restoration efforts.

- Accommodate access to the site for education and passive recreation in a manner that will not adversely impact ecosystem function.

- Enhance public safety through management of fire, hazards, and crime.

- Encourage community stewardship.

2.4 Maintenance Objectives:

As a natural area located within a larger complex of active and passive recreation lands, it is important that the approach to maintaining the Longview Oaks Nature Preserve be consistent with its purpose as a preserve. The following maintenance objectives will be used to direct decisions about how maintenance will be performed in order to optimize the natural resources value while permitting the anticipated passive recreational uses.

- The Longview Oaks Nature Preserve shall be maintained to support the establishment and continued existence of four California Central Valley habitat types: vernal pools, oak woodland, native grassland and seasonal wetlands.

- Maintenance activities shall be scheduled so that they do not adversely impact the life cycles of beneficial plant and animal species that reside in or use the Preserve, including any special status species.

- Maintenance staff will be trained in techniques for vegetation management and pest control that will preserve and enhance the ecosystem function of the preserve using the least environmentally harmful methods and materials feasible.

- Volunteers will be encouraged to participate in maintenance activities in order to build stewardship, increase knowledge of native plant horticultural needs, and educate residents about the ecological value of open space in the urban context.

- Restoration and enhancement activities will be included in regular maintenance of the Preserve.

- Maintenance activities required to limit fire danger or other hazards shall be conducted in the manner that is least damaging to the natural resources on the site while still providing acceptable levels of public safety.

3.0 ADAPTATIONS TO THE MONITORING AND MAINTENANCE PLAN

This Monitoring and Maintenance Plan has been prepared to guide the future management and operations of the Longview Oaks Nature Preserve. As the habitat conditions at the Preserve evolve or new techniques of habitat management are developed, it may be necessary to revise this plan in order to reflect the best preserve management practices.

The Monitoring and Maintenance Plan shall be reviewed every five years by representatives of the City of Sacramento Parks Department and the California Native Plants Society to assess the appropriateness of the monitoring and maintenance practices to carry out the stated objectives of Longview Oaks Nature Preserve. Evaluation of the plan will include review of monitoring data, a site visit, consideration of operational issues and establishing priorities for additional restoration or enhancement activities. The Plan may then be revised to reflect mutually acceptable changes in approach that will continue to support the sustainability of the site's natural resources.

4.0 MONITORING PROCEDURES

Monitoring at the Longview Oaks Nature Preserve is an important management tool to make sure that the resources of the preserve are thriving, and to provide early detection of any activities or conditions that may potentially have an adverse impact. All four of the Preserve habitat types should be monitored. This section of the Plan provides guidelines for the recommended monitoring protocols addressing scope, frequency, procedures and reporting.

4.1 Oak Woodland

Recommended monitoring for the oak woodland includes annual inspections by a certified arborist as well as more frequent monitoring visits by volunteers. The expertise of a certified arborist is required to accurately detect problems such as disease and structural failures that could result in a hazard situation or serious decline in the health of the woodland if not dealt with appropriately. Volunteer monitors are needed to provide regular reports on more evident impacts that may require corrections or changes in management such as public use, adjacent land use, vandalism, and predation.

4.1.1 Certified Arborist

All existing and newly planted oak trees should be evaluated by a certified arborist annually to check for, at a minimum:

- growth,
- insect or animal pests,
- plant parasites,
- signs of stress or disease,
- structural weakness,
- poor drainage, and
- problems with invasive species.

While arborists typically only provide such detailed evaluation of trees that measure 2" or greater in diameter at breast height (DBH) as measured 4.5 from the ground, it will also be important for the arborist to evaluate the newly planting saplings to track the success of the woodland enhancement effort. This comprehensive evaluation is important both for the health of the oak woodland and to identify and address any potential hazard trees that might pose a threat to preserve visitors. An initial arborist evaluation was prepared in 1999 (Appendix A). The numbering and mapping developed for that evaluation should be used as the basis for future monitoring reports. Any new trees planted since 1999 will need to be identified and numbered for future reporting. Special attention should be given to trees identified in prior inspections as having potential structural or disease issues to make sure that they do not pose a hazard. The arborist's report should

be provided to the Del Paso Regional Park Manager and Tree Services so that any remedial actions needed may be taken.

4.1.2 Volunteer Monitors

Volunteer monitors should also observe all the oak trees and seedlings quarterly. Critical times for observation are in late August, when drought stress may be evident and in early spring to detect new bud development and growth. However, predation and vandalism are potentially year round problems and early detection will be important to protection of the oak woodland. Volunteer monitors should check for root development to make sure that the protective wire cages are removed when roots grow to the diameter of the cage.

This more frequent monitoring should also focus on any impacts related to public use or changes in drainage patterns that might damage the oaks. The goal of this monitoring is to identify any potential issues before they have an adverse impact on the Preserve, and to develop strategies to eliminate the issues. Monitors should keep logs of their field visits, with notes describing specific observations and supplemental photographs. Issues noted during these quarterly evaluations that require attention should be reported immediately to the Del Paso Regional Park Manager and Tree Services so that any remedial actions needed may be taken. A sample volunteer monitor field form is provided in Appendix B.

4.2 Vernal Pools

Vernal pools are a unique type of wetland feature that provides habitat to a variety of organisms. Some of these species, such as the Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), Vernal Pool Tadpole Shrimp (*Lepidurus packardi*), and Sacramento Orcutt grass (*Orcuttia viscida*) are threatened or endangered because much of the vernal pool habitat throughout the Central Valley has been lost to development. Accurate assessment of vernal pool function requires knowledge of the plant species whose presence is indicative of the vernal pool habitat type. The monitoring process is further complicated because the appearance of a vernal pool will change dramatically depending on the season (Figure 3). Therefore, annual vernal pool monitoring at the Longview Oaks Nature Preserve should be conducted by a trained wetland scientists and supplemented by more frequent monitoring by volunteers.

4.2.1 Wetland Specialist

A qualified wetland specialist should inspect the vernal pools annually for five years and then once every three years to document the function of the wetlands and species present. Each annual inspection should be documented in a report to the Del Paso Regional Park Manager, along with recommendations, if any, for management actions to maintain, enhance, or restore vernal pool functions.

The wetland specialist will make observations, collect data, and evaluate vernal pool function in the following areas:

- Wetland Plant Communities, which may include evaluation of plant species and abundance, identification of listed or special-status plant species, etc.

- Wetland Invertebrate Communities, which may include dip net sampling, visual observations, etc.
- Wetland Hydrology, which may include visual observation and documentation of inundation/saturation, observation of flows received from offsite locations, etc.

A consistent data collection methodology should be used by the wetland specialist from year to year in order to accurately document changes in function and species abundance. If a change in methodology is warranted by new technology, new sampling protocols, or other circumstances requiring modified procedures, subsequent surveys by the wetland specialist will employ these newer methods.

4.2.2 Volunteer Monitors

Volunteer monitoring of the vernal pools should be conducted quarterly with additional site visits in late spring to determine when the pools are dried up enough to allow maintenance mowing. In the late spring, monitors will need to be watching for the emergence of Yellow Starthistle flowering stems from the basal rosettes. Just prior to the flowering of these plants (typically in late May), the pools should be mowed. A second mowing will need to occur several weeks later when the plants send up secondary flowering stems.

Photographs of each pool should be taken with recorded observations of vernal pool conditions. Monitors should be watching for evidence of public use that may be adversely impacting the ecology and function of the pools, such as foot or bicycle traffic in the pools and trash dumping. The quarterly reports should be provided to the Del Paso Regional Park Manager so that any remedial or preventative maintenance or operational adjustments can be implemented. The Park Manager should also be notified when mowing is to occur in the late spring. A sample volunteer monitor field form is provided in Appendix B.

Figure 3 - Vernal Pool Seasonal Conditions: Top – Late Summer, Bottom - Spring

4.3 Seasonal Wetlands

A wetland delineation conducted in March, 2002 identified .33 acres of existing wetlands at the Longview Oaks Nature Preserve site (Appendix C). The wetlands include four sections of ephemeral drainage (.07 acres) and three seasonal wetland basins (.26 acres). The ephemeral drainages convey water for short periods of time during and following storms and some surface runoff from adjacent properties. The basins are fed by the ephemeral drainages and hold standing water for a much longer duration although they do dry out completely during the summer. When the detention wetland is implemented, a fourth seasonal basin is expected to develop fed by the ephemeral drainage originating at the outfall on the north boundary of the site. The goal of future monitoring of the seasonal wetlands is to observe how well they are functioning and identify measures to prevent adverse impacts.

4.3.1 Volunteer Monitoring

The extent and quality of seasonal wetlands is indicated by the types of plants they support, the characteristics of the soil, and the hydrologic conditions. These are the criteria that were used in the 2002 wetland delineation, and require the expertise of a wetland scientist to accurately assess. However, trained volunteers can reasonably observe general conditions in the seasonal wetlands to track changes in size, plant distribution and period of inundation. Therefore, it is recommended that future monitoring be conducted primarily by trained volunteers, with more comprehensive assessment by a certified wetland scientist occurring only when changing conditions or management issues warrant additional analysis.

Volunteer monitoring should occur quarterly in order to observe the function of the wetlands and to identify any potentially adverse impacts before significant damage occurs. Monitors should record information on the types of plant species present, the presence or absence of surface water and wet soils, the extent of the wetland vegetation and water, wildlife present, and any evidence of potentially adverse impacts such as trash dumping, or intrusion by pedestrians, equestrians or bicycles. A sample volunteer monitor field form is provided in Appendix B. The monitoring report should be provided to the Del Paso Regional Park Manager so that operational or maintenance issue can be promptly addressed.

4.4 Native Grasslands

The establishment of a grassland populated by predominantly native species will be a challenge at the Longview Oaks Nature Preserve site due to the intense competition from non-native annual grasses and forbs. The native grass species are generally perennials while the non-natives are generally annuals. The non-native species tend to germinate early in the spring before the native species and are thus better able to compete for moisture, sunlight and nutrients. However, once the native species are established, they form large, robust plants and can create a dense cover that effectively limits the non-native species. Therefore, the first several years of monitoring following planting of the native grass will be critical. During this period, it will be important to observe the

relative distribution of native and non-native species in order to implement maintenance strategies to reduce or eliminate the non-native species. Such strategies are likely to be limited to manual removal of non-natives or spot application of herbicides so that the native grasses are not damaged.

Several approaches will be used at the Longview Oaks Nature Preserve to establish the native grassland, combining different eradication, site preparation and planting techniques. Monitoring will be focused on determining which of the approaches is most successful for establishing the native grassland so that future revegetation projects might utilize similar methods. Volunteer monitors trained to identify the native grass species should assess the site at least quarterly taking note of the percent of native versus non-native species present and relative vigor of the species. Monitors should also identify areas where manual eradication of non-native species needs to be pursued or supplemental plantings of native species. It is assumed that manual removal of non-native grasses will be done by volunteers from the California Native Plants Society or other similarly trained volunteers able to distinguish between the various species. Such manual control methods are very labor intensive and Del Paso Regional Park maintenance staff are not likely to be available for the work.

Field observations should be recorded, along with photographs and recommended maintenance actions, and provided to the Del Paso Regional Park Manager. Assessment of the relative amount of native versus non-native grasses may most readily be accomplished by dividing the grassland area into plots according to a preliminary visual assessment of species composition. A finite area, such as one square yard, within each plot should be examined and the percent of native species estimated. This percentage may then be extrapolated across the area of each plot to arrive at an overall estimate of native species presence for each plot type. A sample monitoring field form is provided in Appendix B.

4.5 Overall Site Monitoring

In addition to monitoring the habitat types at the Longview Oaks Nature Preserve, overall site condition should be monitored to detect any operational or maintenance issues that need to be addressed to protect the site's natural resources. These site inspections should be the shared responsibility of Del Paso Regional Park staff, CNPS and other interested volunteers. Site inspections should be conducted at least every two weeks to monitor:

- Overall site condition
- Fence condition
- Erosion/sedimentation
- Drainage onto site from adjacent properties
- Litter and dumping
- Unauthorized access
- Campfires
- Encampments

Any issues requiring attention should be communicated to the Del Paso Regional Park Manager. Under no circumstances, should volunteer monitors attempt to address any individuals engaged in unauthorized uses directly. The incident should be reported to the Park Manager for appropriate handling.

5.0 MAINTENANCE PROCEDURES

The Del Paso Regional Park Manager will be responsible for coordinating maintenance activities at the Longview Oaks Nature Preserve. Whenever feasible, volunteers will be encouraged to participate in maintenance activities to enhance protection and stewardship of the Preserve's resources. Required maintenance activities include those actions specific to the preserve habitats as well as general maintenance concerns. In general, maintenance required for the native habitats is minimal, and is focused on eliminating threats or adverse impacts, or fostering optimal conditions for habitat health.

5.1 Mature Oak Woodlands

About one-third of the oak trees 2" of greater DBH in the Preserve would benefit from some degree of immediate pruning to remove dead wood, reduce crown size and/or weight, mistletoe removal, or to correct structural problems. These trees received a rating of less than "excellent" or "good" in the 1999 arborists' report. The annual arborist report will provide most of the direction for any future corrective pruning or remedial treatments required to preserve the health of the oak woodland. However, the quarterly volunteer monitoring reports as well as general site inspections may identify additional periodic pruning required to address limbs weakened by storm damage, vandalism, or undetected disease.

Mature oaks should not be pruned except to remove dead, weakened, diseased, or dangerous branches as prescribed by an arborist, or by the Del Paso Regional Park Manager in emergency situations. Branches should be kept from touching the ground to reduce the dangers of ground fires spreading into tree canopies. If canopy reduction is necessary to improve light penetration, reduce wind resistance, or branch weight, no more than 20 percent of the leaf area from branches 3-6" Ø should be pruned. Excessive pruning will promote epicormic sprouts that are highly vulnerable to damage from mildew. Light pruning may be done at any time of year. Perform heavy pruning only during the winter dormant period for deciduous oaks (Blue Oak, Valley Oak, and California Black Oak) and during July and August for the Interior Live Oak.

5.2 Oak Seedlings

The oak seedlings planted in November, 2002 will need to be hand-watered during the dry season (May – October) for two years to promote growth and development. Deep watering should occur monthly as weather conditions warrant, and more frequently if trees show signs of drought stress. It is important to let the soil dry out between watering during the summer months to prevent the development of bacterial and fungal infections that can kill the oaks. After two years, the trees should have established enough root mass and vigor to adapt to the natural wet winter, dry summer climate of the site.

The protective cages placed around the oak seedlings should be left in place for at least one season, depending on the growth rate of individual trees. Once the roots begin to

expand out to the perimeter of the cage, the cages should be removed or replaced with larger cages if predation is an issue. Failure to remove the cages at this time may result in girdling of the roots or damage to the roots when the cages are eventually removed.

A number of 'volunteer' oak seedlings are also beginning to establish at the Longview Oaks Nature Preserve. These oaks are an important part of the regeneration process that is necessary to keep the oak woodland healthy and diverse. However, since the goal of the Preserve is to provide representative examples of several other habitat types, the volunteer oak seedlings should be managed to encourage growth in desirable areas and limit their spread into other habitat areas. Mowing in the vernal pools and native grassland areas will essentially provide this type of control. Prior to mowing within the oak woodland for fuel load reduction, volunteer seedlings should be flagged so that they can be avoided.

5.3 Vernal Pools

Maintenance of the vernal pools will be minimal. The most important aspect of caring for the vernal pools is to control the non-native species, especially Yellow Starthistle (*Centaurea solstitialis)*, that may try to colonize the pools and replace more desirable species. Traditionally, fire or grazing would have accomplished the management of non-native species in a vernal pool ecosystem. However, fire is not a management option within the Longview Oaks Nature Preserve, due to the proximity to private property, air pollution concerns, and the potential to damage other Preserve resources. Some limited grazing by goats may be used but their range would need to be controlled to prevent damage to the oak seedlings and other desirable plant species.

The recommended alternative is to mow the vernal pools and the surrounding upland areas several times in the late spring once the pools are dry and the native species have already set seed. Since Yellow Starthistle is the predominant and most aggressive of the non-natives to be controlled, monitors should be trained to observe the life stage of the plants so that mowing can occur at the appropriate times. The first mowing should occur in late spring just before the Yellow Starthistle flowers. A second mowing should occur several weeks later to eliminate any secondary flowering stems. After several years of this practice, and once the wetland hydrology of the vernal pools is established, less frequent mowing may be needed and may be limited to the surrounding upland margins. Mowing may be supplemented by periodic hand removal of select invasive species by volunteers trained to recognize the problem species.

5.4 Seasonal Wetlands

The seasonal wetlands will not require mowing since the hydrology of the features will effectively limit the growth of non-wetland species. However, some periodic vegetation removal may still be necessary to allow adequate flow during storm events. Such maintenance activities will be conducted using manual methods and with the minimal amount of disturbance to the topography and water quality of the wetland features.

Chemical controls such as herbicides, and heavy equipment and vehicles will not be used for vegetation control in the seasonal wetlands.

5.5 Native Grassland

Native perennial grasses are relatively slow to germinate and grow, but once they are established (2 – 4 years) they are drought-tolerant, hardy, disease resistant and long-lived. Most are summer dormant, but begin to green up before the winter rains because they have massive root structures that can access water deep in the ground. This is an important consideration in reducing fuel load in the dry, hot months of early fall.

Maintenance of the native grassland during the first several growing seasons will be critical to the successful establishment of the native species. It is anticipated that planting for the native grassland will occur in the fall of 2003, following a year of site preparation measures aimed at reducing the non-native seed bank in the soil. The non-native annual species will begin to germinate and grow very quickly as soon as the rains begin, while the native perennial species will be slower to germinate. A general purpose herbicide such as glyphosate should be applied following planting as soon as the annuals begin to grow but before the natives germinate. Do not apply the general purpose herbicide in subsequent years because it will damage the native grasses as well as the weeds. A pre-emergent should also be applied to the soil surface immediately following drill seeding of the native species. The surface application will not harm the native seed but will help limit the germination of the annual seeds on the soil surface.

Not all of the annuals will be killed by these applications and will germinate later, notably some of the common broadleaf weeds. By February or early March, the native grasses will also have germinated and it will no longer be feasible to use glyphosate for weed control without killing the native grass seedlings. However, a broadleaf herbicide should be applied at this time to control these aggressive broadleaf species such as Starthistle, knotweed and Bull thistle. The application of the broadleaf herbicide should be continued each year at this time until the grassland is established.

In late March or early April, begin successive mowings several weeks apart with blades set at least 3-4 inches from the ground should to control the growth of the non-natives and to allow adequate sunlight to reach the more slow growing native species. The first mowing should occur when the non-natives are no more than 6” tall. A second and possibly a third mowing may be needed through June depending on how quickly the non-natives and natives are growing. The goal of this mowing regime is to keep the non-native annuals low enough so that the natives have an opportunity to successfully compete.

Another mowing should occur later in the summer once the non-natives have begun to develop seeds, but before these seeds are viable. This approach will cause the greatest energy distress to the annuals and will make it less likely that they will be able to set a second crop of seeds that season. After several years using this mowing approach, the viable annual seeds in the soil are not replaced and the native grasses will have a better chance to dominate.

Early in the fall of the second year, a pre-emergent herbicide may be applied to the first-year stand of native grasses. The herbicide will prevent germination of non-native seed in the soil, and have little impact on germination of the natives since they will not have dropped much seed. However, the first-year stand of native grasses is tender and easily damaged so it is critical use the correct herbicide application rates and methods.

These recommended maintenance practices for the native grassland during the first three years following planting, and in subsequent years once established are summarized in Table 1.

Activity	Year 1 (10/03 – 9/04)	Year 2 (10/04 – 9/05)	Year 3 (10/05 – 9/06)	Ongoing as Needed
General herbicide	Once rains start and annuals begin to grow, but before natives germinate	None	None	None
Broadleaf herbicide	Feb. – early Mar.	Feb. – early Mar.	Feb. – early Mar.	Feb. – early Mar.
Pre-emergent herbicide	Immediately after drill seeding	Early fall	None	None
Spring Mowing	Late Mar. – early Apr.; .repeat 2-3x through June	Late Mar. – early Apr.; repeat 2-3x through June	Late Mar. – early Apr.; repeat 2-3x through June	None
Summer Mowing	When annual seeds are set but immature	When annual seeds are set but immature	When annual seeds are set but immature	None

Table 1 - Native Grassland Maintenance Practices

5.6 Detention Wetland Basin

The detention wetland basin at Longview Oaks Nature Preserve is intended to provide some water quality pre-treatment for the outfall discharge that originates on the adjacent parking lot and freeway before it enters the ephemeral drainage and associated wetlands. The wetland basin is intended only to provide temporary detention of the water during minor, frequent storm events, slowing its release into the ephemeral drainage and providing and opportunity for infiltration and settling within the small basin. The downstream end of the wetland basin has an armored spillway that will direct over bank flows toward the ephemeral channel and prevent washouts of the perimeter berm.

Proper function of the detention wetland basin will require periodic removal of excessive vegetation and/or sediment to maintain its capacity. Detention wetland maintenance work should be performed during the summer months when surface runoff is non-existent and when such work would cause minimal impacts to the adjacent habitat. Any

vegetation or soil removed from the detention wetland should be disposed of in a proper manner. Regular debris pickup will also be required to collect trash that is carried into the basin by the outfall discharge.

5.7 General Preserve Maintenance

In addition to the maintenance activities focused on the specific habitats within the Longview Oaks Nature Preserve, general maintenance of the Preserve will also be necessary to provide a safe, functional and enjoyable passive recreation experience for visitors. However, since the primary objectives of the Preserve are to protect and enhance the site's natural resource values and to provide passive recreation opportunities the levels of maintenance traditionally associated with active use parks will not be required. The frequency of general maintenance activities such as litter removal, trail repairs and maintaining signage will need to be established based on use levels and in response to the ongoing monitoring described earlier this plan. Maintenance methods should also be constrained to those that are least damaging the Preserve's resource values.

5.7.1 Vegetation Management

- Maintenance activities under each of the habitat types describe most of the vegetation management strategies for the Preserve. These include the need for monitoring and occasional tree removal for hazard control, removing creek channel blockages where there is an imminent threat to life or property, and mowing around the vernal pools and in the native grassland. However, there may also periodically be a need for vegetation removal to maintain the trail surface, a safe vertical clearance and an adequate line of sight for trail users. Such vegetation removal should be limited to occasional trimming within the trail right-of-way where there are obstructions create unsafe vertical clearances or lines of sight for trail users. Any tree trimming that is necessary to maintain a safe vertical clearance or line of sight should be conducted by a certified arborist under the direction of the Del Paso Regional Park Manager.

- Annual mowings beyond those described for the vernal pool and native grassland may need to be done throughout the entire upland area of the Preserve to reduce fuel load and fire danger.

- All mowing should be accomplished using the equipment and methods that most effectively accomplish the task without causing damage to the Preserve resources. Of particular concern are the potential for heavy equipment to cause compaction within the root zone of the oaks, or for ruts to develop that could eventually result in erosion.

5.7.2 Invasive and Noxious Weed Control

- Non-native plant species that compete with and alter the natural ecosystem to the detriment of native plants and wildlife should be removed from the Longview Oaks Nature Preserve.

- Noxious weeds should be controlled in accordance with state law thorough the utilization of appropriate control methods specific to the biology of the weed being managed. Control methods should be utilized at the time best suited to reduce the growth and spreading of the weeds into the Preserve as determined by the Del Paso Regional Park Manager.

- Noxious plants should be removed and replaced as needed with native trees, grasses, and wildflowers that are adapted to the natural condition of the Preserve and consistent with the habitat objectives.

- Yellow Starthistle is becoming a serious infestation problem in parts of the Preserve. Eradication of Yellow Starthistle is difficult due to very high seed output and viability, and the competitive advantages provided by its long (up to 3') tap root. An IPM approach should be used in the Preserve to control the existing population, suppress new seed production and encourage the establishment of desirable species that will limit available light.

  Control of the existing Starthistle population requires several practices. Plants should be mowed in the late spiny or early-flowering stage well before they set seed. Grazing may also be used to reduce seed production. Goats are most effective because they will eat Starthistle in the spiny stage, while sheep or cattle prefer to eat it when it is younger. Such early grazing actually provides more sunlight for the plants and they will readily resprout from basal rosettes. Any grazing plan needs to provide adequate control of the animals so that they are confined to the designated treatment area. Oak seedlings and other desirable vegetation should be protected with cages.

  Biological controls are also available to supplement mechanical methods, including hairy weevil (*Eustenopus villosus*) and seedhead fly (*Chaetorella succinea*). However, these controls take numerous years to limit seed production and cannot be relied upon exclusively for effective control. Chemical controls should only be used as a last resort only if other acceptable management approaches such as mowing, grazing, biological controls and the establishment of other desirable species cannot control Starthistle.

5.7.3 Restricted Activities

- Oak trees are very sensitive to soil compaction because it adversely affects the structure of the soil, the size and variability of soil pore spaces, and consequently the exchange of air and water between tree roots and the surrounding soil. The potential for soil compaction from foot traffic and particularly from equipment is especially significant in the wet months, when the soil is more saturated and has fewer air spaces. It is therefore important that general public access is restricted to the designated trail and that construction and maintenance activities are performed in a manner to minimize compaction.

- No grading or construction should be allowed in the Preserve other than that necessary for the initial construction and installation of the vernal pools, detention wetland, native grassland, trail, road removal, and the culvert repair.

- No plowing or cultivation of the Preserve should be allowed except as recommended by this plan.

- No discharge, dumping, disposal, storage or placement of any trash, refuse, rubbish, grass clippings, cuttings, fill materials, oil, chemicals or other waste materials should be permitted within the Preserve;

- No motorized vehicles should be permitted on any portion of the Preserve, except as required for maintenance or emergency access.

5.7.4 Infrastructure Repair

- The post and cable fencing along Longview Road should be inspected periodically and repaired as needed to control vehicle access to the Preserve.

- The planned trail system will include two types of trail surfaces. Most of the loop path will be covered with bark mulch that will need to be supplemented with additional mulch as the original material decomposes, or areas of the trail become eroded, sunken, or worn. Trail sections that span the seasonal wetlands will be built using recycled composite materials that will not need painting or surface treatment.

- It is anticipated that interpretive signage will eventually be implemented as a feature of the Longview Oaks Nature Preserve. Signage may need periodic maintenance as a response to vandalism, or the deterioration of sign materials due to weathering.

5.7.5 Debris Removal

- Materials and substances that are not a natural part of Longview Oaks, are considered damaging to the habitat, or create unsafe, unsanitary or unsightly conditions should be removed. Del Paso Regional Park maintenance staff will periodically patrol the Preserve and be responsible for this debris removal.

- Volunteers should be encouraged to participate in stewardship of the Longview Oaks Nature Preserve through organized work days to remove debris in coordination with Del Paso Regional Park maintenance staff. Debris removal may be coordinated with the annual Creek Week event sponsored by the Urban Creeks Council.

5.7.6 Sedimentation and Erosion Control

- Minor flows from adjacent areas into the Preserve during the rainy season are generally compatible with Preserve function, provided such flows do not contain high sediment or nutrient loads. General monitoring of the Preserve throughout the year

will identify any adverse drainage conditions in and adjacent to the wetland and vernal pool habitats.

- In the event that damaging sediment and/or erosive runoff from offsite sources encroaches in the Longview Oaks Nature Preserve, the Del Paso Regional Park Manager will need to ensure that adequate sediment and erosion controls are installed. The Manager should also notify the adjacent property owners of the problem and work with them to ensuring their compliance with any applicable erosion/sediment control plan.

- Any sediment deposited within the Preserve that threatens the health or function of the habitat should be removed, re-contoured, or otherwise disposed of.

- Revegetation of disturbed surfaces should include seeding with native species designed to control erosion. This mix should contain primarily grasses and legumes as they will provide the fast growing, deep roots needed to stabilize the soil.

6.0 SPECIAL MAINTENANCE CONSIDERATIONS

6.1 Fire Suppression

While periodic grassfire is normally a part of the native oak woodland ecosystem, the Longview Oaks Nature Preserve is located adjacent to a heavily traveled freeway, industrial development, and other valuable open space resources. Fire prevention is therefore an essential element of the management of the Preserve. The critical factors in fire management for the Preserve are reducing fuels and controlling ignition sources.

Many of the maintenance practices described throughout this plan will contribute to significantly reducing the risk of a catastrophic fire in the Preserve through fuel load reduction. These include periodic pruning to remove dead wood, the management of invasive understory species, and periodic mowing reduce fuel load and to prevent the development of ladder fuels.

The primary ignition sources, other than natural lightening, are related to human activity. In order to limit fire risk:

- Open fires should be prohibited anywhere within the Preserve, including cigarette smoking.
- All maintenance vehicles and equipment should be properly equipped with spark arresters or other devices as needed to prevent combustion of dry grasses and underbrush.
- Warning signs should be installed at several locations along Longview Drive informing the public about fire prevention.

6.2 Controlled Grazing

Controlled grazing, particularly sheep and goats, is an excellent management tool to help reduce invasive species and manage fuel load in a natural manner. A pre-assessment should be made of the benefits and potential drawbacks of this management technique prior to its use. Some of the preparations and precautions that are required for this practice include:

- Monitor grass growth and woody debris buildup to prevent them from becoming a fire hazard.
- Insure that a sound, temporary, perimeter fence is installed to retain the grazing animals.
- Grazing should only be undertaken during the dry months when impacts would be minimal to the wetlands and seasonal native plants.

- Grazing must be undertaken in strict adherence to the number of animals allowed to graze, the duration of grazing, and that the animals are constantly moved to prevent overgrazing in any one area of the Preserve and potential damage to existing shrubs and trees.

- Controlled grazing should only take place under the supervision of an experienced herder who will oversee, monitor, and control the grazing activities.

- Since grazing animals are not discriminatory, sensitive areas and some specific plants within Longview Oaks may have to be fenced during grazing times to protect the area or plants from being damaged extensively by grazing.

6.3 Temporary Closures

When necessary, portions or the entire Longview Oaks Nature Preserve may be closed to the public using temporary barriers and appropriate signage. Situations requiring temporary closure may include but are not limited to maintenance or restoration projects, the need to perform repair work, or to prevent excessive trampling and compaction from unauthorized access.

6.4 Emergency and Maintenance Access

Small maintenance and emergency vehicles may be required to access the Preserve. The majority of the loop trail, especially the boardwalks and bridges, is designed for pedestrian use and will not support vehicles. Access for large emergency vehicles, such as fire trucks, shall be limited to Longview Drive, from which personnel and fire hoses may be deployed into the Preserve as needed.

7.0 FUNDING

The long term success of the Longview Oaks Nature Preserve depends in part on the availability of resources to implement this Monitoring and Maintenance Plan. A number of funding sources are available that could potentially provide financial support to the Preserve through for focused monitoring projects, interpretive programs, and habitat enhancement.

7.1 Federal Grants and Aid

1. Wetlands Grants
   Granted by the EPA's Office of Water, funds are available to States, local government and not-for-profit organizations to develop the capacity to protect, manage and restore wetlands and riparian resources. Minimum match of 25% of total project cost is required.

2. Urban Park and Recreation Recovery Program
   Funded by the National Park Service, funds are available for the rehabilitation of recreation areas and facilities, demonstration of innovative approaches to improving recreation opportunities, and development of improved recreation planning. These grants are matching grants (50% Federal – 50% local).

3. Outdoor Recreation Acquisition, Development and Planning (Land and Water Conservation Fund Grants)
   Grants provided by the National Park Service to acquire and develop outdoor recreation areas and facilities for the general public, and to meet current and future needs. Not more than 50% of the project cost may be federally financed.

4. Environmental Education Grants (EEG)
   For grants provided by the EPA's Office of Environmental Education, funds are available to support projects to design, demonstrate, or disseminate practices, methods, or techniques related to environmental education and training. Federal funds may not exceed 75% of the project cost.

7.2 State Grants and Aid

1. California's Department of Conservation, Resource Conservation District (RCD) Assistance Program/Grants
   This grant annually provides $120,000 to support conservation education and on-the-ground projects promoting conservation with landowners and communities within watersheds. Land restoration, fish and wildlife habitat enhancement, water quality conservation, and public outreach and education are all eligible actions supported with this grant. A 25% local match is required.

2. State Environmental License Plate Funds

   Grants are offered to state agencies, city or county agencies, or private non-profit organizations to support a variety of projects that help or protect environment. Eligible projects include acquisition, restoration or enhancement of resource lands and endangered species, and development of interpretive facilities.

3. Environmental Enhancement and Mitigation Program (EEMP)

   Grants offered to local, state or federal agencies or non-profit entities to provide enhancement or additional mitigation related to eligible transportation facilities. Eligible projects include highway landscaping and urban forestry, acquisition restoration or enhancement of resource lands, and acquisition and/or development of roadside recreation opportunities.

4. State Water Resources Control Board Non-point Source Pollution Control Program

   Non-point sources (NPS) are the major cause of water pollution in California. As the state agency charged with protecting water quality in the State of California, the State Water Resources Control Board (State Board) is committed to promoting implementation projects that reduce NPS pollution in water bodies of the State. The February 1987 amendments to the federal Clean Water Act (CWA) include Section 319, which establishes the framework for non-point sources (NPS) activities on the State level. Implementation projects to reduce NPS loading from various sources are eligible. NPS implementation activities include demonstration projects, technology transfer, training, public education technical assistance, ordinance development, and other similar activities associated with control of NPS pollution.

5. Department of Parks and Recreation

- *Land and Water Conservation Fund* - This program has funds available for the acquisition or development of neighborhood, community or regional parks or facilities supporting outdoor recreation activities. Eligible applicants include counties, cities, recreation and park districts, special districts with public park and recreation areas. This is a 50/50 matching program. The applicant is expected to finance the entire project and will be reimbursed 50% of the costs, up to the amount of the grant.

- *Habitat Conservation Fund* – This program provides funds for a variety of habitat conservation projects. Eligible applicants include counties, cities, or districts as defined in Subdivision (b) of the Public Resources Code. Eligible projects include: deer and lion habitat, including oak woodlands; habitat for rare and endangered, threatened and fully protected species; wildlife corridors and urban trails; wetlands; aquatic habitat for spawning and rearing of anadromous salmonids and trout species; and riparian habitat. This is a 50/50 matching program. The match must come from a non-State source.

- *Non-Motorized Trails Grant Program* – Eligible applicants include cities, counties, eligible districts, and eligible local agencies formed for park purposes, and federally recognized California Indian tribes. This competitive grant program funds the

development, improvement, rehabilitation, restoration, and enhancement of non-motorized trails and associated interpretive facilities for the purpose of increasing public access to, and enjoyment of, public areas for increased recreational opportunities.

6. California Conservation Corps (CCC)

   The CCC provides low cost services for brush clearance and trail building. Sponsor must provide materials, but CCC provides supervision and some tools, and crews often work alongside volunteers.

Appendix A: 1999 Arborist's Report

DRAFT
ARBORIST'S REPORT FOR THE LONGVIEW DRIVE EXPANSION PROJECT, SACRAMENTO COUNTY, CALIFORNIA

PREPARED FOR:

Senior Gleaners
3185 Longview Drive
North Highlands, CA
Contact: Ken Croxen

PREPARED BY:

Jones & Stokes Associates, Inc.
2600 V Street, Suite 100
Sacramento, CA 95818-1914
Contact: Chris Elliott
916/737-3000

JULY 9, 1999

s document should be cited as:

nes & Stokes Associates, Inc. 1999. Draft arborist's report for the Longview Drive expansion project, Sacramento County, California. July 9, 1999. (JSA 99-9084.) Sacramento, CA. Prepared for Senior Gleaners, Inc., North Highlands, CA.

INTRODUCTION

This report documents the arborist's survey findings for the proposed expansion of the Senior Gleaners facility in the City of Sacramento, California. The survey was conducted from April 16 through April 21, 1999, by Jones & Stokes Associates staff, led by certified arborist Chris Elliott (International Society of Arboriculture Certificate No. WC-4280).

The purpose of this report is to document the tree resources in the survey area in compliance with Title 45 of the City of Sacramento Code. A plot indicating the surveyed location of each tree, the identification numbers assigned to the trees, and proposed project footprint is provided in the map pocket at the end of this report. Potential tree impacts are identified so that the arborist representing the City of Sacramento can determine what mitigation, if any, is required.

SURVEY AREA DESCRIPTION

Survey Area. The survey area is located near the northeast limit of the City of Sacramento, south of Interstate 80, north of Longview Drive, and west of Watt Avenue. The property is currently owned by the City of Sacramento and is designated partially developed open space. It is sought by Senior Gleaners to expand its food distribution facility, which is located immediately to the east of the project area. The survey area also included the existing parking lot for the Senior Gleaners facility. Other adjacent land uses include park/open space across Longview Drive to the south and a public storage facility to the north. There are no buildings on the project site, although a remnant paved road exists on the northwest portion.

Tree Communities. The survey area is generally an upland vegetative community, covered predominantly by exotic annual grasses and invasive species, including yellow star-thistle. The survey area is traversed by a swale which seasonally conveys water to Arcade Creek. A more comprehensive analysis of the biological and wetland resources in the survey area, including the swale, are included in "Biological Resources Evaluation for the Longview Drive Expansion Facility" (Jones & Stokes Associates 1999).

The tree community is generally consistent with a valley oak woodland, with other key species including blue oak and coast live oak. The plant community is relatively void of shrubs and understory species. Oak regeneration is rather prolific, and there are numerous juveniles. The site includes a few very large specimens of valley and blue oak.

SURVEY METHODOLOGY

The arborist's survey methods follow standard professional practices and were discussed with Dan Pskowski, Arborist with the City of Sacramento, prior to the field work. Trees larger than 2 inches diameter at breast height (DBH) (measured at 4.5 feet above ground) were tagged with numbered aluminum tags nailed to the trunk at breast height. Each tree was on an AutoCAD plot of the project site provided by Voss Civil Engineers. Where trees were in dense clusters or where conditions were problematic for individual identification, trees were grouped with a single identification number assigned to the group. Individual specimens and groups are noted on the enclosed plot and the arborist survey data forms.

Information recorded on the data forms includes the species of each tree, DBH (measured with a calibrated DBH tape or 25-inch reach Biltmore Cruiser Stick), dripline diameter (measured with standard surveyors' measuring tape), overall height (measured with a percent/topographic clinometer and standard surveyors' measuring tape), number of trunks, and rating of overall health, based on the following categories:

Excellent (E): A tree given this rating shows no sign of disease, decay, or mistletoe infestation. The trunk and branches are sound, with little evidence of dieback and good overall annual growth. The tree has a balanced branching structure.

Good (G): A tree in this category has good annual growth, but may exhibit some natural dieback and self-pruning. The tree has a sound trunk and, in general, is a normal, healthy tree for its species. The tree may be somewhat limited by overcrowding, but generally is dominant within the immediate community or canopy and has developed an unhampered natural form.

Fair (F): A tree in this category exhibits some twig and branch dieback. Decay may be present in the form of tree cavities or dead limbs but does not affect the overall strength or integrity of the tree. The tree may be suffering from overcrowding, as evidenced by sparse growth, unbalanced or asymmetrical growth, or an otherwise somewhat hampered form or reduced vigor.

Poor (P): A tree given this rating has extensive twig dieback; broken, dead, or decayed limbs; and cavities with significant decay that undermine the structural integrity of the tree. Foliage is sparse and annual growth is limited.

SURVEY RESULTS

A total of 239 trees were evaluated in the survey area (Figure 1 in the map pocket at back of this report) . The number of each species and their relative percentages are shown in Table 1. Several other specimens were noted on site, but these individuals were less than 2 inches DBH and

were not included in the survey. These smaller specimens were typically *Quercus lobata* or *Q. douglasii* and were located near clusters of other trees (predominantly in or near the swale area traversing the site). Information collected on individual trees is provided in the data forms. Trees that will be affected by the proposed project (based on the design footprint provided by Voss Civil Engineers) are identified on the plan and in the data forms.

Table 1. Number of Trees by Species

Scientific Name	Common Name	Number of Trees	Percentage of Total
Quercus lobata	Valley oak	140	59%
Quercus douglasii	Blue oak	38	16%
Quercus agrifolia	Coast live oak	33	14%
Quercus suber	Cork oak	1	<1%
Platanus x acerifolia	London plane	7	3%
Fraxinus sp.	Ash (ornamental)	14	6%
Prunus sp.	Fruit tree	2	<1%
Celtis sp.	Hackberry	2	<1%
Sapium sebiferum	Chinese tallow tree	2	<1%
Total		239	100%

AFFECTED RESOURCES

The Sacramento City arborist was consulted regarding impacts and mitigation for the proposed development of the project site (Pskowski pers. comm.). The City determines mitigation for tree replacement on a project-by-project basis. Therefore, there are no standard replacement ratios for the removal of trees on the parcel. This report will be reviewed by the City Planning Department and a determination of mitigation measures to compensate for tree removal will be developed during that process.

DATA FORMS

The following four sheets comprise the data forms and the complete survey results. The codes used on data forms are defined below.

Species

Species Code	Scientific Name	Common Name
Qu do	*Quercus douglasii*	Blue oak
Pl ac	*Platanus x acerifolia*	London plane
Sa se	*Sapium sebiferum*	Chinese tallow tree
Fr sp.	*Fraxinus* species	Ash (ornamental)
Qu lo	*Quercus lobata*	Valley oak
Qu ag	*Quercus agrifolia*	Coast live oak
Pr sp.	*Prunus* species	Fruit tree
Ce sp.	*Celtis* species	Hackberry
Qu su	*Quercus suber*	Cork oak

Condition

E	Excellent
G	Good
F	Fair
P	Poor
D	Dead

Senior Gleaners Project Arborist Survey Data Form

Identification Number	Impact	Species	Trunks	DBH (inches)	Dripline (feet)	Height (feet)	Condition (E/G/F/P/D)
001	x	*Qu do*	1	26.5	45	50	G/E
002	x	*Pl ac*	1	2.5	6	15	G
003	x	*Pl ac*	1	6	17	24	G
004	x	*Pl ac*	1	6.25	(no crown)	9	P
005	x	*Sa se*	1	9.5	23	33	F
006	x	*Ce* sp.	1	9	19	34	G
007	x	*Fr* sp.	1	6	22	21	F
008	x	*Fr* sp.	1	6.5	22	22	F
009	x	*Fr* sp.	1	9.25	29	26	F
010	x	*Fr* sp.	1	8	21	23	F
011	x	*Fr* sp.	1	7	17	24	F
012	x	*Fr* sp.	1	7	24	21	F
013	x	*Fr* sp.	1	8.25	20	15	F
014	x	*Fr* sp.	1	6.5	20	17	F
015	x	*Pl ac*	1	6.5	18	26	E
016	x	*Pl ac*	1	6	17	28	E
017	x	*Pl ac*	1	5.75	17	23	E
018	x	*Pl ac*	1	5	16	22	E
019	x	*Qu do*	1	19	43	40	F/G
020	x	*Fr* sp.	1	3.5	12	15	P/F
021	x	*Fr* sp.	1	7.75	24	25	F/G
022	x	*Fr* sp.	1	7	22	20	F
023		*Fr* sp.	1	6	18	22	F
024	x	*Fr* sp.	1	7.25	17	20	F/G
025		*Fr* sp.	1	6	12	20	F
026	x	*Qu lo*	1	9	16	27	F/G
027	x	*Qu lo*	1	7	12	19	F
028 (Group)	x	*Qu lo* (2) *Qu ag* (1)	4	mg. 0.75 to 2/avg. 1	10	6	G
029	x	*Qu lo*	2	mg. 4/avg. 4	12	19	G
030	x	*Pr* sp.	3	mg. 3/avg. 3	16	11	G
031		*Qu ag*	2	4.5	16	16	E
032	x	*Qu ag*	1	8	11	28	G
033	x	*Qu do*	3	mg. 4 to 8/avg. 5.5	20	17	G/E
034	x	*Qu do*	1	5	13	14	G
035		*Qu lo*	1	5.25	13	20	G
036	x	*Qu lo*	2	mg. 5.5/avg. 5.5	15	27	G/E
037	x	*Qu lo*	1	7.25	16	27	G
038	x	*Qu lo*	1	4.5	8	18	F/G
039		*Qu lo*	1	7.5	11	31	G
040		*Qu lo*	1	10.25	14	33	G
041		*Qu do*	1	5	8	17	G
042		*Qu do*	2	mg. 3 to 4/avg. 3.5	13	17	G
043	x	*Qu do*	1	4.5	14	18	G
044	x	*Qu lo*	3	mg. 6 to 7.5/avg. 7	18	23	G/E
045		*Qu lo*	3	5	19	29	G
046		*Qu lo*	1	3.25	9	11	G
047 (Group)		*Qu lo* (6)	8	mg. 2 to 4.25/avg. 3	6 (avg.)	9	G
048		*Qu lo*	1	47	76	75	G/E
049 (Group)		*Qu lo* (2)	2	mg. 2 to 4.25/avg. 3	5 to 8 (mg.)	8 to 13 (mg.)	G
050		*Qu lo*	2	mg. 17 to 19/avg. 18	44	50	F/G

Senior Gleaners Project Arborist Survey Data Form

Identification Number	Impact	Species	Trunks	DBH (inches)	Dripline (feet)	Height (feet)	Condition (E/G/F/P/D)
051		*Qu lo*	1	26.75	53	67	G
052		*Qu lo*	1	40	63	80	G
053		*Qu lo*	2	mg. 14 to 16/avg. 15	39	56	F/G
054		*Qu lo*	2	mg. 3.25 to 5/avg. 4	12	15	G
055		*Qu do*	1	7	8	18	F/G
056		*Qu lo*	1	16	37	45	G
057 (Group)		*Qu lo* (4) *Qu ag* (1)	6	mg. 1.75 to 5.75/avg. 3	3 to 10 (mg.)	10 to 20 (mg.)	G
058 (Group)		*Qu lo* (4) *Qu ag* (5)	7	mg. 2 to 6.5/avg. 3.25	4 to 20 (mg.)	8 to 20 (mg.)	G
059		*Qu lo*	1	14.5	21	35	G
060		*Qu lo*	1	6.25	14	18	G
061 (Group)		*Qu lo* (2)	4	mg. 2 to 3/avg. 2.5	4 to 12 (mg.)	8 to 11 (mg.)	G
062		*Qu lo*	1	6	12	14	G
063 (Group)		*Qu lo* (2) *Qu do* (1)	3	mg. 2/avg. 2	3 to 5 (mg.)	6 to 7 (mg.)	G
064	x	*Qu do*	4	mg. 1 to 2/avg. 1.25	8	9	G
065		*Qu do*	1	38	75	57	G/E
066		*Qu ag*	2	mg. 3.5/avg. 3.5	14	12	G
067		*Qu do*	1	31.5	46	45	F/G
068		*Qu do*	1	3	8	14	G
069	x	*Qu lo*	1	4.25	11	18	G
070	x	*Qu do*	3	mg. 3 to 4/avg. 3.25	11	14	G
071	x	*Qu lo*	2	mg. 2 to 3/avg. 2.5	6 to 8 (mg.)	8 to 12 (mg.)	G
072	x	*Sa se*	1	3.5	8	12	F
073		*Qu lo*	2	mg. 3.5 to 10.5/avg. 7	22	26	G
074		*Qu lo*	1	5	12	16	F/G
075		*Qu do*	2	mg. 1 to 2.5/avg. 1.75	7	11	G
076		*Qu do*	1	19.25	34	34	F/G
077		*Qu do*	1	4.5	12	24	G
078 (Group)		*Qu lo* (5)	7	mg. 2 to 3.25/avg. 2.25	4 to 10 (mg.)	10 to 15 (mg.)	G
079		*Qu lo*	2	mg. 2.5/avg. 2.5	8	15	G
080		*Qu lo*	3	mg. 6 to 8/avg. 7.25	22	40	G
081		*Qu lo*	1	10.75	24	42	G
082 (Group)		*Qu lo* (4)	7	mg. 1.75 to 3.75/avg. 2.5	6 to 12 (mg.)	10 to 15 (mg.)	G
083	x	*Qu lo*	2	mg. 4/avg. 4	13	18	G
084		*Qu lo*	1	8.25	15	27	F
085		*Qu lo*	1	17	32	42	F
086 (Group)		*Qu lo* (8) *Qu do* (2)	19	mg. 1 to 9.5/avg. 4.5	3 to 33 (mg.)	8 to 35 (mg.)	G
087 (Group)		*Qu lo* (2) *Qu ag* (1)	3	mg. 2 to 14.5/avg. 6.5	8 to 25 (mg.)	8 to 40 (mg.)	G
088	x	*Qu lo*	1	2.5	8	10	G
089	x	*Qu lo*	1	3.75	9	12	G
090	x	*Qu lo*	1	3	9	11	G
091		*Qu lo*	1	4.5	9	19	G
092		*Qu lo*	1	4.75	10	23	G
093	x	*Qu lo*	1	4.5	8	20	G
094	x	*Qu lo*	3	mg. 2 to 3.25/avg. 2.5	8	10	P
095		*Qu lo*	1	6.5	12	23	G
096		*Qu lo*	1	2	8	11	G
097	x	*Qu do*	2	mg. 6/avg. 6	15	20	G
098	x	*Qu lo*	1	4	7	15	F/G
099 (Group)	x	*Qu lo* (3) *Qu ag* (1)	6	mg. 1.25 to 6.25/avg. 3.5	6 to 15 (mg.)	11 to 18 (mg.)	G
100	x	*Qu lo*	2	mg. 2 to 3.5/avg. 2.75	10	15	F/G

Senior Gleaners Project Arborist Survey Data Form

Identification Number	Impact	Species	Trunks	DBH (inches)	Dripline (feet)	Height (feet)	Condition (E/G/F/P/D)
101	x	*Qu lo*	1	5.5	12	23	G
102a (Group)	x	*Qu lo* (1) *Qu do* (1)	2	mg. 3.25 to 5.75/avg. 4.5	9 to 12 (mg.)	13 to 25 (mg.)	G
102b	x	*Pr* sp.	1	6	12	15	G
103	x	*Qu do*	2	mg. 6/avg. 6	24	29	G
104 (Group)	x	*Qu lo* (2)	4	mg. 3.5 to 7/avg. 5.25	7 to 17 (mg.)	29	G
105	x	*Qu ag*	2	mg. 4 to 6.5/avg. 5.25	14	23	G
106	x	*Qu lo*	1	8	17	35	F/G
107 (Group)	x	*Qu lo* (2)	2	mg. 3 to 9/avg. 6	6 to 21 (mg.)	15 to 34 (mg.)	G
108	x	*Qu do*	2	mg. 3.75 to 4/avg. 4	14	22	G
109	x	*Qu lo*	1	6.5	14	24	G
110	x	*Qu lo*	1	4	11	18	F/G
111	x	*Qu ag*	2	mg. 3 to 5/avg. 4	16	30	G
112	x	*Qu lo*	1	7.75	12	40	G
113	x	*Qu lo*	2	mg. 6 to 9/avg. 7.5	18	36	F/G
114	x	*Qu ag*	2	mg. 5.5/avg. 5.5	14	22	G
115	x	*Qu lo*	3	mg. 1.75 to 3.75/avg. 2	6	11	F/G
116	x	*Qu lo*	2	mg. 5 to 8/avg. 6.5	16	30	G
117	x	*Qu lo*	1	5	12	22	G
118	x	*Qu lo*	3	mg. 3 to 6.5/avg. 5.25	18	20	F/G
119	x	*Qu lo*	1	3.5	8	13	G
120	x	*Qu ag*	3	mg. 5/avg. 5	21	30	G
121	x	*Qu lo*	1	9	16	35	G
122	x	*Qu lo*	1	6	16	26	F/G
123	x	*Qu do*	2	mg. 2.25/avg. 2.25	15	11	F/G
124	x	*Qu lo*	1	12.5	22	40	G
125 (Group)	x	*Qu lo* (4)	4	mg. 3.25 to 5.25/avg. 4	16	27	F/G
126 (Group)	x	*Qu lo* (1) *Qu ag* (3)	4	mg. 3/avg. 3	11	22	F
127	x	*Qu lo*	1	6.75	13	26	F/G
128	x	*Qu lo*	1	4	8	30	G
129	x	*Qu ag*	3	mg. 3 to 4.25/avg. 3.5	14	26	F/G
130	x	*Qu ag*	3	mg. 2.25 to 6/avg. 4	16	25	G
131	x	*Qu lo*	2	mg. 3.25/avg. 3.25	9	27	F
132	x	*Qu lo*	1	4.5	12	31	G
133	x	*Qu lo*	2	mg. 9 to 9.5/avg. 9.25	23	42	F/G
134	x	*Qu lo*	1	6	14	21	F
135 (Group)	x	*Qu ag* (3)	4	mg. 3 to 4.5/avg. 3.75	21	18	F/G
136	x	*Qu lo*	1	7	14	33	F/G
137 (Group)	x	*Qu lo* (2)	2	mg. 4/avg. 4	16	22	F/G
138	x	*Qu ag*	2	mg. 12/avg. 12	27	32	F/G
139	x	*Qu ag*	2	mg. 3.25/avg. 3.25	16	15	F/G
140	x	*Qu lo*	1	8	12	32	F/G
141	x	*Ce* sp.	1	3	12	18	G
142	x	*Qu do*	1	2.5	7	17	F/G
143	x	*Qu do*	2	mg. 3/avg. 3	10	16	F
144	x	*Qu do*	2	mg. 4/avg. 4	12	19	F
145	x	*Qu do*	4	mg. 2 to 5.25/avg. 3.5	22	23	F/G
146	x	*Qu do*	2	mg. 2 to 2.25/avg. 2.25	8	13	G
147 (Group)	x	*Qu do* (3)	5	mg. 1 to 2.5/avg. 2	4 to 6 (mg.)	9 to 12 (mg.)	F/G
148		*Qu do*	1	3.5	15	18	G
149 (Group)	x	*Qu lo* (2)	3	mg. 2/avg. 2	6	9 to 12 (mg.)	G

Senior Gleaners Project Arborist Survey Data Form

Identification Number	Impact	Species	Trunks	DBH (inches)	Dripline (feet)	Height (feet)	Condition (E/G/F/P/D)
150	x	*Qu do*	1	2.5	9	14	G
151	x	*Qu lo*	2	mg. 3.25 to 4.5/avg. 3.5	14	21	F/G
152	x	*Qu lo*	1	3.5	12	17	F/G
153		*Qu lo*	1	7.5	14	35	G/E
154	x	*Qu do*	1	7	12	18	G/E
155	x	*Qu ag*	2	mg. 2.75 to 3.25/avg. 3	14	17	G
156	x	*Qu ag*	2	mg. 2.25 to 4/avg. 3	15	11	G/E
157		*Qu lo*	1	12	17	34	G/E
158 (Group)		*Qu ag* (3) *Qu do* (3) *Qu lo* (4)	22	mg. 2 to 8/avg. 3.5	36	35	F/G
159		*Qu lo*	1	5	11	12	G/E
160		*Qu lo*	1	13	16	29	G/E
161		*Qu ag*	4	mg. 4.75 to 5.25/avg. 5	13	23	G
162		*Qu lo*	1	8.5	24	23	G
163 (Group)		*Qu lo* (3) *Qu ag* (1)	9	mg. 2 to 6/avg. 3.5	19	25	G
164	x	*Qu lo*	1	2.5	8	12	G
165		*Qu lo*	1	3	8	14	F/G
166		*Qu lo*	2	mg. 6.5 to 12/avg. 9.25	25	32	G
167		*Qu su*	1	11	24	24	G
168							
169							
170							
171							
172							
173							
174							
175							
176							
177							
178							
179							
180							
181							
182							
183							
184							
185							
186							
187							
188							
189							
190							
191							
192							
193							
194							
195							
196							
197							
198							
199							

INTERSTATE FREEWAY 80

ACCESS, EGRESS & STORAGE AREA (2.16 ACRES)

EXISTING EQUIPMENT STORAGE

EXISTING STORAGE BUILDINGS

EXISTING PARKING LOT (68 STALLS)

PROPOSED OPEN SPACE EASEMENT 3 ACRES APPROX.

WAREHOUSE 15,600 SF

AREA SET ASIDE FOR DRAINAGE REMEDIES (.12 ACRES)

HISTORIC HEADWALLS AT CULVERT

PROPOSED FUTURE PARKING & TRUCK MANEUVERING AREA (2.27 ACRES)

EXIST. PL

PROP. PL

HAGGIN OAK PARK LAND

N

LEGEND

*030 IMPACTED TREE

*068 NON-IMPACTED TREE

SCALE: 1"=40'

0 40' 80' 120'

Note:
Base information provided by Voss Civil Engineering

DESIGNED BY(C/E/C-)

CADD BY(C-)

CHECKED BY(C/E/SA)

DATE(4/26/99)

JOB NO.#

DWG. NO.(tree_survey)

REV.	DATE	DESCRIPTION	BY	APP'D

Prepared For:
Senior Gleaners Incorporated
3166 Landview Drive
Sacramento, CA 95660

Prepared By:
Jones & Stokes Associates
2000 V Street, Suite 100
Sacramento, CA 95818

FIGURE 1
SENIOR GLEANERS PROJECT
ARBORIST SURVEY

SENIOR GLEANERS INCORPORATED

1

1 OF 1

Appendix B: Sample Monitoring Field Data Sheets

Longview Oaks Nature Preserve
Oak Woodland Monitoring Worksheet

Monitors (names): _____
Organization: _____ Sheet ___ of ___
Date: _____ Time: _____ Weather: _____

Tree #	Species	Height (feet)	DBH/Cal. (inches)	Condition		Issues	Photo #
				Health	Structure		

Tree Rating System

Rating	Tree Health	Tree Structure
Excellent	Free of any signs of stress, disease, nutrient deficiency, or parasites. Wounds, if any, all healed.	Branch structure appropriate for species. No evidence of structural failure.
Good	Minor evidence of stress, disease, nutrient deficiency, or parasites. Minor leaf loss or deformity. Any wounds nearly healed, or showing satisfactory progress toward healing.	Branch structure appropriate for species. Minor structural defects (e.g. deadwood, small wounds). Low potential for substantial structural failure.
Fair	Moderate evidence of stress, disease, nutrient deficiency, or parasites. Moderate loss or deformity of leaves or buds. Wounds showing evidence of closure but with moderate amounts of exposed wood.	Moderate structural defects (e.g. substantial deadwood, large wounds, loss of large branches, imbalance in canopy). Moderate potential for substantial structural failure.
Poor	Widespread evidence of stress, disease, nutrient deficiency, or parasites. Substantial leaf loss or deformity, bud death, or other pathology. Wounds showing little or no closure, with substantial exposed wood. High potential for tree mortality.	Major structural defects, evidence of substantial structural failure, or substantial structural failure imminent.

Additional Health/Structure Notes

Code	Meaning	Code	Meaning
ABS	Altered Branch Structure	MTA	Multiple Trunk Attachments
AC	Asymmetrical Canopy	OK	No Obvious Defects
BD	Basal Decay	OLL	Overburdened Lateral Limbs
BW	Basal Wound	PRE	Predation Damage
CD	Codominant Branching	REM	Removed or Missing
DI	Drainage Inadequate	SF	Sparse Foliage
DS	Drought Stressed	SG	Sprout Growth
DW	Deadwood/Dieback	SGE	Suppressed Growing Environ.
ER	Exposed Roots	TC	Topping Cuts
IB	Included Bark	TD	Trunk Decay
IN	Insect Infestation	TW	Trunk Wound
L	Lean	VE	Vandalism Evidence
LF	Limb Failures	+	Above Average
MT	Mistletoe	++	Extreme/Severe

Tree Species Codes

Code	Species	Common Name
CE	Celtis laevigata	Hackberry
FRLA	Fraxinus latifolia	Oregon Ash
PLRA	Platanus racemosa	California Sycamore
PR	Prunus spp.	Fruits (Plum, Cherry, Almond)
QUAG	Quercus agrifolia	Coast Live Oak
QUDO	Quercus douglasii	Blue Oak
QULO	Quercus lobata	Valley Oak
QUSU	Quercus suber	Cork Oak
SASE	Sapium sebiferum	Chinese Tallow Tree

Longview Oaks Nature Preserve
Vernal Pool Monitoring Worksheet

Monitors (names): _____Vernal Pool # _____
Organization: _____ Sheet ___ of ___
Date: _____ Time: _____ Weather: _____

Condition	Description
Presence/absence of standing water or wet soil	
Location and area of inundation (sq. ft.)	
Evidence of foot traffic or other intrusion	
% of plant cover present	
Location of plant cover	
Plant species observed	
Evidence of animal species	
Condition of pool margins (stable, eroding, etc.)	
Management concerns or issues	
Photo ID's	

Vernal Pool Diagram:

Indicate locations of standing water, mud, plant cover, management issues

Vernal Pool # _____

Scale 1” = 10’ or other 1” = _____’

North

Longview Oaks Nature Preserve
Seasonal Wetlands Monitoring Worksheet

Monitors (names): _____
Organization: _____ Sheet ___ of ___
Date: _____ Time: _____ Weather: _____
Wetland #: _____ Type of Wetland Feature (**B**asin or **E**phemeral Drainage): _____

Condition	Description
Presence/absence of standing water or wet soil	
Location and area of inundation (sq. ft.)	
Evidence of foot traffic or other intrusion	
% of plant cover present	
Location of plant cover	
Plant species observed	
Evidence of animal species	
Management concerns or issues	
Photo ID's	

Seasonal Wetland Diagram:

Indicate locations of standing water, wet soil, plant cover, management issues

Wetland # _____

Scale 1” = 10’ or other 1” = _____’

↑

North

Longview Oaks Nature Preserve
Native Grasslands Monitoring Worksheet

Monitors (names): _____ Plot #: _____
Organization: _____ Sheet ___ of ___
Date: _____ Time: _____ Weather: _____

Measurements: *Formula:*

Plot
A. Area (sq. ft.): _____

Sampled Quadrant
B. Area (sq. ft.): _____
C. % Area Unvegetated: _____
D. % Area Vegetated: _____ *(100 – C)*
E. % Native Species in Vegetated Area: _____
F. % Non-native Species in Vegetated Area: _____ *(100 – E)*

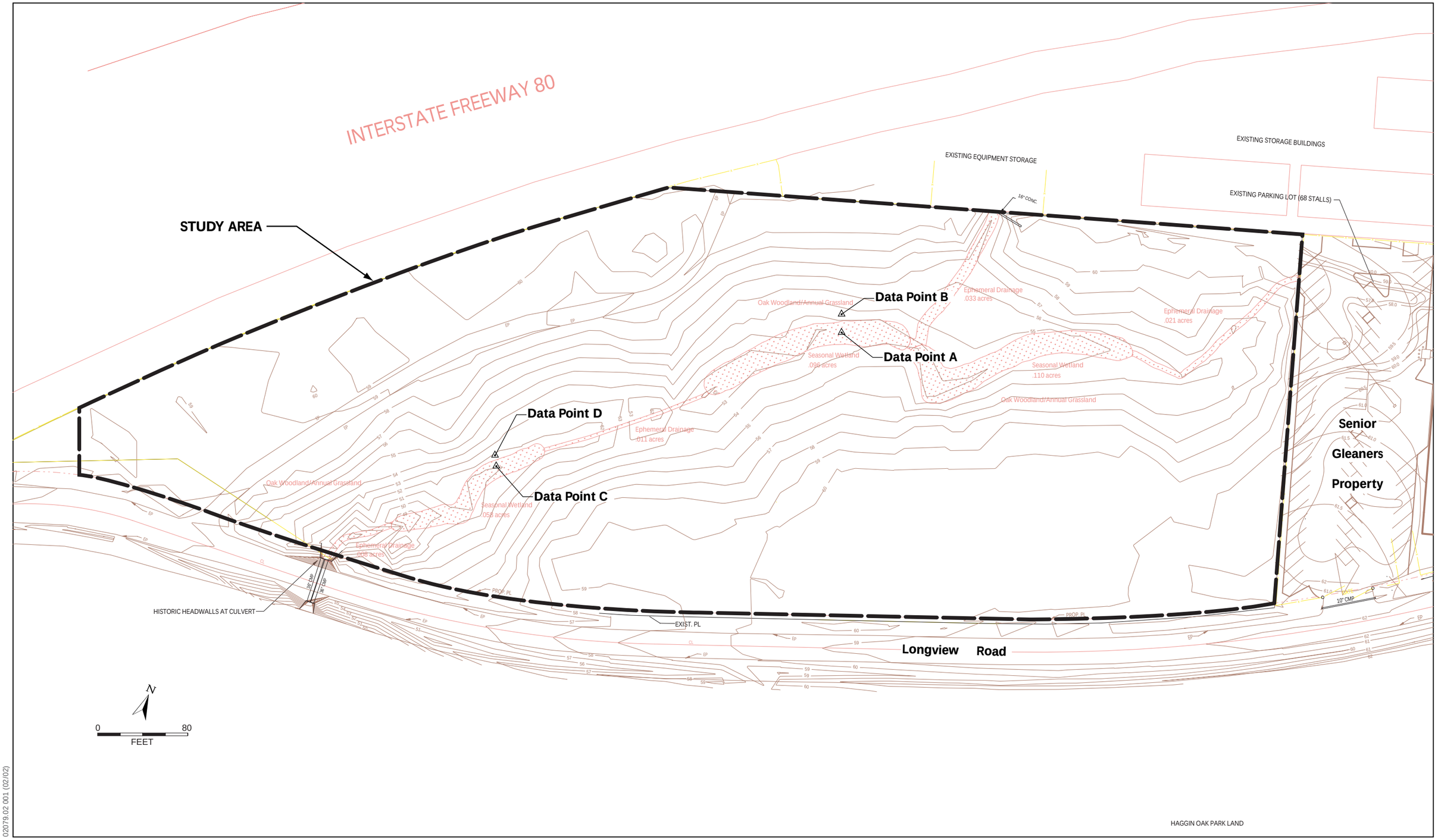
Plot
G. Area Unvegetated (sq. ft.): _____ *(A x C)*
H. Area Vegetated (sq. ft.): _____ *(A – G)*
I. Native Vegetated Area (sq. ft.): _____ *(E x H)*
J. Non-native Vegetated Area (sq. ft.): _____ *(F x H)*

Vegetation Observations:

Species	Common Name	Native (yes/no)	Condition (Height, vigor, life stage, predation, etc.)	Estimated % of Vegetated Area	Photo ID

Recommended Non-native Eradication: _____ No ____ Yes
____ *Immediately*
____ *In 2 – 4 Weeks*
____ *In 4 – 8 Weeks*

Appendix C: Wetland Delineation



02079.02 001 (02/02)

Jones & Stokes

Figure 3
Longview Oaks Project Wetland Delineation Map