A CASE STUDY OF THE URBAN-EDGE

Sunol Water Temple Agricultural Park

A model for collaborative beginning farming integrated with public education and natural resources stewardship

Supplemental Appendix

PRODUCED BY
Sustainable Agriculture Education (SAGE)

IN PARTNERSHIP WITH
San Francisco Public Utilities Commission (SFPUC)

WITH SUPPORT FROM
USDA Beginning Farmer and Rancher Program
GRANT # 2011-49400-30641

2014
Appendix Contents

The following appendix materials are to supplement

**A Case Study of the Urban-Edge Sunol Water Temple Agricultural Park**

*A model for collaborative beginning farming integrated with public education and natural resources stewardship*

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The Sunol AgPark Case Study can be located at

[www.sagecenter.org](http://www.sagecenter.org) under ‘Publications’.
SAN FRANCISCO PUBLIC UTILITIES COMMISSION

GAVIN NEWSOM, MAYOR

LEASE

between

CITY AND COUNTY OF SAN FRANCISCO,
as Landlord

and

SUSTAINABLE AGRICULTURE EDUCATION (SAGE),
as Tenant

For the lease of
18 Acres located between the Water Temple and the SFWD Corporation Yard
in Sunol California

January 1, 2007
Date

PUBLIC UTILITIES COMMISSION

Ryan L. Brooks – President
Ann Moller Caen – Vice President
E. Dennis Normandy – Commissioner
Richard Sklar – Commissioner
Adam Werbach – Commissioner

Susan Leal
General Manager of Public Utilities
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SAN FRANCISCO PUBLIC UTILITIES COMMISSION

LEASE

THIS LEASE (this "Lease"), dated for reference purposes only as of January 1, 2007, is by and between the CITY AND COUNTY OF SAN FRANCISCO, a municipal corporation ("City" or "Landlord"), and SUSTAINABLE AGRICULTURE EDUCATION (SAGE), a California non-profit corporation ("Tenant").

City and Tenant hereby agree as follows:

1. BASIC LEASE INFORMATION

The following is a summary of basic lease information (the "Basic Lease Information"). Each item below shall be deemed to incorporate all of the terms set forth in this Lease pertaining to such item. In the event of any conflict between the information in this Section and any more specific provision of this Lease, the more specific provision shall control.

Lease Reference Date: April 1, 2007
Landlord: CITY AND COUNTY OF SAN FRANCISCO
Tenant: SUSTAINABLE AGRICULTURE EDUCATION (SAGE)
Premises (Section 3.1): Portion of SFPUC Parcel #65, Sunol Water Temple, Alameda County
Term (Section 4.1): Commencement Date: April 1, 2007
Expiration Date: March 31, 2016
Processing Fee (Section 5.2): $750.00
Use (Section 7.1): Establish and operate the Sunol Water Temple Agricultural Park to: establish productive agriculture including agricultural plots for use by local farmers; provide public education about natural resources and water conservation; provide native plants for restoration of SFPUC watershed lands; and further understanding of SFPUC water users about SFPUC's regional watershed lands.
Notice Address of City (Section 25.1): Real Estate Services
San Francisco Public Utilities Commission
1145 Market St., 5th Floor
San Francisco, CA 94103
Attn: Director
Key Contacts for City: Real Estate Services, Public Utilities Commission
Telephone No.: (415) 487-5210
and
Tim Koopman, SFPUC Natural Resources Division
Telephone No. (925) 862-5509

Notice Address of Tenant (Section 25.1):
Sibella Kraus – President
Sustainable Agriculture Education
1417 Josephine Street
Berkeley, CA 94703

Key Contact for Tenant: Sibella Kraus
Telephone No.: (510) 526-1793
Facsimile No.: (510) 524-7153
With a copy to: Renée L. Robin, Esq.
Stoel Rives, LLP
111 Sutter Street, Suite 700
San Francisco, CA 94104

2. DEFINITIONS

For purposes of this Lease, initially capitalized terms shall have the meanings ascribed to them in this Section:

"Affiliate of Tenant" means any person or entity which directly or indirectly, through one or more intermediaries, controls, is controlled by or is under the common control with, Tenant. As used above, the words "control," "controlled" and "controls" mean the right and power, directly or indirectly through one or more intermediaries, to direct or cause the direction of substantially all of the management and policies of a person or entity through ownership of voting securities or by contract, including, but not limited to, the right to fifty percent (50%) or more of the capital or earnings of a partnership or, alternatively, ownership of fifty percent (50%) or more of the voting stock of a corporation.

"Agents" means, when used with reference to either Party to this Lease, the officers, directors, employees, agents and contractors of such Party, and their respective heirs, legal representatives, successors and assigns. "Agents" also means, with reference to Tenant, volunteers engaged by Tenant to engage in the Permitted Uses specified in Exhibit D.
"Alterations" means any alterations, installations or additions to any Improvements or to the Premises.

"Assignment" has the meaning given in Section 16.1 hereof.

"Award" means all compensation, sums or value paid, awarded or received for a Taking, whether pursuant to judgment, agreement, settlement or otherwise.

"Basic Lease Information" means the information with respect to this Lease summarized in Section 1 hereof.

"City" means the City and County of San Francisco, a municipal corporation.

"Commencement Date" means the date on which the Term of this Lease commences as described in Section 4.2 hereof.

"Date of Taking" means the earlier of (i) the date upon which title to the portion of the Premises taken passes to and vests in the condemnor or (ii) the date on which Tenant is dispossessed.

"Effective Date" means the date on which this Agreement becomes effective pursuant to Section 4.5 hereof.

"Encumbrer" means create any Encumbrance; "Encumbrance" means any mortgage, deed of trust, assignment of rents, fixture filing, security agreement, or similar security instrument, or other lien or encumbrance.

"Encumbrancer" means a mortgagee, beneficiary of a deed of trust or other holder of an Encumbrance.

"Environmental Laws" means any present or future federal, state or local Laws or policies relating to Hazardous Material (including, without limitation, its use, handling, transportation, production, disposal, discharge or storage) or to human health and safety, industrial hygiene or environmental conditions in, on, under or about the Premises (including any permitted Improvements) and any other property, including, without limitation, soil, air and groundwater conditions.

"Event of Default" means any one of the events of default described in Section 17.1 hereof.

"General Manager" means the General Manager of the Public Utilities Commission.

"Hazardous Material" means any material that, because of its quantity, concentration or physical or chemical characteristics, is deemed by any federal, state or local governmental authority to pose a present or potential hazard to human health or safety or to the environment. Hazardous Material includes, without limitation, any material or substance defined as a "hazardous substance," or "pollutant" or "contaminant" pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA", also commonly known as the "Superfund" law), as amended, (42 U.S.C. Sections 9601 et seq.) or pursuant to Section 25281 of the California Health & Safety Code; any "hazardous waste" listed pursuant to Section 25140 of the California Health & Safety Code; any asbestos and asbestos containing materials whether or not such materials are part of the structure of any existing improvements on the Land, any Improvements to be constructed on the Land by or on behalf of Tenant, or are naturally occurring substances on, in or about the Land; and petroleum, including crude oil or any fraction thereof, and natural gas or natural gas liquids.
"Hazardous Material Claims" means any and all enforcement, Investigation, Remediation or other governmental or regulatory actions, agreements or orders threatened, instituted or completed pursuant to any Environmental Laws, together with any and all Losses made or threatened by any third party against City, the PUC, their Agents, or the Premises or any Improvements, relating to damage, contribution, cost recovery compensation, loss or injury resulting from the presence, release or discharge of any Hazardous Materials, including, without limitation, Losses based in common law. Hazardous Materials Claims include, without limitation, Investigation and Remediation costs, fines, natural resource damages, damages for decrease in value of the Premises or any Improvements, the loss or restriction of the use or any amenity of the Premises or any Improvements, and attorneys' fees and consultants' fees and experts' fees and costs.

"Improvements" means any and all buildings, structures, fixtures and other improvements constructed, installed or placed on the Premises by or on behalf of Tenant pursuant to this Lease, including, without limitation, any trailers, mobile homes, permanent tent facilities, signs, billboards or other advertising materials, roads, trails, driveways, parking areas, curbs, walks, fences, walls, stairs, poles, plantings and landscaping.

"Indemnify" means indemnify, protect, defend and hold harmless forever.

"Indemnified Parties" means City, including, but not limited to, all of its boards, commissions, departments, agencies and other subdivisions, including, without limitation, its Public Utilities Commission, and all of its and their respective Agents, and their respective heirs, legal representatives, successors and assigns, and each of them.

"Investigation" when used with reference to Hazardous Material means any activity undertaken to determine the nature and extent of Hazardous Material that may be located in, on, under or about the Premises, any Improvements or any portion thereof or which have been, are being, or threaten to be Released into the environment. Investigation shall include, without limitation, preparation of site history reports and sampling and analysis of environmental conditions in, on, under or about the Premises or any Improvements.

"Invitees" when used with respect to Tenant means the clients, customers, invitees, guests, members and licensees, assignees and subtenants of Tenant.

"Land" means the real property described in Exhibit A attached hereto.

"Landlord" means the City and County of San Francisco.

"Law" means any law, statute, ordinance, resolution, regulation, proclamation, order or decree of any municipal, county, state or federal government or other governmental or regulatory authority with jurisdiction over the Premises, or any portion thereof, whether currently in effect or adopted in the future and whether or not in the contemplation of the Parties.

"Lease" means this Lease as it may be amended in accordance with its terms.

"Lease Charges" means any and all personal property taxes, possessory interest taxes and other costs, impositions and expenses described in Section 6 hereof or otherwise payable by Tenant under this Lease. Lease Charges shall be deemed to be rent under this Lease.

"Losses" means any and all claims, demands, losses, liabilities, damages, liens, injuries, penalties, fines, lawsuits and other proceedings, judgments and awards and costs and expenses, including, without limitation, reasonable attorneys' and consultants' fees and costs.
"Official Records" means the official records of the county(ies) in which the Premises are located.

"Party" means City or Tenant; "Parties" means both City and Tenant.

"Permitted Uses" means those activities set forth in Exhibit D attached hereto.

"Premises" has the meaning given in Section 3.1 hereof. The Premises shall include any existing and permitted future Improvements, together with any additions, modifications or other Alterations thereto permitted hereunder. Notwithstanding anything to the contrary in this Lease, the Premises do not include the SFPUC Facilities, nor any water, water rights, riparian rights, water stock, mineral rights or timber rights relating to the Premises.

"Release" when used with respect to Hazardous Material means any actual or imminent spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into or inside any existing improvements or any Improvements constructed hereunder by or on behalf of Tenant, or in, on, under or about the Premises or SFPUC Facilities or any portion thereof.

"Remediation" when used with reference to Hazardous Material means any activities undertaken to clean up, remove, contain, treat, stabilize, monitor or otherwise control any Hazardous Material located in, on, under or about the Premises or SFPUC Facilities or which have been, are being, or threaten to be Released into the environment. Remediate includes, without limitation, those actions included within the definition of "remedy" or "remedial action" in California Health and Safety Code Section 25322 and "remove" or "removal" in California Health and Safety Code Section 25323.

"SFPUC" means the Public Utilities Commission of the City and County of San Francisco.

"SFPUC Facilities" means any and all water pipelines, drainage pipelines, hatch covers, wells and other surface and subsurface facilities owned by the SFPUC and now or later located in, under, on or about the Premises for the storage, transportation or distribution of water for municipal purposes, together with all appurtenances thereto and all monuments thereof, but does not include the irrigation water connections specified in Section 3.5 hereof.

"Sublease" has the meaning given in Section 16.1 hereof.

"Taking" means a taking or damaging, including severance damage, by eminent domain, inverse condemnation or for any public or quasi-public use under Law. A Taking may occur pursuant to the recording of a final order of condemnation, or by voluntary sale or conveyance in lieu of condemnation or in settlement of a condemnation action.

"Tenant" means the Party identified as Tenant in the Basic Lease Information and at the beginning of this Lease. Except when immediately followed by the word "itself," the term Tenant shall also refer to the successors and assigns of Tenant's interests under this Lease, provided that the rights and obligations of Tenant's successors and assigns shall be limited to only those rights and obligations that this Lease permits to be transferred and that have been transferred in accordance with this Lease.

"Tenant's Personal Property" means the personal property of Tenant described in Section 8.3 hereof.

"Term" means the term of this Lease as determined under Section 4.1 hereof.
"Transfer" means any Assignment or Sublease.

"Transferee" means any recognized assignee of any part of Tenant's leasehold interest hereunder or any recognized subtenant of any portion of the Premises, pursuant to a Transfer that complies with Section 16 hereof.

"Unmatured Event of Default" means any default by Tenant under this Lease that, with the giving of notice or the passage of time, or both, would constitute an Event of Default hereunder.

3. PREMISES

3.1 Leased Premises

Subject to the terms, covenants and conditions of this Lease, City leases to Tenant and Tenant leases from City, the real property located near the Sunol Water Temple, in the County of Alameda, State of California, more particularly described in the attached Exhibit A, together with any and all improvements existing thereon and owned by City as of the date of this Lease (the "Premises"); excluding therefrom and reserving during the Term unto City, its successors and assigns, during the Term the rights described in Section 3.2 below. The Premises are shown generally on SFPUC Drawing No. B-4826, a copy of which is attached hereto as Exhibit B. Any acreage stated in this Lease with respect to the Premises is an estimate only, and City does not warrant it to be correct. However, the Parties agree that for all purposes of this Lease, any such acreage shall be deemed to be correct. Nothing in this Lease is intended to grant Tenant any right whatsoever to possess, use or operate the SFPUC Facilities, or any portion thereof.

3.2 Rights Reserved to City

Notwithstanding anything to the contrary in this Lease, City reserves and retains all of the following rights relating to the Premises:

(a) Any and all water and water rights, including, but not limited to (i) any and all surface water and surface water rights, including, without limitation, riparian rights and appropriative water rights to surface streams and the underflow of streams, and (ii) any and all groundwater and subterranean water rights, including, without limitation, the right to export percolating groundwater for use by City or its water customers;

(b) Any and all timber and timber rights, including, without limitation, all standing trees and downed timber;

(c) Any and all minerals and mineral rights of every kind and character now known to exist or hereafter discovered in the Premises, including, but not limited to, oil and gas rights thereto, together with the sole, exclusive, and perpetual right to explore for, remove, and dispose of those minerals by any means or methods suitable to City or its successors and assigns, but without entering upon or using the surface of the lands of the Premises and in such manner as not to damage the surface of the Premises or to interfere with the permitted use thereof by Tenant, without Tenant's prior written consent;

(d) All rights to use, operate, maintain, repair, enlarge, modify, expand, replace and reconstruct the SFPUC Facilities;

(e) The right to grant future easements and rights-of-way over, across, under, in and upon the Premises as City shall determine to be in the public interest, provided that any such easement or right-of-way shall be conditioned upon the grantee's assumption of liability to
Tenant for damage to its property that Tenant may sustain hereunder as a result of the grantee's use of such easement or right-of-way; and

(f) All rights of access provided for in Section 20 below.

3.3 Subject to Water Supply Operations

Tenant acknowledges that the property of which the Premises are a part constitutes a portion of City's Alameda watershed lands, which City holds for the purposes of collecting, storing and distributing water for municipal use. Tenant's rights under this Lease shall be subject to City's use of the Premises for such purposes and for other City uses. However, so long as there is no Event of Default or Unmatured Event of Default on the part of Tenant outstanding hereunder and subject to the terms and conditions of this Lease, City shall use its best efforts to avoid interfering with Tenant's quiet use and enjoyment of the Premises.

3.4 As Is Condition of Premises

(a) Inspection of Premises

Tenant represents and warrants that Tenant has conducted a thorough and diligent inspection and investigation, either independently or through Agents of Tenant's own choosing, of the Premises and the suitability of the Premises for Tenant's intended use. Tenant is fully aware of the needs of its operations and has determined, based solely on its own investigation, that the Premises are suitable for its operations and intended uses.

(b) As Is; Disclaimer of Representations

Tenant acknowledges and agrees that the Premises are being leased and accepted in their "AS IS, WITH ALL FAULTS" condition, without representation or warranty of any kind, and subject to all applicable Laws governing the use, occupancy, management, operation and possession of the Premises. Without limiting the foregoing, this Lease is made subject to any and all covenants, conditions, restrictions, easements and other title matters affecting the Premises, or any portion thereof, whether or not of record. Tenant acknowledges and agrees that neither City, SFPUC, nor any of their Agents have made, and City hereby disclaims, any representations or warranties, express or implied, concerning: (i) title or survey matters affecting the Premises, (ii) the physical, geological, seismological or environmental condition of the Premises, (iii) the quality, nature or adequacy of any utilities serving the Premises, (iv) the present or future suitability of the Premises for Tenant's business and intended uses, (v) the feasibility, cost or legality of constructing any Improvements on the Premises if required for Tenant's use and permitted under this Lease, or (vi) any other matter whatsoever relating to the Premises or their use, including, without limitation, any implied warranties of merchantability or fitness for a particular purpose.

3.5 Improvement Funding to be Provided by City

Notwithstanding the foregoing to the contrary, subject to the terms and conditions of Section 23.2 below, City shall provide a grant to Tenant in an amount of $65,000.00. A portion of this grant, not to exceed to $25,000, shall be used by the Tenant for the installation of those items listed as City's responsibility on Exhibit E attached hereto. Notwithstanding any provision of Exhibit E to the contrary, in no event shall City's contribution toward the cost of the improvements listed as City's responsibility exceed $25,000, and Tenant shall pay the balance, if any, of the cost of the listed improvements at Tenant's sole cost. The balance of this grant shall be used by the Tenant in accordance with the provisions of Section 23.1. of this Lease. The total amount of City's grant shall not exceed $65,000.00.
4. TERM

4.1 Term of Lease Date

The Premises are leased for a term (the "Term") commencing on the date specified in the Basic Lease Information as the Commencement Date, or, if later, the Effective Date, as defined in Section 4.3 below (the "Effective Date"). The Term of this Lease shall end on the expiration date specified in the Basic Lease Information (the "Expiration Date"), or 9 (nine) years from the Effective Date, which ever is later, unless sooner terminated pursuant to the provisions of this Lease.

4.2 Possession of Premises; Termination of Existing Permit

Tenant acknowledges that Tenant is presently in possession of the Premises pursuant to that certain revocable permit, dated as of January 20, 2006, between Tenant, as Permittee, and City, acting through the SFPUC (the "Existing Permit"), the term of which has been continued on a month-to-month basis. Notwithstanding any provision of the Existing Permit which would require written notice prior to the termination of the Existing Permit, the Existing Permit shall expire on the date immediately preceding the Commencement Date of this Lease.

4.3 Effective Date

This Lease shall become effective on the date (the "Effective Date") upon which (i) the SFPUC passes a resolution approving this Lease, and (ii) the Parties hereto have duly executed and delivered this Lease.

5. RENT

5.1 Base Rent

In consideration of the benefits provided to the SFPUC by Tenant's use and occupancy of the Land as provided in Section 7.1, there will be no base rent charged to Tenant during the Term of this Lease.

5.2 Processing Fee

Upon execution of this Lease, Tenant shall pay SFPUC the sum of Seven Hundred Fifty Dollars ($750.00) as a fee for processing this Lease.

6. TAXES, ASSESSMENTS AND OTHER EXPENSES

6.1 Taxes and Assessments, Licenses, Permit Fees and Liens

(a) Taxability of Possessory Interest

Tenant recognizes and agrees that the Improvements constructed by Tenant pursuant to this Lease may create a possessory interest subject to personal property taxation. Should Alameda County or other entity with taxation powers seek to impose taxes based on the value of Tenant's Improvements, Tenant shall pay any and all such taxes levied on such interest. Tenant shall make all such payments directly to the charging authority at least ten (10) days prior to delinquency.
(b) No Liens

Tenant shall not allow or suffer a lien for any taxes payable by Tenant hereunder to be imposed upon the Premises or upon any equipment or other property located thereon without promptly discharging the same. Tenant may have a reasonable opportunity to contest the validity of any such taxes. Tenant shall Indemnify City, the other Indemnified Parties, and the Premises from and against any Losses arising out of any proceeding or contest provided for hereunder. The foregoing Indemnity shall not be limited by the amount of the tax delinquency.

(c) Reporting Requirement

Tenant agrees to provide such information as City may request to enable City to comply with any tax reporting requirements applicable to this Lease.

6.2 Other Expenses

Tenant shall be responsible for any and all other charges, costs and expenses related to its use, occupancy, operation or enjoyment of the Premises or any Improvements permitted thereon, including, without limitation, the cost of any utilities or services necessary for Tenant's use, except as provided in Section 9.2 of this Lease.

6.3 Evidence of Payment

Tenant shall, upon City's request, furnish to City within ten (10) days after the date when any charges are due and payable, official receipts of the appropriate taxing authority or other evidence reasonably satisfactory to City, evidencing payment thereof.

7. USE; COVENANTS TO PROTECT PREMISES AND SFPUC FACILITIES

7.1 Tenant's Permitted Use; Continuous Operation

Tenant shall use the Premises and any Improvements allowed hereunder only for the Permitted Uses detailed in Exhibit D attached hereto, and for no other purpose. The Permitted Uses include, without limitation, farming, educational elements related to the SFPUC's supply of water to the Bay Area, water conservation, and watershed management, as set forth in the 2000 Alameda Watershed Management Plan. Tenant acknowledges that Tenant's agreement to engage in the Permitted Uses is a material inducement to and consideration for City's agreement to lease the Premises to Tenant on the terms set forth herein. Accordingly, Tenant agrees to use diligent good-faith efforts to promptly establish and continuously engage in all of the Permitted Uses throughout the Term of this Lease. Tenant acknowledges that if Tenant fails to continuously engage in the Permitted Uses, such failure will be a material breach of this Lease. If Tenant fails to promptly establish or continuously engage in one or more of the Permitted Activities, City shall provide Tenant with written notice of such failure. If Tenant disputes City's determination of such failure, Tenant shall so notify City in writing, together with an explanation of Tenant's efforts to establish or engage in such activity. City and Tenant shall use reasonable efforts to resolve any dispute regarding Tenant's performance of the Permitted Activities.

7.2 Covenants Regarding Use

As a material inducement to City to enter into this Lease, Tenant covenants with City as follows:
(a) No Unlawful Uses or Nuisances

Tenant shall not use or occupy any of the Premises or any Improvements, or permit the use or occupancy thereof, in any unlawful manner or for any illegal purpose, or permit to be carried on any offensive, immoral, noisy or hazardous use or any use in violation of the conditions of any certificate of occupancy. Tenant shall take all precautions to eliminate immediately any nuisances or hazards relating to its activities on or about the Premises or any Improvements permitted hereunder.

(b) Covenant Against Waste

Tenant shall not cause or permit any waste, damage or injury to the Premises.

(c) Covenant to Protect SFPUC Facilities

At all times during the Term of this Lease, Tenant shall protect the SFPUC Facilities from any damage, injury or disturbance. If Tenant or any of its Agents or Invitees damages, injures or disturbs any of the SFPUC Facilities, or any portion of the SFPUC Facilities (including monuments), Tenant shall immediately notify City of that occurrence. City may, without limiting any of its other rights hereunder, take all actions it deems proper to repair such SFPUC Facilities (including relocation of monuments) at Tenant's sole expense. Tenant shall promptly, upon City's request, remove or alter to City's satisfaction and at Tenant's sole cost, any Improvements, Alterations or Tenant's Personal Property placed on the Premises by or on behalf of Tenant as necessary to avoid interference with City's use of the Premises for municipal utility purposes. Alternatively, subject to the SFPUC General Manager's approval in his or her sole discretion, Tenant may pay City for the costs determined by the SFPUC General Manager that City will incur as a result of such interference.

City may adopt from time to time such rules and regulations with regard to Tenant's facilities and operations hereunder as City may determine are necessary or appropriate to safeguard against corrosion of City's pipelines and related SFPUC Facilities. Tenant shall comply with all such rules and regulations upon receipt of a copy thereof.

(d) Covenant to Protect Water Courses and Water Quality

Tenant shall not cause any ponding on the Premises or any flooding on adjacent land. Tenant shall not engage in any activity that causes any change, disturbance, fill, alteration or impairment to the bed, bank or channel of any natural water course, wetland, or other body of water on, in, under or about the Premises, nor shall Tenant engage in any activity that would pollute or degrade any surface or subsurface waters or result in the diminution or drainage of such waters. In furtherance of Tenant's covenant to protect water quality, and consistent with Landlord's 2000 Alameda Watershed Management Plan, the Approved Improvements listed in Exhibit E include the installation of a filter strip along the boundary of the Premises facing the Arroyo de la Laguna.

(e) Covenant Against Dumping

Tenant shall not cause or permit the dumping or other disposal on, under or about the Premises of landfill, refuse, Hazardous Material or other materials that are unsightly or could pose a hazard to the human health or safety, native vegetation or wildlife, or the environment. This section shall not apply to Tenant's composting of organic material for soil enrichment purposes in the manner described in Exhibit D.
(f) Covenant to Protect Trees or Other Native Vegetation

Tenant shall not engage in or permit the cutting, removal, or destruction of trees or any other native vegetation on the Premises, without the prior written approval of the SFPUC. This provision shall not apply to pruning for tree health, or the practice of fruit cultivation pursuant to the Management Plan described herein at Section 23.1.

(g) No Tree Planting

Tenant shall not plant any trees on the Premises, nor shall Tenant plant any other vegetation on the Premises except as described in Exhibit D or otherwise expressly provided herein.

(h) Covenant Against Hunting or Fishing

Tenant shall not engage in or permit any hunting, trapping or fishing on or about the Premises, except for hunting or trapping for the purpose of controlling predators or problem animals by the appropriate use of selective control techniques approved in advance by the SFPUC provided such hunting and trapping is done in strict accordance with all applicable Laws. Whenever possible, all measures used for such control shall be limited in their application to the specific problem animals. Tenant shall not use poison bait, cyanide guns, traps or other similar non-selective control techniques. In no event may Tenant use any prophylactic predator control measures. The restrictions of this Section applicable to the identification and control of predators and problem animals shall not apply to commensal rodents.

(i) Pesticides Prohibition

Tenant shall comply with the provisions of Section 308 of Chapter 3 of the San Francisco Environment Code (the "Pesticide Ordinance") which (i) prohibit the use of certain pesticides on City property, (ii) require the posting of certain notices and the maintenance of certain records regarding pesticide usage and (iii) require Tenant to submit to the SFPUC an integrated pest management ("IPM") plan that (a) lists, to the extent reasonably possible, the types and estimated quantities of pesticides that Tenant may need to apply to the Premises during the terms of this Lease, (b) describes the steps Tenant will take to meet the City’s IPM Policy described in Section 300 of the Pesticide Ordinance, and (c) identifies, by name, title, address and telephone number, an individual to act as the Tenant’s primary IPM contact person with the City. In addition, Tenant shall comply with Sections 303(a) and 303(b) of the Pesticide Ordinance.

(j) Weed Control

Tenant shall not introduce any noxious weeds on or about the Premises. Tenant shall control noxious weeds, provided that Tenant may use chemical herbicides only if such use complies with the requirements of Section 7.2(i) above.

(k) Maintenance of Roads

Tenant shall keep all roads on the Premises open and in the same condition as such roads are now in, ordinary wear and tear excepted, and shall not interfere with any travel on such roads.
(l) Covenant Against Burning

Tenant shall not burn any weeds, debris or other substances on or about the Premises.

(m) Watershed Management Plan

Tenant shall comply with any and all other regulations or requirements resulting from City's 2000 Alameda Watershed Management Plan, and any modifications or additions to such plan, provided that such regulations or requirements do not unreasonably interfere with Tenant's use and enjoyment of the Premises hereunder. The terms of the Alameda Watershed Management Plan are incorporated in this Section by reference and made a part of this Lease as though fully set forth herein.

(n) Access to Premises

Tenant shall limit access to the Premises to the following parties: Agents performing work for Tenant, approved sub-tenants or licensees and their agents as authorized in Section 16, along with members of the public accessing the Premises for educational purposes as authorized by Tenant and consistent with the Permitted Uses described in Exhibit D. Except as provided below, public access to the Premises for groups larger than 20 persons but less than 70 persons, for tours, training events, workshops, and educational events, shall be preceded by at least 14 days written notice to the key contacts for City set forth in the Basic Lease Information that includes the date(s) of the event, the numbers of people and vehicles involved, along with other information that may be requested by the SFPUC Natural Resources Division. For purposes of this section only, written notice via electronic mail shall be permitted, notwithstanding Section 24.1 of this Lease. For public access to the Premises involving groups larger than seventy (70) persons, access shall be permitted only if authorized in advance under an access permit issued by the SFPUC Natural Resources Division, the terms and conditions of which shall be established by in the Management Agreement. Tenant shall give City not less than thirty (30) days advance written notice of any request for such a permit, together with such information regarding the proposed access as SFPUC shall reasonably require.

8. IMPROVEMENTS

8.1 Construction of Improvements

Tenant shall not construct or install any Improvements nor make or permit any Alterations in, to or about the Premises, without SFPUC's prior written consent in each instance, which consent shall not be unreasonably withheld. City has consented to the installation of those items set forth on Exhibit E attached hereto (the "Approved Improvements"), subject to City's approval of the location of the proposed Improvements and the plans and specifications therefor. Any permitted Improvements or Alterations (including the Improvements described in Exhibit E) shall be done at Tenant's sole expense (except as provided in Exhibit E, Section 3,5 above and Section 23.2 below) and (i) in strict accordance with plans and specifications approved in advance by SFPUC in writing, (ii) by duly licensed and bonded contractors or mechanics approved by SFPUC, (iii) in a good and professional manner, (iv) in strict compliance with all Laws, and (v) subject to all other conditions that SFPUC may reasonably impose, including, without limitation, provision of such completion security as is acceptable to SFPUC. In no event shall the construction or installation of any such Improvements or the making of any Alterations impair the use or operation of the SFPUC Facilities, or any portion thereof, or SFPUC's access thereto. Prior to the commencement of any work on the Premises to construct
8.2 Ownership of Improvements

Any Improvements or Alterations constructed on or affixed to the Premises by or on behalf of Tenant pursuant to the terms and limitations of Section 8.1 above shall be and remain Tenant's property during the Term. Upon the Expiration Date or any earlier termination hereof, Tenant shall remove all such Improvements and Alterations from the Premises in accordance with the provisions of Section 22.1 hereof, unless SFPUC, at its sole option and without limiting any of the provisions of Section 8.1 above, requires as a condition to approval of any such Improvements or Alterations that such Alterations or Improvements remain on the Premises following the expiration or termination of this Lease or unless SFPUC as a condition of such approval reserves the right to elect by notice to Tenant not less than thirty (30) days prior to the end of the Term to have such Improvements or Alterations remain on the Premises.

8.3 Tenant's Personal Property

All furniture, furnishings and articles of movable personal property and equipment installed in the Premises by or for the account of Tenant that can be removed without structural or other material damage to the Premises (all of which are herein called "Tenant's Personal Property") shall be and remain the property of Tenant and may be removed by it subject to the provisions of Section 22.1 hereof. At least ten (10) days prior to delinquency, Tenant shall pay all taxes levied or assessed upon Tenant's Personal Property and shall deliver satisfactory evidence of such payment to City.

9. REPAIRS AND MAINTENANCE

9.1 City's Maintenance Obligations

City shall maintain and repair at its expense, as required, existing access roads and water utility infrastructure serving the Premises, and if necessary shall repair existing SFPUC Facilities on the Premises (excluding any irrigation water piping installed by Tenant or any SFPUC Facilities damaged by Tenant under Section 7.2(c) of this Lease), and any perimeter game fence constructed by Tenant and the main water supply line feeding Tenant's irrigation system, up to and including the water meter measuring the quantity of irrigation water delivered to the Premises.

9.2 Tenant Responsible for Maintenance and Repair

Except as provided in Section 9.1, Tenant assumes full and sole responsibility for the condition, operation, repair and maintenance and management of the Premises and any permitted Improvements from and after the Commencement Date. Except as provided in Section 9.1 and Exhibit E, City shall not under any circumstances be responsible for the performance of any

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repairs, changes or alterations to the Premises or any adjoining property, nor shall City be liable
for any portion of the cost thereof. Except as provided in Section 9.1, Tenant shall make all
repairs and replacements, interior and exterior, structural as well as non-structural, ordinary as
well as extraordinary, foreseen and unforeseen, that may be necessary to maintain the Premises
including the existing building and any permitted Improvements at all times in clean, safe,
attractive and sanitary condition and in good order and repair, to City's reasonable satisfaction
and so that the Premises, including the existing building, shall be at least equal in quality, value
and utility to the Premises as it exist on the Commencement Date. If any portion of the Premises
or any of City's property located on or about the Premises is damaged by any of the activities
conducted by Tenant or its Agents or Invitees hereunder, Tenant shall immediately, at its sole
cost, repair any and all such damage and restore the Premises or City's property to its previous
condition.

9.3 Utilities

(a) Protection of Utilities Generally

Except as provided in Section 9.3 (c), City has no responsibility or liability of any kind
with respect to any utilities that may be on or about the Premises. Tenant has the sole
responsibility to locate such utilities and protect them from damage. The provisions of this
Section 9.3(a) may be amended only by written agreement of City and Tenant.

(b) Tenant Responsibility for Securing Non-Water Utility Service

Tenant shall make all arrangements directly with the utility companies for, and shall pay
for, any and all utilities and services furnished to or used by it, including, without limitation, gas,
electricity, sewage, telephone service, trash collection, and janitorial service, and for all deposits,
connection and installation charges. Tenant shall be responsible for installation and maintenance
of all facilities required in connection with such utility services. The Parties agree that any and
all utility improvements shall be subject to the provisions of Section 8.1 and that such
improvements shall be deemed part of City's real property, and not personal property or trade
fixtures of Tenant. During the Term, Tenant shall be obligated to repair and maintain any and all
utility systems and improvements located on or within the Premises (except for the SFPUC
Facilities) in good operating condition. City shall not be liable for any failure or interruption of
any utility service furnished to the Premises, and no such failure or interruption shall entitle
Tenant to any abatement in rent or to terminate this Lease. The City and the Tenant may agree in
writing to reallocate these responsibilities.

(c) Provision of Irrigation Water by SFPUC

Tenant has occupied the Premises under the Existing Permit since January 20, 2006, and
since that time has prepared the soil for agricultural purposes, as authorized in Exhibit D.
Tenant agrees to pay to the SFPUC a total of $1,500.00 for irrigation water received from the
SFPUC during calendar year 2006 under the Existing Permit. As of the Effective Date of this
Lease, Tenant agrees to pay a total of $9,000 per year for irrigation water, payable in four equal
quarterly installments of $2,250.00 each on March 31st, June 30th, September 30th, and December
31st. The annual $9,000.00 charge for irrigation water is based on an estimated annual water
usage by Tenant of 12,000 units (a unit measuring one hundred cubic feet of water, or ccf)
valued at the SFPUC W-24 rate for non-potable water. In the event that Tenant uses more than
12,000 units of water in any calendar year, then in addition to the foregoing payments, Tenant
shall pay SFPUC for all quantities of irrigation water delivered by the SFPUC in excess of
12,000 units at the then-current W-21 water rate established by the SFPUC in its sole discretion
under the provisions of the City's Charter.
City's provision of irrigation water is subject to reduction in the event of a water shortage caused by drought or any maintenance or repair of the SFPUC water system. City shall not be liable for any failure or interruption of irrigation water service furnished to the Premises, and no such failure or interruption shall entitle Tenant to any abatement in rent or to terminate this Lease.

9.4 Maintenance of Fences

Except as provided in Section 9.1 and Exhibit E, Tenant shall maintain in good condition the existing fence along or about the property line of the Premises.

9.5 No Right to Repair and Deduct

Tenant expressly waives the benefit of any existing or future Law or judicial or administrative decision that would otherwise permit Tenant to make repairs or replacements at City's expense, or to terminate this Lease because of City's failure to keep the Premises or any adjoining property (including, without limitation, access roads, utilities and other infrastructure serving the Premises) or any part thereof in good order, condition or repair, or to abate or reduce any of Tenant's obligations hereunder on account of the Premises or any adjoining property (including, without limitation, access roads, utilities and other infrastructure serving the Premises) or any part thereof being in need of repair or replacement. Without limiting the foregoing, Tenant expressly waives the provisions of California Civil Code Sections 1932, 1941 and 1942 or any similar Laws with respect to any right of Tenant to terminate this Lease and with respect to any obligations of City for tenantability of the Premises and any right of Tenant to make repairs or replacements and deduct the cost thereof from rent.

10. LIENS

Tenant shall keep the Premises and all of City's property free (including, without limitation, the SFPUC Facilities) from any liens arising out of any work performed, material furnished or obligations incurred by or for Tenant. In the event Tenant does not, within five (5) days following the imposition of any such lien, cause the lien to be released of record by payment or posting of a proper bond, City shall have in addition to all other remedies provided herein and by Law or equity the right, but not the obligation, to cause the same to be released by such means as it shall deem proper, including, but not limited to, payment of the claim giving rise to such lien. All such sums paid by City and all expenses it incurs in connection therewith (including, without limitation, reasonable attorneys' fees) shall be payable to City by Tenant upon demand. City shall have the right at all times to post and keep posted on the Premises any notices permitted or required by Law or that City deems proper for its protection and protection of the Premises and City's property, from mechanics' and materialmen's liens. Tenant shall give City at least fifteen (15) days' prior written notice of the commencement of any repair or construction on any of the Premises. Notwithstanding the foregoing, Tenant shall have the right, upon posting of an adequate bond or other security acceptable to City, to contest any such lien, and in such case City shall not seek to satisfy or discharge such lien unless Tenant has failed to do so within ten (10) days after final determination of the validity thereof. Tenant shall Indemnify City, the other Indemnified Parties and the Premises against any and all Losses arising out of any such contest.

11. COMPLIANCE WITH LAWS

11.1 Compliance with Laws

Tenant shall promptly, at its sole expense, maintain the Premises, including any Improvements and Tenant's use and operations thereon in strict compliance at all times with all present and future Laws, whether foreseen or unforeseen, ordinary as well as extraordinary.
Such Laws shall include, without limitation, all Laws relating to health and safety and disabled accessibility including, without limitation, the Americans with Disabilities Act, 42 U.S.C. Sections 12101 et seq. and Title 24 of the California Code of Regulations, all present and future Environmental Laws (as defined in this Lease below), and all present and future life safety, fire sprinkler, seismic retrofit and other building code requirements. The Parties acknowledge and agree that Tenant's obligation to comply with all laws as provided herein is a material part of the bargained-for consideration under this Lease. Tenant waives any rights now or hereafter conferred upon it by any existing or future Law to terminate this Lease or to compel City to make any repairs to comply with any such Laws, on account of any occurrence or situation, whether foreseen or unforeseen.

11.2 Regulatory Approvals

(a) Responsible Party

Tenant understands and agrees that Tenant's use of the Premises may require authorizations, approvals or permits from governmental regulatory agencies with jurisdiction over the Premises. Tenant shall be solely responsible for obtaining any and all such regulatory approvals. Tenant shall not seek any regulatory approval without first obtaining the written consent of the SFPUC. Tenant shall bear all costs associated with applying for, obtaining and maintaining any necessary or appropriate regulatory approval and shall be solely responsible for satisfying any and all conditions imposed by regulatory agencies as part of a regulatory approval. Any fines or penalties levied as a result of Tenant's failure to comply with the terms and conditions of any regulatory approval shall be immediately paid and discharged by Tenant, and City shall have no liability, monetary or otherwise, for any such fines or penalties. Tenant shall Indemnify City and the other Indemnified Parties against all Losses arising in connection with Tenant's failure to obtain or comply with the terms and conditions of any regulatory approval.

(b) City Acting as Owner of Real Property

Tenant further understands and agrees that City, acting by and through the SFPUC, is entering into this Lease in its capacity as a property owner with a proprietary interest in the Premises and not as a regulatory agency with police powers. Nothing in this Lease shall limit in any way Tenant's obligation to obtain any required approvals from City departments, boards or commissions having jurisdiction over the Premises. By entering into this Lease, City is in no way modifying or limiting Tenant's obligation to cause the Premises or any permitted Improvements to be used and occupied in accordance with all applicable Laws, as provided further above.

11.3 Compliance with City's Risk Management Requirements

Tenant shall not do anything, or permit anything to be done, in or about the Premises or any Improvements permitted hereunder that would create any unusual fire risk, and shall take commercially reasonable steps to protect City from any potential premises liability. Tenant shall faithfully observe, at its expense, any and all reasonable requirements of City's Risk Manager with respect thereto and with the requirements of any policies of public liability, fire or other policies of insurance at any time in force with respect to the Premises and any Improvements as required hereunder.

11.4 Reports

Tenant shall submit an annual report to City describing Tenant's operations on the Premises during the previous year and shall provide such documentation to City as City may from time to time request regarding Tenant's operations and evidencing compliance thereof with this Lease and all Laws.
12. FINANCING; ENCUMBRANCES; SUBORDINATION

12.1 Encumbrance of Landlord's Fee Interest

The following provisions shall apply notwithstanding anything to the contrary contained in this Lease.

(a) Encumbrance by City

To the extent permitted by applicable Law, City may at any time sell or otherwise transfer or encumber its fee estate in any portion of the Premises provided that (i) any such sale or Encumbrance shall be subject and subordinate to all of the terms of this Lease and the leasehold estate created hereby, (ii) the right of possession of Tenant to the Premises shall not be affected or disturbed by any such sale or Encumbrance, or by the exercise of any rights or remedies by any purchaser or Encumbrance arising out of any instrument reflecting such sale or Encumbrance so long as no Event of Default or Unmatured Event of Default is outstanding hereunder.

(b) Encumbrance By Tenant

Tenant shall not under any circumstances whatsoever Encumber in any manner the Premises, the SFPUC Facilities, City's estate in the Premises or any adjoining property, City's interest under this Lease, or any portion thereof.

12.2 Leasehold Encumbrances

Without limiting Section 16 hereof, Tenant shall not Encumber this Lease, or assign or pledge assignment of the same as security for any debt, without first obtaining the written consent of City, which City may give or withhold in its sole discretion.

13. DAMAGE OR DESTRUCTION

13.1 Damage or Destruction to the Improvements

In the case of damage to or destruction of any Improvements on the Premises made by or on behalf of Tenant during the Term hereof or during the term of the Existing Permit by fire or any other casualty, whether insured or uninsured, Tenant may, at its option and at its sole cost, restore, repair, replace or rebuild such Improvements to the condition such Improvements were in prior to such damage or destruction, subject to any changes made in strict accordance with the requirements of Section 8.1 above. However, if Tenant does not notify City in writing within thirty (30) days after the date of such damage or destruction of Tenant's election to restore, repair, replace or rebuild any such damaged or destroyed Improvements as provided above, Tenant shall promptly, at its sole cost, demolish such Improvements and remove them (including all debris) from the Premises in compliance with the provisions of Section 22.1 below.

13.2 Waiver

The Parties understand and agree that the foregoing provisions of this Section are intended to govern fully the rights and obligations of the Parties in the event of damage or destruction to the Improvements, and City and Tenant each hereby waives and releases any right to terminate this Lease in whole or in part under Sections 1932.2 and 1933.4 of the Civil Code of California or under any similar Laws now or hereafter in effect, to the extent such rights are inconsistent with the provisions hereof.
14. CONSTRUCTION PROJECTS; WAIVER OF RELOCATION ASSISTANCE

14.1 Proximity of Construction Projects

Tenant acknowledges that during the Term, major construction projects or other work may be undertaken on property in the immediate vicinity of the Premises. Tenant is aware that the construction of such projects or the performance of such work may result in some inconvenience to or disturbance of Tenant. Such impacts may include, but are not limited to, increased vehicle and truck traffic, traffic delays and re-routing impediments to access, loss of street and public parking, dust, dirt, construction noise and visual obstructions. Tenant hereby waives any and all claims against SFPUC, City and their Agents based on such inconvenience or disturbance, including without limitation any abatement or reduction or rent.

14.2 Waiver of Relocation Assistance Rights

Tenant hereby waives any and all rights, benefits or privileges of the California Relocation Assistance Law, California Government Code Sections 7260 et seq., and the Uniform Relocation Assistance and Real Property Acquisition Policies Act, 42 U.S.C. Sections 4601 et seq., or under any similar law, statute or ordinance now or hereafter in effect, except as provided in Section 15 hereof (Eminent Domain).

15. EMINENT DOMAIN

15.1 General

If during the Term or during the period between the execution of this Lease and the Commencement Date, any Taking of all or any part of the Premises or any interest in this Lease occurs, the rights and obligations of the Parties hereunder shall be determined pursuant to this Section. City and Tenant intend that the provisions hereof govern fully in the event of a Taking and accordingly, the Parties each hereby waives any right to terminate this Lease in whole or in part under Sections 1265.120 and 1265.130 of the California Code of Civil Procedure or under any similar Law now or hereafter in effect.

15.2 Total Taking; Automatic Termination

If a total Taking of the Premises occurs, then this Lease shall terminate as of the Date of Taking.

15.3 Partial Taking; Election to Terminate

(a) If a Taking of any portion (but less than all) of the Premises occurs, then this Lease shall terminate in its entirety under either of the following circumstances: (i) if all of the following exist: (A) the partial Taking renders the remaining portion of the Premises untenantable or unsuitable for continued use by Tenant, (B) the condition rendering the Premises untenantable or unsuitable either is not curable or is curable but City is unwilling or unable to cure such condition, and (C) Tenant elects to terminate; or (ii) if City elects to terminate.

(b) If a partial Taking of a substantial portion of the SFPUC Facilities or any of City's adjoining real property, but not the Premises, occurs, City shall have the right to terminate this Lease in its entirety.

(c) Either Party electing to terminate under the provisions of this Section 15 shall do so by giving written notice to the other Party before or within thirty (30) days after the Date of Taking, and thereafter this Lease shall terminate upon the later of the thirtieth day after such written notice is given or the Date of Taking.
15.4 Award

Upon termination of this Lease pursuant to an election under Section 15.3 above, City shall be entitled to the entire Award in connection therewith (including, but not limited to, any portion of the Award made for the value of the leasehold estate created by this Lease), and Tenant shall have no claim against City for the value of any unexpired term of this Lease, provided that Tenant may make a separate claim for compensation, and Tenant shall receive any Award made specifically to Tenant, for Tenant's relocation expenses or the interruption of or damage to Tenant's business or damage to Tenant's Personal Property.

15.5 Partial Taking; Continuation of Lease

If a partial Taking of the Premises occurs and this Lease is not terminated in its entirety under Section 15.3 above, then this Lease shall terminate as to the portion of the Premises so taken, but shall remain in full force and effect as to the portion not taken, and the rights and obligations of the Parties shall be as follows: City shall be entitled to the entire Award in connection therewith (including, but not limited to, any portion of the Award made for the value of the leasehold estate created by this Lease). Tenant shall have no claim against City for the value of any unexpired Term of this Lease, provided that Tenant may make a separate claim for compensation. Tenant shall retain any Award made specifically to Tenant for Tenant's relocation expenses or the interruption of or damage to Tenant's business or damage to Tenant's Personal Property.

15.6 Temporary Takings

Notwithstanding anything to contrary in this Section, if a Taking occurs with respect to all or any part of the Premises for a limited period of time not in excess of sixty (60) consecutive days, this Lease shall remain unaffected thereby, and Tenant shall continue to perform all of the terms, conditions and covenants of this Lease. In the event of such temporary Taking, Tenant shall be entitled to receive that portion of any Award representing compensation for the use or occupancy of the Premises during period of the Taking.

16. ASSIGNMENT, SUBLETTING, AND LICENSING

16.1 Restriction on Assignment, Subletting and Licensing

Tenant shall not directly or indirectly (including, without limitation, by merger, acquisition, sale or other transfer of any controlling interest in Tenant), voluntarily or by operation of Law, sell, assign, encumber, pledge or otherwise transfer any part of its interest in or rights with respect to the Premises, the business, any Improvements or its leasehold estate hereunder (collectively, "Assignment"), or permit any portion of the Premises or any Improvements to be occupied by anyone other than itself, or sublet any portion of the Premises or any permitted Improvements thereon (collectively, "Sublease"), without the SFPUC General Manager's prior written consent, which may be withheld in his or her sole discretion. Any Assignment or Sublease, without the SFPUC General Manager's prior consent, shall be voidable at the option of the City in its sole and absolute discretion; and the General Manager shall have the right to terminate immediately this Lease by sending written notice to Tenant. Notwithstanding the foregoing, Tenant may, without the prior written consent of the City, license individual farm plots on the Premises to individual farmers (a "Farming Licensee") provided that each such Farming Licensee fully and properly executes a license in precisely the form attached hereto as Exhibit F (a "Farming License") and provided further that Tenant delivers a copy of each Farming License to City within five (5) business days after the execution thereof. All Farming Licenses issued by Tenant shall be restricted as follows: (i) no Farming License shall extend beyond 365 days; (ii) no Farming License shall automatically renew; and (iii) the
Farming Licensee shall be provided with a copy of the Lease and shall be obligated to comply with all use restrictions and other relevant terms of the Lease.

Tenant further agrees and understands that the intent and purpose of this Lease is to allow for use or uses as provided in the Basic Lease Information, and not for the purpose of creating an investment in property. Therefore, while Tenant may charge to an assignee, sublessee or Farming Licensee an amount in excess of that rent which is at the time being charged by City to Tenant, all rental income or other consideration received by Tenant which is attributable to the value of the leasehold estate created by this Lease over and above that rent charged to Tenant by City shall be paid directly to City with no profit, direct or indirect, to Tenant attributable to the value of the leasehold estate created by this Lease.

16.2 Notice of Proposed Transfer for Assignment or Sublease

If Tenant desires to enter into an Assignment or a Sublease, then it shall give written notice (a "Notice of Proposed Transfer") to the SFPUC of its intention to do so. The Notice of Proposed Transfer shall identify the Transferee and state the terms and conditions under which Tenant is willing to enter into such proposed Assignment or Sublease, including a copy of the proposed Assignment or Sublease agreement. Tenant shall provide the SFPUC with financial statements for the proposed Transferee and such additional information regarding the proposed Transfer as the SFPUC may reasonably request.

16.3 SFPUC's Response

Within twenty (20) business days after SFPUC's receipt of the Notice of Proposed Transfer and any such additional information requested by SFPUC (the "Response Period"), the SFPUC declines to exercise either of the options provided in clauses (a) and (b) above, then Tenant shall be entitled for a period of ninety (90) days following the earlier of SFPUC's notice that it will not elect either such option or the expiration of the Response Period, to enter into such Assignment or Sublease, subject to the SFPUC's prior written approval of the proposed Transferee and the terms and conditions of the proposed Transfer. However, any rent or other consideration realized by Tenant under any such Assignment or Sublease (in excess of the rent, if any, payable hereunder (or the amount thereof proportionate to the portion of the Premises subject to such Sublease or Recapture)) shall be paid one hundred percent (100%) to the SFPUC, after Tenant has recovered any verifiable, customary and reasonable brokers' commissions and the verifiable, customary and reasonable cost of any leasehold improvements that Tenant has actually incurred in connection with such Sublease or Recapture. Tenant shall provide the SFPUC with such information regarding the proposed Transferee and the proposed Assignment or Sublease as the SFPUC may reasonably request.

Notwithstanding the foregoing, if following the SFPUC's decline to exercise the foregoing options Tenant desires to enter into such Assignment or Sublease on terms and conditions materially more favorable to Tenant than those contained in the Notice of Proposed Transfer, then Tenant shall give SFPUC a new Notice of Proposed Transfer, which notice shall state the terms and conditions of such Assignment or Sublease and identify the proposed Transferee, and SFPUC shall again be entitled to elect one of the options provided in clauses (a) and (b) above at any time within fifteen (15) business days after the SFPUC's receipt of such new Notice of Proposed Transfer.

In the event the SFPUC elects either of the options provided in clauses (a) or (b) above, the SFPUC shall be entitled, at its sole option, to enter into a lease, sublease or assignment agreement with respect to the Premises (or portion thereof specified in such new Notice of Proposed Transfer) with the proposed Transferee identified in Tenant's notice.
Notwithstanding the foregoing, if any Event of Default or Unmatured Event of Default by Tenant is outstanding hereunder at the time of Tenant's Notice of Proposed Transfer, then City may elect by notice to Tenant to refuse to consent to Tenant's proposed Transfer and pursue any of its rights or remedies hereunder or at Law or in equity.

16.4 Sublease or Recapture Premises

If City elects to Sublease or Recapture from Tenant as provided in Section 16.3, the following shall apply:

(a) Sublease

In the case of a Sublease, (i) City shall have the right to use the portion of the Premises covered by the Notice of Proposed Transfer (the "Sublease Premises") for any legal purpose, (ii) the rent payable by City to Tenant shall be the lesser of that set forth in the Notice of Proposed Transfer or the rent (if any) payable by Tenant under this Lease at the time of the Sublease (or the amount thereof proportionate to the Sublease Premises if for less than the entire Premises), (iii) City may make alterations and improvements to the Sublease Premises as it may elect, and City may remove any such alterations or improvements, in whole or in part, prior to or upon the expiration of the Sublease, provided that City shall repair any damage or injury to the Sublease Premises caused by such removal, (iv) City shall have the right to further sublease or assign the Sublease Premises to any party, without the consent of Tenant, and (v) Tenant shall pay to City on demand any costs incurred by City in physically separating the Sublease Premises (if less than the entire Premises) from the balance of the Premises and in complying with any applicable Laws relating to such separation.

(b) Recapture

In the case of Recapture, (i) the portion of the Premises subject to the Recapture (the "Recapture Premises") shall be deleted from the Premises for all purposes hereunder, and Tenant and City shall be relieved of all of their rights and obligations hereunder with respect to the Recapture Premises except to the extent the same would survive the Expiration Date or other termination of this Lease pursuant to the provisions hereof, and (ii) City shall pay any cost incurred in physically separating the Recapture Premises (if less than the entire Premises) from the balance of the Premises and in complying with any applicable governmental Laws relating to such separation.

16.5 Effect of Transfer

No Sublease or Assignment by Tenant nor any consent by City thereto shall relieve Tenant, or any guarantor, of any obligation to be performed by Tenant under this Lease. Any Sublease or Assignment that is not in compliance with this Section shall, at the option of the City in its sole and absolute discretion, be void and, at City's option, shall constitute a material Event of Default by Tenant under this Lease. The acceptance of any rent or other payments by City from a proposed Transferee shall not constitute consent to such Sublease or Assignment by City or a recognition of any Transferee, or a waiver by City of any failure of Tenant or other transferor to comply with this Section.

16.6 Assumption by Transferee

Each Transferee shall assume all obligations of Tenant under this Lease and shall be and remain liable jointly and severally the assignor or sublessor for the payment of rent (if applicable), and for the performance of all of the terms, covenants and conditions to be performed by Tenant under this Lease. No Assignment shall be binding on City unless Tenant or Transferee shall deliver to City a counterpart of the Assignment and an instrument in recordable
form that contains a covenant of assumption by such Transferee satisfactory in substance and form to City, and consistent with the requirements of this Section. However, the failure or refusal of such Transferee to execute such instrument of assumption shall not release such Transferee from its liability as set forth above. Tenant shall reimburse City on demand for any reasonable costs that may be incurred by City in connection with any proposed Transfer, including, without limitation, the costs of making investigations as to the acceptability of the proposed Transferee and legal costs incurred in connection with the granting of any requested consent.

16.7 Indemnity for Relocation Benefits

Without limiting Section 16.6, Tenant shall cause any Transferee to expressly waive entitlement to any and all relocation assistance and benefits in connection with this Lease. Tenant shall Indemnify City and the other Indemnified Parties for any and all Losses arising out of any relocation assistance or benefits payable to any Transferee.

17. DEFAULT; REMEDIES

17.1 Events of Default

Any of the following shall constitute an event of default ("Event of Default") by Tenant hereunder:

(a) Rent

Any failure to pay any rent, irrigation water service, or other sums as and when due, provided Tenant shall have a period of three (3) days from the date of written notice of such failure from City within which to cure any default in the payment of rent or other sums; provided, however, that City shall not be required to provide such notice regarding Tenant's failure to make such payments when due more than twice during any calendar year, and any such failure by Tenant after Tenant has received two such notices in any calendar year from City shall constitute a default by Tenant hereunder without any requirement on the part of City to give Tenant notice of such failure or an opportunity to cure except as may be required by Section 1161 of the California Code of Civil Procedure;

(b) Permitted Use

Any failure to promptly establish and continuously engage in one or more of the Permitted Uses, provided Tenant shall have a period of thirty (30) days from the date of written notice from City of such failure within which to cure such default under this Lease, or, if such default is not capable of cure within such 30-day period, if and only if Tenant provides City with reasonable evidence that Tenant can and will cure such default within a reasonable period of time not to exceed ninety (90) days after the receipt of notice of default from City, Tenant shall have a reasonable period (not to exceed 90 days) to complete such cure.

(c) Supervision of Minors

Any failure by Tenant or any of its subcontractors to comply with any provision of Section 24.32 of this Lease.
(d) Covenants, Conditions and Representations

Any failure to perform or comply with any other covenant, condition or representation made under this Lease, provided Tenant shall have a period of fifteen (15) days from the date of written notice from City of such failure within which to cure such default under this Lease, or, if such default is not capable of cure within such 15-day period, Tenant shall have a reasonable period to complete such cure if Tenant promptly undertakes action to cure such default within such 15-day period and thereafter diligently prosecutes the same to completion and Tenant uses its best efforts to complete such cure within sixty (60) days after the receipt of notice of default from City; provided, however, that upon the occurrence during the Term of two defaults of the same obligation City shall not be required to provide any notice regarding Tenant's failure to perform such obligation, and any subsequent failure by Tenant after Tenant has received two such notices shall constitute a default by Tenant hereunder without any requirement on the part of City to give Tenant notice of such failure or an opportunity to cure;

(e) Vacation or Abandonment

Any vacation or abandonment of the Premises for more than fourteen (14) consecutive days;

(f) Bankruptcy

The appointment of a receiver to take possession of all or substantially all of the assets of Tenant, or an assignment by Tenant for the benefit of creditors, or any action taken or suffered by Tenant under any insolvency, bankruptcy, reorganization, moratorium or other debtor relief act or statute, whether now existing or hereafter amended or enacted, if any such receiver, assignment or action is not released, discharged, dismissed or vacated within sixty (60) days; and

(g) Supervision of Minors

Any breach of the obligations under Section 24.32 below.

17.2 Remedies

Upon the occurrence of an Event of Default by Tenant, City shall have the following rights and remedies in addition to all other rights and remedies available to City at Law or in equity:

(a) Terminate Lease and Recover Damages

The rights and remedies provided by California Civil Code Section 1951.2 (damages on termination for breach), including, but not limited to, the right to terminate Tenant's right to possession of the Premises and to recover the worth at the time of award of the amount by which the unpaid rent for the balance of the Term after the time of award exceeds the amount of rental loss for the same period that Tenant proves could be reasonably avoided, as computed pursuant to subsection (b) of such Section 1951.2. City's efforts to mitigate the damages caused by Tenant's breach of this Lease shall not waive City's rights to recover damages upon termination.

(b) Continue Lease and Enforce Rights

The rights and remedies provided by California Civil Code Section 1951.4 (continuation of lease after breach and abandonment), which allows City to continue this Lease in effect and to enforce all of its rights and remedies under this Lease, including the right to
recover rent as it becomes due, for so long as City does not terminate Tenant's right to possession, if Tenant has the right to sublet or assign, subject only to reasonable limitations. For purposes hereof, none of the following shall constitute a termination of Tenant's right of possession: acts of maintenance or preservation; efforts to relet the Premises or the appointment of a receiver upon City's initiative to protect its interest under this Lease; or withholding consent to an Assignment or Sublease, or terminating an Assignment or Sublease, if the withholding or termination does not violate the rights of Tenant specified in subdivision (b) of California Civil Code Section 1951.4. If City exercises its remedy under California Civil Code Section 1951.4, City may from time to time sublet the Premises or any part thereof for such term or terms (which may extend beyond the Term) and at such rent and upon such other terms as City in its sole discretion may deem advisable, with the right to make alterations and repairs to the Premises. Upon each such subletting, Tenant shall be immediately liable for payment to City of, in addition to rent due hereunder, the cost of such subletting and such alterations and repairs incurred by City and the amount, if any, by which the rent owing hereunder for the period of such subletting (to the extent such period does not exceed the Term) exceeds the amount to be paid as rent for the Premises for such period pursuant to such subletting. No action taken by City pursuant to this Section 17.2(b) shall be deemed a waiver of any default by Tenant and, notwithstanding any such subletting without termination, City may at any time thereafter elect to terminate this Lease for such previous default.

(c) Appointment of Receiver

The right to have a receiver appointed for Tenant upon application by City to take possession of the Premises and to apply any rental collected from the Premises and to exercise all other rights and remedies granted to City pursuant to this Lease.

17.3 City's Right to Cure Tenant's Defaults

If Tenant defaults in the performance of any of its obligations under this Lease, then City may at any time thereafter with three (3) days prior oral or written notice (except in the event of an emergency as determined by City), remedy such Event of Default for Tenant's account and at Tenant's expense. Tenant shall pay to City, as rent, promptly upon demand, all sums expended by City, or other costs, damages, expenses or liabilities incurred by City, including, without limitation, reasonable attorneys' fees, in remedying or attempting to remedy such Event of Default. Tenant's obligations under this Section shall survive the termination of this Lease. Nothing herein shall imply any duty of City to do any act that Tenant is obligated to perform under any provision of this Lease, and City's cure or attempted cure of Tenant's Event of Default shall not constitute a waiver of Tenant's Event of Default or any rights or remedies of City on account of such Event of Default.

18. WAIVER OF CLAIMS; INDEMNIFICATION

18.1 Waiver of Claims

(a) Tenant covenants and agrees that City shall not be responsible for or liable to Tenant for, and, to the fullest extent allowed by Law, Tenant hereby waives all rights against City and its Agents and releases City and its Agents from, any and all Losses, including, but not limited to, incidental and consequential damages, relating to any injury, accident or death of any person or loss or damage to any property, in or about the Premises or any other City property, from any cause whatsoever. Nothing herein shall relieve City from liability caused solely and directly by the gross negligence or willful misconduct of City or its Agents, but City shall not be liable under any circumstances for any consequential, incidental or punitive damages. Tenant expressly acknowledges and agrees that the financial agreements memorialized hereunder do not
take into account any potential liability of City for any consequential or incidental damages including, but not limited to, lost profits arising out of disruption to the Improvements or Tenant's uses hereunder. City would not be willing to enter into this Lease in the absence of a complete waiver of liability for consequential or incidental damages due to the acts or omissions of City or its Agents, and Tenant expressly assumes the risk with respect thereto. Accordingly, without limiting any indemnification obligations of Tenant or other waivers contained in this Lease and as a material part of the consideration for this Lease, Tenant fully RELEASES, WAIVES AND DISCHARGES forever any and all claims, demands, rights, and causes of action against City for consequential and incidental damages (including without limitation, lost profits), and covenants not to sue for such damages, City, its departments, commissions, officers, directors and employees, and all persons acting by, through or under each of them, arising out of this Lease or the uses authorized hereunder, including, without limitation, any interference with uses conducted by Tenant pursuant to this Lease regardless of the cause, and whether or not due to the negligence or gross negligence of City or its Agents.

18.2 Indemnity

(a) Tenant, on behalf of itself and its successors and assigns, shall Indemnify City and the other Indemnified Parties from and against any and all Losses incurred in connection with or arising directly or indirectly, in whole or in part, out of: (a) any accident, injury to or death of a person, including, without limitation, Agents, Licensees and Invitees of Tenant, or loss of or damage to property howsoever or by whomsoever caused, occurring in, on or about the Premises or any other City property; (b) any default by Tenant in the observation or performance of any of the terms, covenants or conditions of this Lease to be observed or performed on Tenant's part; (c) the use, occupancy, conduct or management, or manner of use, occupancy, conduct or management by Tenant, its Agents, Licensees or Invitees or any person or entity claiming through or under any of them, of the Premises or any Improvements; (d) the condition of the Premises or any Improvements; (e) any construction or other work undertaken by Tenant on or about the Premises or any Improvements whether before or during the Term of this Lease; or (f) any acts, omissions or negligence of Tenant, its Agents, Licensees or Invitees, or of any trespassers, in, on or about the Premises or any Improvements; all regardless of the active or passive negligence of, and regardless of whether liability without fault is imposed or sought to be imposed on, the Indemnified Parties, except to the extent that such Indemnity is void or otherwise unenforceable under applicable Law in effect on or validly retroactive to the date of this Lease and further except only such Losses as are caused exclusively by the gross negligence and intentional wrongful acts and omissions of the Indemnified Parties. The foregoing Indemnity shall include, without limitation, reasonable fees of attorneys, consultants and experts and related costs and City's costs of investigating any Loss. Tenant specifically acknowledges and agrees that it has an immediate and independent obligation to defend City and the other Indemnified Parties from any claim which actually or potentially falls within this indemnity provision even if such allegation is or may be groundless, fraudulent or false, which obligation arises at the time such claim is tendered to Tenant by City and continues at all times thereafter. Tenant's obligations under this Section shall survive the expiration or sooner termination of the Lease.

19. INSURANCE

19.1 Tenant's Insurance

Tenant shall procure and maintain throughout the Term of this Lease and pay the cost thereof, insurance in the following amounts and coverages:
(a) **Property Insurance**

Property insurance, on an all-risk form, including earthquake and flood, for one hundred percent (100%) of the full insurable value of the permitted Improvements, with any deductible not to exceed Ten Thousand Dollars ($10,000) each occurrence. Such insurance shall include Tenant and City as named insureds as their respective interests may appear. "Full insurable value" shall mean the actual replacement cost of the Improvements and the existing improvements; which are included in the Premises (excluding foundation and excavation costs but without deduction for physical depreciation). It shall be determined at inception and each renewal by Insurer selected and paid by Tenant and reasonably acceptable to City; provided, however, that City shall have the right, at any time, to ascertain the full insurable value at its own expense, except that in the event such full insurance value exceeds the value of the then existing amount of insurance coverage procured by Tenant, Tenant shall pay the expense of determining the full insurable value.

(b) **Commercial General Liability Insurance**

Commercial General Liability Insurance with limits not less than Two Million Dollars ($2,000,000) each occurrence combined single limit for bodily injury and property damage, including contractual liability, broad-form property damage, independent contractors, liquor liability, personal injury, products and completed operations.

(c) **Worker’s Compensation Insurance**

Worker’s Compensation Insurance, including employer's liability coverage, with limits not less than One Million Dollars ($1,000,000) each accident.

(d) **Business Automobile Liability**

Business Automobile liability insurance with limits not less than One Million Dollars ($1,000,000) each occurrence combined single limit for bodily injury and property damage, including owned and non-owned and hired vehicles as applicable, if Tenant uses or causes to be used any vehicles in connection with its use of the Premises.

(e) **Other Insurance**

City reserves the right to change amounts and types of insurance as permitted use of the property may change from time to time.

19.2 **General Requirements**

All insurance provided for under this Lease shall be effected under valid enforceable policies issued by insurers of recognized responsibility and reasonably approved by City.

(a) Should any of the required insurance be provided under a claims-made form, Tenant shall maintain such coverage continuously throughout the term hereof and, without lapse, for a period of three (3) years beyond the expiration or termination of this Lease, to the effect that, should occurrences during the Term give rise to claims made after expiration or termination of this Lease, such claims shall be covered by such claims-made policies.

(b) Should any of the required insurance be provided under a form of coverage that includes a general annual aggregate limit or provides that claims investigation or legal defense costs be included in such general annual aggregate limit, such general aggregate limit shall be double the occurrence or claims limits specified above.
(c) All liability insurance policies shall be endorsed to provide the following:

(i) Name the City and County of San Francisco, its officers, agents and employees, as additional insureds, as their respective interests may appear hereunder.

(ii) That such policies are primary insurance to any other insurance available to the additional insureds, with respect to any claims arising out of this Lease, and that insurance applies separately to each insured against whom claim is made or suit is brought, except with respect to the insurer’s limit of liability.

(iii) All policies shall be endorsed to provide thirty (30) days' advance written notice to City of cancellation or intended non-renewal, mailed to the address(es) for City set forth in the Basic Lease Information.

19.3 Proof of Insurance

Tenant shall deliver to City certificates of insurance and additional insured policy endorsements from insurers in a form satisfactory to City, evidencing the coverages required hereunder, on or before the Commencement Date, together with complete copies of the policies promptly upon City's request, and Tenant shall provide City with certificates or policies thereafter at least ten (10) days before the expiration dates of expiring policies. In the event Tenant shall fail to procure such insurance, or to deliver such policies or certificates, City may, at its option, procure the same for the account of Tenant, and the cost thereof shall be paid to City within five (5) days after delivery to Tenant of bills therefore.

19.4 Review of Insurance Requirements

Tenant and City shall periodically review the limits and types of insurance carried pursuant to this Section. If the general commercial practice in the City and County of San Francisco is to carry liability insurance in an amount or coverage materially greater than the amount or coverage then being carried by Tenant with respect to risks comparable to those associated with the Premises, then, at City's option, Tenant shall increase at its sole cost the amounts or coverages carried by Tenant to conform to such general commercial practice.

19.5 No Limitation on Indemnities

Tenant's compliance with the provisions of this Section shall in no way relieve or decrease Tenant's indemnification obligations under Sections 18.2 above and 23.2 below, or any of Tenant's other obligations or liabilities under this Lease.

19.6 Lapse of Insurance

Notwithstanding anything to the contrary in this Lease, City may elect, in City’s sole and absolute discretion, to terminate this Lease upon the lapse of any required insurance coverage by written notice to Tenant.

19.7 Tenant's Personal Property

Tenant may, at its expense, insure Tenant's Personal Property.

19.8 City's Self Insurance

Tenant acknowledges that City self-insures against property and liability risks and agrees City shall not be required to carry any insurance with respect to the Premises or otherwise.
19.9 Waiver of Subrogation

Notwithstanding anything to the contrary contained herein, to the extent permitted by their respective policies of property insurance, City and Tenant each hereby waive any right of recovery against the other party for any loss or damage sustained by such other party with respect to the Premises, whether or not such loss is caused by the fault or negligence of such other party, but only to the extent such loss or damage is actually recovered from such insurance.

20. ACCESS BY CITY

20.1 Access to Premises by City

(a) General Access

City reserves for itself and its designated Agents, the right to enter the Premises and any portion thereof at all reasonable times upon not less than forty-eight (48) hours oral or written notice to Tenant (except in the event of an emergency) for any of the following purposes:

(i) To determine whether the Premises are in good condition and to inspect the Premises (including, without limitation, soil borings or other Hazardous Material Investigations);

(ii) To determine whether Tenant is in compliance with its obligations hereunder and to cure or attempt to cure any such default in accordance with the provisions of Section 16.3 hereof;

(iii) To serve, post or keep posted any notices required or allowed under any of the provisions of this Lease;

(iv) To do any maintenance or repairs to the Premises that City has the right or the obligation, if any, to perform hereunder; and

(v) To show it to any prospective purchasers, brokers, Encumbrancers or public officials, or, during the last year of the Term of this Lease, exhibiting the Premises to prospective tenants or other occupants, and to post any "for sale" or "for lease" signs in connection therewith.

(b) Emergency Access

In the event of any emergency, as determined by City, City may, at its sole option and without notice, enter the Premises and alter or remove Tenant's Personal Property on or about the Premises. City shall have the right to use any and all means City considers appropriate to gain access to any portion of the Premises in an emergency. In such case, City shall not be responsible for any damage or injury to any such property, nor for the replacement of any such property and any such emergency entry shall not be deemed to be a forcible or unlawful entry onto or a detainer of, the Premises, or an eviction, actual or constructive, of Tenant from the Premises or any portion thereof.

(c) No Liability

City shall not be liable in any manner, and Tenant hereby waives any claims, for any inconvenience, disturbance, loss of business, nuisance or other damage arising out of City's entry onto the Premises, except damage resulting directly and exclusively from the gross negligence or willful misconduct of City or its Agents and not contributed to by the acts, omissions or negligence of Tenant, its Agents or Invitees.
(d) Minimize Disruption

City shall use its reasonable good faith efforts to conduct any activities on the Premises allowed under this Section in a manner that, to the extent practicable, will minimize any disruption to Tenant's use hereunder.

20.2 Pipeline and Utility Installations

Without limiting Section 20.1 above, City shall have the right at all times, to enter upon the Premises upon forty-eight (48) hours advance written or oral notice (except in cases of emergency as determined by City), to use, install, construct, repair, maintain, operate, replace, inspect, and remove SFPUC Facilities or any other public utility facilities. City shall bear the expense of any such activities, unless the need is occasioned by the acts, omissions or negligence of Tenant, its Agents or Invitees. City shall not be responsible for any temporary loss or disruption of Tenant’s use of the Premises occasioned by any such facility installations or other activities.

20.3 Roadways

City and its Agents shall have the right to enter upon and pass through and across the Premises on any existing or future roadways and as City otherwise determines necessary or appropriate for purposes of the SFPUC Facilities, provided that City shall use its reasonable good faith efforts to use such roadways in a manner that, to the extent practicable, will minimize any disruption to Tenant's use hereunder.

21. SURRENDER

21.1 Surrender of the Premises

Upon the Expiration Date or any earlier termination of this Lease pursuant hereto, Tenant shall surrender to City the Premises, in good condition, order and repair, free from debris and hazards, and free and clear of all liens, easements and other Encumbrances created or suffered by, through or under Tenant. On or before the Expiration Date or any earlier termination hereof, Tenant shall, at its sole cost, remove any and all of Tenant's Personal Property from the Premises and demolish and remove any and all Improvements and Alterations from the Premises (except for the building and other improvements existing on the Commencement Date and any other Improvements or Alterations that City agrees are to remain part of the Premises pursuant to the provisions of Section 8.2 above). In addition, Tenant shall, at its sole expense, repair any damage to the Premises resulting from the removal of any such items and restore the Premises to their condition immediately prior to the presence of any Improvements or Alterations. In connection therewith, Tenant shall obtain any and all necessary permits and approvals, including, without limitation, any environmental permits, and execute any manifests or other documents necessary to complete the demolition, removal or restoration work required hereunder. Tenant's obligations under this Section shall survive the Expiration Date or other termination of this Lease. Any items of Tenant's Personal Property remaining on or about the Premises after the Expiration Date of this Lease may, at City's option, be deemed abandoned and in such case City may dispose of such property in accordance with Section 1980 et seq. of the California Civil Code or in any other manner allowed by Law.

If Tenant fails to surrender the Premises to City on the Expiration Date or earlier termination of the Term as required by this Section, Tenant shall Indemnify City against all Losses resulting therefrom, including, without limitation, Losses made by a succeeding tenant resulting from Tenant's failure to surrender the Premises.
21.2 Automatic Reversion

Upon the Expiration Date or earlier termination of this Lease, the Premises shall automatically, and without further act or conveyance on the part of Tenant or City, become the property of City, free and clear of all liens and Encumbrances and without payment therefore by City and shall be surrendered to City upon such date. Upon or at any time after the date of termination of this Lease, if requested by City, Tenant shall promptly deliver to City, without charge, a quitclaim deed to the Premises suitable for recordation and any other instrument reasonably requested by City to evidence or otherwise effect the termination of Tenant's leasehold estate hereunder and to effect such transfer or vesting of title to the Premises or any permitted Improvements or Alterations that City agrees are to remain part of the Premises pursuant to the provisions of Section 8.2 above.

22. HAZARDOUS MATERIALS

22.1 No Hazardous Materials

Tenant covenants and agrees that neither Tenant nor any of its Agents or Invitees shall cause or permit any Hazardous Material to be brought upon, kept, used, stored, generated or disposed of in, on or about the Premises or any Improvements or transported to or from the Premises or any Improvements. Tenant shall immediately notify City if and when Tenant learns or has reason to believe there has been any Release of Hazardous Material in, on or about the Premises or any Improvements. City may from time to time request Tenant to provide adequate information for City to determine that any Hazardous Material permitted hereunder is being handled in compliance with all applicable Environmental Laws, and Tenant shall promptly provide all such information. Without limiting Section 20 hereof, City and its Agents shall have the right to inspect the Premises for Hazardous Material and compliance with the provisions hereof at all reasonable times upon reasonable advance oral or written notice to Tenant (except in the event of an emergency). Notwithstanding any other provision contained in this Lease, Tenant shall have the right to utilize in its operations or the operations of its licensees reasonable amounts of Hazardous Materials normally and customarily utilized in farming operations and other uses conforming to the Permitted Uses provided such Hazardous Materials are used in accordance with applicable Law. Tenant shall obtain City's written consent for any provisions in the Management Plan described herein at Section 23.1 regarding the storage of fuel for farm vehicles, and City may withhold or condition City's consent in City's reasonable discretion.

22.2 Tenant's Environmental Indemnity

If Tenant breaches any of its obligations contained in Section 22.1 above, or, if any act or omission or negligence of Tenant or any of its Agents or Invitees results in any Release of Hazardous Material in, on, under or about the Premises (including any Improvements thereon) or any other City property, without limiting Tenant's general Indemnity contained in Section 18.2 above, Tenant, on behalf of itself and its successors and assigns, shall Indemnify City and the Indemnified Parties, and each of them, from and against all Hazardous Materials Claims arising during or after the Term of this Lease and relating to such Release. The foregoing Indemnity includes, without limitation, all costs associated with the Investigation and Remediation of Hazardous Material and with the restoration of the Premises or any other City property to its prior condition including, without limitation, fines and penalties imposed by regulatory agencies, natural resource damages and losses, and revegetation of the Premises or other City property. Without limiting the foregoing, if Tenant or any of Tenant's Agents or Invitees, causes or permits the Release of any Hazardous Materials in, on, under or about the Premises or any other City property, Tenant shall, immediately, at no expense to City, take any and all appropriate actions to return the Premises or other City property affected thereby to the condition existing prior to such Release and otherwise Investigate and RemEDIATE the Release in accordance with all Environmental Laws. Tenant shall provide City with written notice of and afford City a full
opportunity to participate in any discussions with governmental regulatory agencies regarding any settlement agreement, cleanup or abatement agreement, consent decree, permit, approvals, or other compromise or proceeding involving Hazardous Material.

23. CITY COOPERATION WITH TENANT PERMITTED ACTIVITIES

23.1 Planning and Collaboration

Tenant shall develop a long term management plan for the Approved Improvements to be located on the Premises (the "Management Plan"). A portion of the Grant Payment (as defined in Section 23.2 below), not to exceed $40,000, shall be applied by Tenant against Tenant's cost of development of the Management Plan, as described in Exhibits D and E. The Permitted Uses include educational elements related to the SFPUC's supply of water to the Bay Area, water conservation, and watershed management, as set forth in the 2000 Alameda Watershed Management Plan. Tenant agrees to cooperate with the SFPUC in furthering the SFPUC's educational goals with respect to Tenant's use of the Premises. All written materials produced by Tenant for distribution to the public relating to the use of the Premises shall acknowledge the SFPUC's sponsorship of these activities, and Tenant shall submit such materials to the SFPUC's designated representative for review and approval prior to publication and distribution by Tenant.

23.2 Grant

The SFPUC shall make a one-time grant to Tenant of $65,000 (the "Grant Payment") which shall be used by Tenant solely for the purposes set forth in Exhibit E. The Grant Payment shall be due and payable on the date which is thirty (30) calendar days following the Commencement Date, provided that the SFPUC's obligation to make the Grant Payment is subject to the budget and fiscal provisions of the City’s Charter, and, accordingly, SFPUC's obligation to make the Grant Payment will accrue only after prior written authorization certified by the City’s Controller, and any amount of the City’s obligation hereunder shall not at any time exceed the amount certified for the purpose and period stated in such advance authorization. If the City does not make the Grant Payment by the date which is forty five (45) days after the Commencement Date, then at Tenant's option Tenant may terminate this Lease by written notice to City given at any time prior to the time the Grant Payment is made, and this lease shall thereupon terminate without penalty, liability or expense of any kind to City on the date which is thirty (30) days after City's receipt of Tenant's termination notice. This Section shall control against any and all other provisions of this Agreement.

24. GENERAL PROVISIONS

24.1 Notices

Except as otherwise expressly provided in this Lease, any notice given hereunder shall be effective only if in writing and given by delivering the notice in person, or by sending it first-class mail or certified mail with a return receipt requested or reliable commercial overnight courier, return receipt requested, with postage prepaid, to: (a) Tenant (i) at Tenant's address set forth in the Basic Lease Information, if sent prior to Tenant's taking possession of the Premises, or (ii) at the Premises if sent on or subsequent to Tenant's taking possession of the Premises, or (iii) at any place where Tenant or any Agent of Tenant may be found if sent subsequent to Tenant's vacating, abandoning or surrendering the Premises; or (b) City at City's address set forth in the Basic Lease Information; or (c) to such other address as either City or Tenant may designate as its new address for such purpose by notice given to the other in accordance with the provisions of this Section at least ten (10) days prior to the effective date of such change. Any
notice hereunder shall be deemed to have been given two (2) days after the date when it is mailed if sent by first-class or certified mail, one day after the date it is made if sent by commercial overnight courier, or upon the date personal delivery is made, and any refusal by either Party to accept the attempted delivery of any notice, if such attempted delivery is in compliance with this Section 25.1 and applicable Laws, shall be deemed receipt of such notice. For convenience of the Parties, copies of notices may also be given by telefacsimile to the telefacsimile number set forth in the Basic Lease Information or such other number as may be provided from time to time; however, neither party may give official or binding notice by telefacsimile. The effective time of a notice shall not be affected by the receipt, prior to receipt of the original, of a telefacsimile copy of the notice.

24.2 No Implied Waiver

No failure by City to insist upon the strict performance of any obligation of Tenant under this Lease or to exercise any right, power or remedy arising out of a breach thereof, irrespective of the length of time for which such failure continues, no acceptance of full or partial rent during the continuance of any such breach, or possession of the Premises prior to the expiration of the Term by any Agent of City, shall constitute a waiver of such breach or of City's right to demand strict compliance with such term, covenant or condition or operate as a surrender of this Lease. No express written waiver of any default or the performance of any provision hereof shall affect any other default or performance, or cover any other period of time, other than the default, performance or period of time specified in such express waiver. One or more written waivers of a default or the performance of any provision hereof shall not be deemed to be a waiver of a subsequent default or performance. The consent of City given in any instance under the terms of this Lease shall not relieve Tenant of any obligation to secure the consent of City in any other or future instance under the terms of this Lease.

24.3 Amendments

Neither this Lease nor any term or provisions hereof may be changed, waived, discharged or terminated, except by a written instrument signed by the Parties hereto.

24.4 Authority

If Tenant signs as a corporation, a partnership or a limited liability company, each of the persons executing this Lease on behalf of Tenant does hereby covenant and warrant that Tenant is a duly authorized and existing entity, that Tenant has and is qualified to do business in California, that Tenant has full right and authority to enter into this Lease, and that each and all of the persons signing on behalf of Tenant are authorized to do so. Upon City's request, Tenant shall provide City with evidence reasonably satisfactory to City confirming the foregoing representations and warranties.

24.5 Joint and Several Obligations

The word "Tenant" as used herein shall include the plural as well as the singular. If there is more than one Tenant, the obligations and liabilities under this Lease imposed on Tenant shall be joint and several.

24.6 Interpretation of Lease

The captions preceding the articles and sections of this Lease and in the table of contents have been inserted for convenience of reference only and such captions shall in no way define or limit the scope or intent of any provision of this Lease. This Lease has been negotiated at arm's length and between persons sophisticated and knowledgeable in the matters dealt with herein and shall be interpreted to achieve the intents and purposes of the Parties, without any presumption.
against the party responsible for drafting any part of this Lease. Provisions in this Lease relating
to number of days shall be calendar days, unless otherwise specified, provided that if the last day
of any period to give notice, reply to a notice or to undertake any other action occurs on a
Saturday, Sunday or a bank or City holiday, then the last day for undertaking the action or giving
or replying to the notice shall be the next succeeding business day. Use of the word "including"
or similar words shall not be construed to limit any general term, statement or other matter in this
Lease, whether or not language of non-limitation, such as "without limitation" or similar words,
are used. Unless otherwise provided herein, whenever the consent of City is required to be
obtained by Tenant hereunder, City may give or withhold such consent in its sole and absolute
discretion.

24.7 Successors and Assigns

Subject to the provisions of Section 16 hereof relating to Assignment and Subletting, the
terms, covenants and conditions contained in this Lease shall bind and inure to the benefit of
City and Tenant and, except as otherwise provided herein, their personal representatives and
successors and assigns; provided, however, that upon any sale, assignment or transfer by City
named herein (or by any subsequent landlord) of its interest in the Premises as owner or lessee,
including any transfer by operation of Law, City (or any subsequent landlord) shall be relieved
from all subsequent obligations and liabilities arising under this Lease subsequent to such sale,
assignment or transfer.

24.8 Severability

If any provision of this Lease or the application thereof to any person, entity or
circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Lease, or the
application of such provision to persons, entities or circumstances other than those as to which it
is invalid or unenforceable, shall not be affected thereby, and each other provision of this Lease
shall be valid and be enforceable to the fullest extent permitted by Law.

24.9 Governing Law

This Lease shall be construed and enforced in accordance with the Laws of the State of
California.

24.10 Entire Agreement

This instrument (including the exhibits hereto, which are made a part of this Lease)
contains the entire agreement between the Parties and supersedes all prior written or oral
negotiations, discussions, understandings and agreements. The Parties further intend that this
Lease shall constitute the complete and exclusive statement of its terms and that no extrinsic
evidence whatsoever (including prior drafts of this Lease and any changes therefrom) may be
introduced in any judicial, administrative or other legal proceeding involving this Lease. Tenant
hereby acknowledges that neither City nor City's Agents have made any representations or
warranties with respect to the Premises or this Lease except as expressly set forth herein, and no
rights, easements or licenses are or shall be acquired by Tenant by implication or otherwise
unless expressly set forth herein.

24.11 Attorneys' Fees

In the event that either City or Tenant fails to perform any of its obligations under this
Lease or in the event a dispute arises concerning the meaning or interpretation of any provision
of this Lease, the defaulting party or the non-prevailing party in such dispute, as the case may be,
shall pay the prevailing party reasonable attorneys' and experts' fees and costs, and all court costs
and other costs of action incurred by the prevailing party in connection with the prosecution or
defense of such action and enforcing or establishing its rights hereunder (whether or not such action is prosecuted to a judgment). For purposes of this Lease, reasonable attorneys' fees of the City’s Office of the City Attorney shall be based on the fees regularly charged by private attorneys with the equivalent number of years of experience in the subject matter area of the law for which the City Attorney’s services were rendered who practice in the City of San Francisco in law firms with approximately the same number of attorneys as employed by the Office of the City Attorney. The term "attorneys' fees" shall also include, without limitation, all such fees incurred with respect to appeals, mediations, arbitrations, and bankruptcy proceedings, and whether or not any action is brought with respect to the matter for which such fees were incurred. The term "costs" shall mean the costs and expenses of counsel to the parties, which may include printing, duplicating and other expenses, air freight charges, hiring of experts, and fees billed for law clerks, paralegals, and others not admitted to the bar but performing services under the supervision of an attorney.

24.12 Holding Over

Any holding over after the expiration of the Term with the express consent of City shall be construed to automatically extend the Term of this Lease on a month-to-month basis, and shall otherwise be on the terms and conditions herein specified so far as applicable (except for those pertaining to the Term). Any holding over without City’s consent shall constitute a default by Tenant and entitle City to exercise any or all of its remedies as provided herein, and shall be at a monthly rental rate equal to one hundred fifty percent (150%) of the fair market rental rate for the Premises, as reasonably established by City.

24.13 Time of Essence

Time is of the essence with respect to all provisions of this Lease in which a definite time for performance is specified.

24.14 Cumulative Remedies

All rights and remedies of either party hereto set forth in this Lease shall be cumulative, except as may otherwise be provided herein.

24.15 Survival of Indemnities

Termination of this Lease shall not affect the right of either party to enforce any and all indemnities and representations and warranties given or made to the other party under this Lease, nor shall it affect any provision of this Lease that expressly states it shall survive termination hereof. Tenant specifically acknowledges and agrees that, with respect to each of the indemnities contained in this Lease, Tenant has an immediate and independent obligation to defend City and the other Indemnified Parties from any claim which actually or potentially falls within the indemnity provision even if such allegation is or may be groundless, fraudulent or false, which obligation arises at the time such claim is tendered to Tenant by City and continues at all times thereafter.

24.16 Relationship of Parties

City is not, and none of the provisions in this Lease shall be deemed to render City, a partner in Tenant's business, or joint venturer or member in any joint enterprise with Tenant. With respect to Agents of Tenant, the SFPUC shall not be considered a joint employer of any such Agents, who shall be solely managed and controlled by Tenant. Neither party shall act as the agent of the other party in any respect hereunder, and neither party shall have any authority to commit or bind the other party without such party's consent as provided herein. This Lease is
not intended nor shall it be construed to create any third-party beneficiary rights in any third party, unless otherwise expressly provided.

24.17 Transfer by City

If City sells or otherwise transfers the Premises, City shall be released from its obligations hereunder arising on or after the date of such sale or transfer and Tenant shall look solely to the successor-in-interest to City. Upon a sale of the Premises by City, Tenant shall attorn to the purchaser or transferee, such attornment to be effective and self-operative without the execution of any further instruments on the part of the parties to this Lease. This Lease shall not be deemed to constitute any commitment by City, or create any priority or right in favor of Tenant, with regard to any future sale or other disposition of the Premises, or any portion thereof.

24.18 Recording

Tenant agrees that it shall not record this Lease nor any memorandum or short form hereof in the Official Records.

24.19 Non-Liability of City Officials, Employees and Agents

No elective or appointive board, commission, member, officer, employee or other Agent of City shall be personally liable to Tenant, its successors and assigns, in the event of any default or breach by City or for any amount which may become due to Tenant, its successors and assigns, or for any obligation of City under this Agreement.

24.20 Wages and Working Conditions

With respect to the construction of the Improvements and any Alterations, any employee performing services for Tenant shall be paid not less than the highest prevailing rate of wages, shall be subject to the same hours and working conditions, and shall receive the same benefits as in each case are provided for similar work performed in the county in which the Premises are located. Tenant shall require any contractor to provide, and shall deliver to City upon request, certified payroll reports with respect to all persons performing labor in the construction of any Improvements or Alterations to the Premises.

24.21 Non-Discrimination in City Contracts and Benefits Ordinance

(a) Covenant Not to Discriminate

In the performance of this Lease, Tenant covenants and agrees not to discriminate on the basis of the fact or perception of a person’s race, color, creed, religion, national origin, ancestry, age, sex, sexual orientation, gender identity, domestic partner status, marital status, height, weight, disability or Acquired Immune Deficiency Syndrome or HIV status (AIDS/HIV status) against any employee of, any City employee working with, or applicant for employment with Tenant, in any of Tenant’s operations within the United States, or against any person seeking accommodations, advantages, facilities, privileges, services, or membership in all business, social, or other establishments or organizations operated by Tenant.

(b) Subleases and Other Subcontracts

Tenant shall include in all Subleases and other subcontracts relating to the Premises a non-discrimination clause applicable to such Subtenant or other subcontractor in substantially the form of subsection (a) above. In addition, Tenant shall incorporate by reference in all subleases and other subcontracts the provisions of Sections 12B.2(a), 12B.2(c)-(k), and 12C.3 of the San Francisco Administrative Code and shall require all subtenants and other
subcontractors to comply with such provisions. Tenant’s failure to comply with the obligations in this subsection shall constitute a material breach of this Lease.

(c) Non-Discrimination in Benefits

Tenant does not as of the date of this Lease and will not during the Term, in any of its operations in San Francisco or where the work is being performed for the City or elsewhere within the United States, discriminate in the provision of bereavement leave, family medical leave, health benefits, membership or membership discounts, moving expenses, pension and retirement benefits or travel benefits, as well as any benefits other than the benefits specified above, between employees with domestic partners and employees with spouses, and/or between the domestic partners and spouses of such employees, where the domestic partnership has been registered with a governmental entity pursuant to state or local law authorizing such registration, subject to the conditions set forth in Section 12B.2(b) of the San Francisco Administrative Code.

(d) Condition to Lease

As a condition to this Lease, Tenant shall execute the "Chapter 12B Declaration: Nondiscrimination in Contracts and Benefits" form (Form HRC-12B-101) with supporting documentation and secure the approval of the form by the San Francisco Human Rights Commission.

(e) Incorporation of Administrative Code Provisions by Reference

The provisions of Chapters 12B and 12C of the San Francisco Administrative Code relating to non-discrimination by parties contracting for the lease of City property are incorporated in this Section by reference and made a part of this Agreement as though fully set forth herein. Tenant shall comply fully with and be bound by all of the provisions that apply to this Lease under such Chapters of the Administrative Code, including but not limited to the remedies provided in such Chapters. Without limiting the foregoing, Tenant understands that pursuant to Section 12B.2(h) of the San Francisco Administrative Code, a penalty of $50 for each person for each calendar day during which such person was discriminated against in violation of the provisions of this Lease may be assessed against Tenant and/or deducted from any payments due Tenant.

24.22 Requiring Health Benefits for Covered Employees

Unless exempt, Tenant agrees to comply fully with and be bound by all of the provisions of the Health Care Accountability Ordinance (HCAO), as set forth in San Francisco Administrative Code Chapter 12Q (Chapter 12Q), including the implementing regulations, as the same may be amended or updated from time to time. The provisions of Chapter 12Q are incorporated herein by reference and made a part of this Lease as though fully set forth herein. The text of the HCAO is currently available on the web at www.dph.sf.ca.us/HCRes/Resolutions/2004Res/HCRes102004.shtml. Capitalized terms used in this Section and not defined in this Lease shall have the meanings assigned to such terms in Chapter 12Q.

(a) For each Covered Employee Tenant shall provide the applicable health benefit set forth in Section 12Q.3 of the HCAO. If Tenant chooses to offer the health plan option, such health plan shall meet the minimum standards set forth by the San Francisco Health Commission.

(b) Notwithstanding the above, if Tenant meets the requirements of a "small business" as described in Section 12Q.3(d) of the HCAO, it shall have no obligation to comply with part (a) above.
(c) Unless excused by section (b) above, Tenant’s failure to comply with the requirements of the HCAO shall constitute a material breach by Tenant of this Lease. If, within thirty (30) days after receiving City’s written notice of a breach of this Lease for violating the HCAO, Tenant fails to cure such breach or, if such breach cannot reasonably be cured within such thirty- (30-) day period, Tenant fails to commence efforts to cure within such period, or thereafter fails diligently to pursue such cure to completion, City shall have the remedies set forth in Section 12Q.5(f)(1-5). Each of these remedies shall be exercisable individually or in combination with any other rights or remedies available to City.

(d) Unless excused by Section (b) above, any Sublease or Contract regarding services to be performed on the Premises entered into by Tenant shall require the Subtenant or Contractor and Subcontractors, as applicable, to comply with the requirements of the HCAO and shall contain contractual obligations substantially the same as those set forth in this Section. Unless excused by Section (b) above, Tenant shall notify the Purchasing Department when it enters into such a Sublease or Contract and shall certify to the Purchasing Department that it has notified the Subtenant or Contractor of the obligations under the HCAO and has imposed the requirements of the HCAO on the Subtenant or Contractor through written agreement with such Subtenant or Contractor. Unless excused by Section (b) above, Tenant shall be responsible for ensuring compliance with the HCAO by each Subtenant, Contractor and Subcontractor performing services on the Premises. If any Subtenant, Contractor or Subcontractor fails to comply, City may pursue the remedies set forth in this Section against Tenant based on the Subtenant’s, Contractor’s, or Subcontractor’s failure to comply, provided that the Contracting Department has first provided Tenant with notice and an opportunity to cure the violation.

(e) Tenant shall not discharge, reprimand, penalize, reduce the compensation of, or otherwise discriminate against, any employee for notifying City of any issue relating to the HCAO, for opposing any practice proscribed by the HCAO, for participating in any proceedings related to the HCAO, or for seeking to assert or enforce any rights under the HCAO by any lawful means.

(f) Tenant represents and warrants that it is not an entity that was set up, or is being used, for the purpose of evading the requirements of the HCAO.

(g) Tenant shall keep itself informed of the requirements of the HCAO, as they may change from time to time.

(h) Upon request, Tenant shall provide reports to City in accordance with any reporting standards promulgated by City under the HCAO, including reports on Subtenants, Contractors, and Subcontractors.

(i) Within five (5) business days after any request by City, Tenant shall provide City with access to pertinent records relating to any Tenant’s compliance with the HCAO. In addition, City and its agents may conduct random audits of Tenant at any time during the term of this Lease. Tenant agrees to cooperate with City in connection with any such audit.

24.23 Notification of Limitations on Contributions

Through its execution of this Lease, Tenant acknowledges that it is familiar with Section 1.126 of the San Francisco Campaign and Governmental Conduct Code, which prohibits any person who contracts with the City for the selling or leasing any land or building to or from the City whenever such transaction would require approval by a City elective officer or the board on which that City elective officer serves, from making any campaign contribution to the officer at any time from the commencement of negotiations for such contract until the termination of negotiations for such contract or three (3) months has elapsed from the date the contract is approved by the City elective officer, or the board on which that City elective officer serves.
24.24 No Relocation Assistance; Waiver of Claims

Tenant acknowledges that it will not be a displaced person at the time this Lease is terminated or expires by its own terms, and Tenant fully RELEASES, WAIVES AND DISCHARGES forever any and all claims, demands, rights, and causes of action (including, without limitation, consequential and incidental damages) against, and covenants not to sue, City, its departments, commissions, officers, directors and employees, and all persons acting by, through or under each of them, under any Laws, including, without limitation, any and all claims for relocation benefits or assistance from City under federal and state relocation assistance laws (including, but not limited to, California Government Code Section 7260 et seq.), except as otherwise specifically provided in this Lease with respect to a Taking.

24.25 MacBride Principles - Northern Ireland

The City and County of San Francisco urges companies doing business in Northern Ireland to move toward resolving employment inequities and encourages them to abide by the MacBride Principles as expressed in San Francisco Administrative Code Section 12F.1 et seq. The City and County of San Francisco also urges San Francisco companies to do business with corporations that abide by the MacBride Principles. Tenant acknowledges that it has read and understands the above statement of the City and County of San Francisco concerning doing business in Northern Ireland.

24.26 Conflicts of Interest

Through its execution of this Lease, Tenant acknowledges that it is familiar with the provisions of Sections 15.103 of the San Francisco Charter, Article III, Chapter 2 of the City’s Campaign and Governmental Conduct Code and Sections 87100 et seq. and Sections 1090 et seq. of the Government Code of the State of California and certifies that it does not know of any facts, which would constitute a violation of said provision, and agrees that if Tenant becomes aware of any such fact during the term of this Lease, Tenant shall immediately notify the City.

24.27 Charter Provisions

This Lease is governed by and subject to the provisions of the Charter of the City and County of San Francisco.

24.28 Tropical Hardwood and Virgin Redwood Ban

The City and County of San Francisco urges companies not to import, purchase, obtain or use for any purpose, any tropical hardwood, tropical hardwood wood product, virgin redwood, or virgin redwood wood product. Except as expressly permitted by the application of Sections 802(b) and 803(b) of the San Francisco Environment Code, Tenant shall not provide any items to the construction of the Improvements or the Alterations, or otherwise in the performance of this Lease which are tropical hardwoods, tropical hardwood wood products, virgin redwood, or virgin redwood wood products.

24.29 Tobacco Product Advertising Prohibition

Tenant acknowledges and agrees that no advertising of cigarettes or tobacco products is allowed on any real property owned by or under the control of the City, including the property, which is the subject of this Lease. This prohibition includes the placement of the name of a company producing, selling, or distributing cigarettes or tobacco products or the name of any cigarette or tobacco product in any promotion of any event or product. This prohibition does not apply to any advertisement sponsored by a state, local or nonprofit entity designed to
communicate the health hazards of cigarettes and tobacco products or to encourage people not to smoke or to stop smoking.

24.30  **Consents, Approvals, Elections and Options**

Any consent or approval required by the SFPUC, or any election or option exercisable by the SFPUC, must be given or exercised pursuant to a resolution duly passed by the SFPUC in its discretion. No consent, approval, election or option shall be effective unless evidenced by a written instrument.

24.31  **Counterparts**

This Lease may be executed in two or more counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument.

24.32  **Supervision of Minors**

(a)  **Generally.** Tenant, and any subcontractors, shall comply with California Penal Code section 11105.3 and request from the Department of Justice records of all convictions or any arrest pending adjudication involving the offenses specified in Welfare and Institution Code section 15660(a) of any person who applies for employment or volunteer position with Tenant, or any subcontractor, in which he or she would have supervisory or disciplinary power over a minor under his or her care.

Tenant shall not hire, and shall prevent its subcontractors from hiring, any person for employment or volunteer position to provide those services if that person has been convicted of any offense that was listed in former Penal Code section 11105.3 (h)(1) or 11105.3(h)(3).

If Tenant, or any of its subcontractors, hires an employee or volunteer to provide services to minors, and that employee or volunteer has been convicted of an offense specified in Penal Code section 11105.3(c), then Tenant shall comply, and cause its subcontractors to comply with that section and provide written notice to the parents or guardians of any minor who will be supervised or disciplined by the employee or volunteer not less than ten (10) days prior to the day the employee or volunteer begins his or her duties or tasks. Tenant shall provide, or cause its subcontractors to provide City with a copy of any such notice at the same time that it provides notice to any parent or guardian.

Tenant shall expressly require any of its subcontractors with supervisory or disciplinary power over a minor to comply with this section of the Lease as a condition of its contract with the subcontractor.

(b)  **Event of Default**

Tenant acknowledges and agrees that failure by Tenant or any of its subcontractors to comply with any provision of this section of the Lease shall constitute an Event of Default. Tenant further acknowledges and agrees that such Event of Default shall be grounds for the City to terminate this Lease. The remedies provided in this Section shall not limit any other remedy available to the City hereunder, or in equity or law for an Event of Default, and each remedy may be exercised individually or in combination with any other available remedy. The exercise of any remedy shall not preclude or in any way be deemed to waive any other remedy.
24.33 Disclosure

Tenant understands and agrees that under the City's Sunshine Ordinance (San Francisco Administrative Code Chapter 67) and the State Public Records Law (Gov't Code Section 6250 et seq.), apply to this Lease and any and all records, information, and materials submitted to the City in connection with this Lease. Accordingly, any and all such records, information and materials may be subject to public disclosure in accordance with the City’s Sunshine Ordinance and the State Public Records Law. Tenant hereby authorizes the City to disclose any records, information and materials submitted to the City in connection with this Lease.

[No further text this page]
NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED IN THIS LEASE, TENANT ACKNOWLEDGES AND AGREES THAT NO OFFICER OR EMPLOYEE OF CITY HAS AUTHORITY TO COMMIT CITY HERETO UNLESS AND UNTIL A RESOLUTION OF THE SFPUC AND OF THE BOARD OF SUPERVISORS SHALL HAVE BEEN DULY PASSED APPROVING THIS LEASE AND AUTHORIZING THE TRANSACTIONS CONTEMPLATED HEREBY AND THE MAYOR APPROVES THE SAME. THEREFORE, ANY OBLIGATIONS OR LIABILITIES OF CITY HEREUNDER ARE CONTINGENT UPON PASSAGE OF SUCH RESOLUTIONS, AND THIS LEASE SHALL NOT BE EFFECTIVE UNLESS AND UNTIL THE SFPUC AND THE BOARD OF SUPERVISORS APPROVE THIS LEASE, EACH IN THEIR SOLE AND ABSOLUTE DISCRETION, AND IN ACCORDANCE WITH ALL APPLICABLE LAWS.

City and Tenant have executed this Lease in triplicate as of the date first written above.

TELENT:

SUSTAINABLE AGRICULTURE EDUCATION (SAGE), a California non-profit corporation

By: [Signature]

Its: PRESIDENT

By: [Signature]

Its: [Signature]

CITY:

CITY AND COUNTY OF SAN FRANCISCO, a municipal corporation

By: [Signature]

Its: General Manager
Public Utilities Commission

AUTHORIZED BY

PUBLIC UTILITIES COMMISSION

Resolution No. 07-0045
Adopted: 3-27-07
Attested: [Signature]
Secretary
Public Utilities Commission
APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: [Signature]
Deputy City Attorney
EXHIBIT A

Legal Description of Premises

All that certain real property located in Alameda County, California, described as follows: A portion of the land owned by the City and County of San Francisco, designated by the City as Parcel #65, bounded by I-680 on the South, Paloma Way on the East and Alameda and Arroyo de le Laguna Creeks on the West and North, respectively, as shown on Drawing No. B-4826 attached to the Lease as Exhibit B. The Premises consist of approximately 18 acres of land.
EXHIBIT B

SFPUC Drawing of Premises

Working Drawing No. B-4826
(consisting of 1 page)

[Attached]
EXHIBIT C

Parcel Deeds

Original Deed from Spring Valley Water Company to City and County of San Francisco, dated March 3, 1930. Recorded in the office of the County Recorder of the County of Alameda on March 3, 1930 in Liber 2350 of Official Records at page 1. SFPUC Parcel # 65
EXHIBIT D

Permitted Uses

Three sets of activities will be permitted at the Sunol Water Temple Agricultural Park: Community Benefit Farming; Public Education, and Natural Resource Stewardship. These activities will be carried out by SAGE and its primary collaborators, SFPUC and Alameda County Resource Conservation District, with support from secondary collaborators, including University of California Cooperative Extension, Agriculture and Land-Based Training Association, and local nonprofit organizations.

An outline of these activities follows. The Management Plan, which SAGE expects to complete in Spring 2007, will provide detail on these activities, including phasing of activities, development of improvements and engagement of partners over the nine-year term of the lease agreement.

Agricultural Activities

1. One primary activity will be productive agriculture and will include the following activities:

   1.1. Soil restoration regime: deep rip (to 3’) or plow ground to aerate and facilitate water penetration and moisture; spread with compost; sow cover crop; incorporate cover crop into the soil by mowing and disking. This annual regime, not including deep rip, will continue depending on needs for soil enhancement.
   1.2. Establish beehives (away from Temple access road)
   1.3. Develop compost program on back section (away from Temple access road): compile compost materials; form compost windrows which will provide basic fertility for the entire AgPark. Utilize ‘clean green’ urban green waste as feasible.
   1.4. Establish practices to minimize soil run-off and to maximize ground water recharge. As feasible, establish research projects to measure these resource conservation services.
   1.5. Plant crops, tend, and harvest crops in seasonal rotations; add additional soil amendments as needed.
   1.6. Establish and maintain organic farming practices. Achieve organic certification within 4 years of project implementation.
   1.7. Establish a small chicken operation, assuming partnership with a local farmer or 4-H club or other person who can provide 7 day a week care
   1.8. Establish a nursery, grow plants, and provide landscape services for Hanson Materials Company, pending a fee-for-services agreement.
   1.9. Collaborate with partners (agencies, nonprofit organizations, contractors, and individuals) as needed to carry out agricultural activities described above. Farming partners will be selected based on their engagement in the public benefit goals and activities of the AgPark. Current partners include: Alameda County Resource Conservation District (RCD), UC Cooperative Extension (UCCE), Mien Farming Collaborative, Baia Nicchia, and People’s Grocery.
Additional partners that may participate include: college interns, Master Gardeners, and community volunteers.

Educational Activities

2. The Educational Program will be developed and implemented by SAGE in collaboration with various partners in order to achieve the goals listed below, involving the steps listed below, and with the allowable activities listed below:

2.1. Goals:
   • Offer a curriculum that helps a primary audience of school children understand the connection between healthy seasonal foods and stewardship of local land, water, and biodiversity resources.
   • Provide educational and interpretive opportunities that relate to water conservation and use, the filter galleries, the area’s history, agriculture, natural resources, and mining.
   • Provide youth groups, such as 4-H, Scouts, and underserved urban youth, with educational opportunities including training, employment, and special projects.
   • Provide opportunities for local community involvement in workdays, education programs, and special events.

2.2. Development and implementation of the Educational Program will be carried out by the Program Manager with support from the AgPark Advisory Committee:
   • Informed by the Education Committee as a subset of the AgPark Advisory Committee
   • Program Manager will be responsible for program development and management including staffing, scheduling, budgeting, fundraising, and reporting
   • Engaging key partners
   • Establishment and development of a Sunol AgPark Volunteer and Intern Program to assist with educational programs
   • Obtain additional funding for transporting school groups to the park

2.3. Allowable activities will include:
   • A regular schedule of school field trips
   • Subject to pre-approval by SFPUC staff liaison, hosting of public education and promotion events, including on weekends, for workdays, and for at least 1 fundraising event

Natural Resources Stewardship and Curation Activities

3. Under the direction of and in partnership with the Alameda County Resource Conservation District (ACRCD) out the following activities:
3.1. Plan and Implement Restoration of Riparian Setback Area
- develop resource management/stewardship plan for setback area, including site evaluation and survey, regulatory compliance, and outline of educational/stewardship element
- begin implementation of plan, conduct plantings and other stewardship activities, mark boundaries, signage, begin educational/stewardship element

3.2. Plan and establish Native Plant Nursery
- research prototypes including GGNRA model and others
- develop phased plan for nursery- location, facilities, activities, plant production schedule, timeline, budget, staffing, outline educational/stewardship element
- begin phased development of nursery - layout facilities, construction (as funds allow)

3.3. Restoration and Enhancement of other planted areas in and near the AgPark including around the Temple area, the persimmon orchard, plantings along the Temple access road
- plan and coordinate all aspects of this work on a fee-for-service basis

3.4. Plan and implement the Natural Resources Stewardship component of the Education Program, with activities including:
- develop riparian hike curriculum, survey hike route, develop hike materials kit
- conduct short riparian hikes and related activities as part of school field trips
- plan and conduct more extensive study hikes for youth programs and other groups

3.5. Utilize the assistance of volunteers and college interns to research, monitor and assist with development of stewardship activities.

ACRCD will continue to contribute to the planning and implementation of the AgPark program through its county-wide land conservation program. In addition, ACRCD will facilitate the acquisition of additional funding from USDA NRCS (partner agency to ACRCD) to expand implementation of stewardship and resource management activities, and secure the technical assistance of local office NRCS staff assistance in project implementation.
EXHIBIT E
Approved Improvements/Start Up and Operations Budget

Approved Improvements
The following is a detailed list of the infrastructural and site improvements that have already taken place and those that SAGE proposes to implement during the lease agreement period. The improvements described below are subject to the management plan that SAGE will complete in Spring 2007 for the Sunol AgPark.

**All structural dimensions are estimates. Structures will be built as is appropriate for the actual use and demand and will be based on dimensions recommended by USDA, UC Cooperative Extension, and other reviewed publications.**

<table>
<thead>
<tr>
<th>Sunol AgPark Infrastructure</th>
<th>Quantity</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fence:</strong> 8’ high deer fence to run perimeter of AgPark; 6 gates total—2 for equipment entry and 4 for visitor/farmer entry</td>
<td>1</td>
<td>Completed in 2006</td>
</tr>
<tr>
<td><strong>Irrigation System:</strong> 6” line from SFPUC main meter to filter (with concrete pad) to 4” line within AgPark fence with 6 small meters to 2” line to field header and connection to drip irrigation components</td>
<td>1</td>
<td>Mostly completed in 2006; Will finish line within the fence in 2007</td>
</tr>
<tr>
<td><strong>Access Roads:</strong> Packed dirt farm road within deer fence; gravel road for access near water temple to education center and native plant demonstration/interpretative walk</td>
<td>2</td>
<td>To be completed by Dec 31, 2008 per EQIP funding</td>
</tr>
<tr>
<td><strong>Greenhouses:</strong> 20’ x 50’ x 10’ hoop house, aluminum/alloy metal hoops covered in plastic; anchored with temporary concrete piers; on grade; internal benches; additional irrigation and electricity required; medium water storage tank possible; installation schedule will depend on native plant nursery and fee-for-service plant replacement program for SFPUC</td>
<td>4</td>
<td>Install 1 in 2007 (subject to funding); and no more than 2 per year in each subsequent year</td>
</tr>
<tr>
<td><strong>Shade house:</strong> 20’ x 30’ x 10’ hoop house; covered with shade cloth; internal benches;</td>
<td>1-2</td>
<td>Install 1 in 2007 (subject to funding) or with first greenhouse</td>
</tr>
<tr>
<td><strong>Packing shed/wash area/potting area:</strong> 20’ x 40’ x 8’; 2’ x 4’ posts, at 5’ centers around the perimeter; set in temporary concrete piers; horizontals (2’ x 4’”) at 4’ and 8’; no sides or temporary sides of corrugated plastic; bench tables; informally plumbed sinks; temporary</td>
<td>1-3</td>
<td>Install 1 in 2008 and 2nd or 3rd structure depending on demand and</td>
</tr>
</tbody>
</table>
gravel floor; French drain to direct water back into field; could be used for tractor/large equipment storage in winter; may include small equipment for washing (i.e. salad greens spinner)

<table>
<thead>
<tr>
<th><strong>Barn:</strong> 20’ x 50’ for storage of equipment and supplies; includes small office space (need electrical hook-up); based on USDA or UCCE recommendations</th>
<th>1</th>
<th>Install 1 in 2008 depending on funding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporary Tool Shed:</strong> small to medium portable shed (10’ x 14’) made of vinyl or metal</td>
<td>3-4 (1 per farmer)</td>
<td>Install 1 per farmer in 2007 depending on funding</td>
</tr>
<tr>
<td><strong>Temporary Cooler:</strong> 8’ x 20’ x 10’ on blocks (need electrical hook-up)</td>
<td>1-2</td>
<td>Install 1-2 in 2008 depending on funding</td>
</tr>
<tr>
<td><strong>Education/Visitor Meeting Area:</strong> lean-to (4 posts, slanted roof) open air with portable benches; could incorporate fruit-producing vines (i.e. kiwi, grapes) and natural materials</td>
<td>1</td>
<td>Install 1 in 2007 depending on funding</td>
</tr>
<tr>
<td><strong>Chicken Coop:</strong> 10’ x 40’ with outdoor run area</td>
<td>1</td>
<td>Install 1 in 2009 depending on interest, funding, management</td>
</tr>
<tr>
<td><strong>Signage:</strong> portable, temporary, free-standing signs</td>
<td>2+</td>
<td>Install 1 in 2007 and more as is necessary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sunol AgPark Improvements</strong></th>
<th><strong>Quantity</strong></th>
<th><strong>Time Period</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil Improvements:</strong> deep rip; cover crop; spring tillage and bed preparation; compost and chicken manure applications; vegetation management protocols;</td>
<td>1</td>
<td>To be completed by May 2007; other work is ongoing</td>
</tr>
<tr>
<td><strong>Compost:</strong> compost windrows (~100’ x 8’ x 6’)</td>
<td>1-3</td>
<td>Install in 2007; continual upkeep</td>
</tr>
<tr>
<td><strong>Native Plant Hedgerow and Filter Strip:</strong> 15’ strip planted along back fence near creek; dual use as interpretive walk for public; will include</td>
<td>1</td>
<td>Install by Dec 31, 2008 per EQIP funding</td>
</tr>
<tr>
<td><strong>Electrical Access/Hook-up:</strong> needed for temporary cooler, barn and included office space, greenhouses, packing shed/wash station</td>
<td>1 system; at least 3 hook-ups</td>
<td>Install just previous to infrastructure requiring electricity</td>
</tr>
<tr>
<td><strong>Potable Water and Delivery System:</strong> system to filter and deliver water suitable for human consumption and washing produce for direct market sales</td>
<td>1 incl. delivery to wash area</td>
<td>Install in 2007 or asap depending on funding</td>
</tr>
<tr>
<td>Temporary Sitting Areas: hay bales, benches, or other low-impact, portable chairs or benches</td>
<td>10</td>
<td>Install in 2007</td>
</tr>
<tr>
<td>Bathrooms: will use port-a-potty next to Water Temple</td>
<td>x</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Water Rate and One-time Payment

1. Water Rate

Payment for 2006 calendar year (first year of operation, start up only – not full build out) = $1500

Payment for remaining 8 years of the lease = $9,000* annually, which will be paid in four quarterly payments of $2250.00 by April 1st, July 1st, September 1st, and December 1st.

This annual rate assumes SAGE will not use more than 12,000 units (100 cubic feet) per year. Any volume of water used over and above this level in any one calendar year will be charged at the W-21 rate.

The estimate of annual water usage and the annual charge for water usage can be revised based on agreement by both SAGE and the SFPUC.

* Note that this annual sum is based on the W-24 non-potable rate, and assumes approximately 18 acres will be under irrigation.

2. One-Time Payment of SFPUC Funds to Support Start-Up of the Sunol AgPark

In recognition of our common goals and objectives for management of these leased lands, the SFPUC agrees to make a one-time payment to SAGE for $65,000 to support start-up costs. In summary*, these funds will support: (1) development of a long-term management plan for the Sunol AgPark, that may include a native plant nursery to support restoration efforts in the Alameda Creek watershed ($40,000); (2) infrastructure improvements, including fences and irrigation systems ($21,500); and (3) a filter strip along the edges of the leased lands to improve water quality of runoff ($3,500).

These funds will be due and payable within 30 days of the execution of this lease agreement. SAGE expects the Sunol AgPark will be self-sufficient, in terms of project management, by January 1, 2008. (Development and implementation of educational programs will continue to be grant-funded and supported by the project’s educational partners.) This one-time payment of funds in no way obligates the SFPUC to any future funding commitments in support of the Sunol AgPark.

* See Sunol AgPark Start Up and Operations Budget (2006 -7). The $65,000 will be provided from CUW257 (Watershed Protection).
## Start-up and Operations Budget

### Sunol AgPark Start Up and Operations Budget (2006-7)

<table>
<thead>
<tr>
<th>Item</th>
<th>SAGE + Partners</th>
<th>SFPUC</th>
<th>Total Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term Management Plan</td>
<td>0</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Farm Management/Operation</td>
<td>55,000</td>
<td>0</td>
<td>55,000</td>
</tr>
<tr>
<td>Infrastructure Improvements (Fences, Irrigation Systems, etc)</td>
<td>35,000</td>
<td>21,500</td>
<td>56,500</td>
</tr>
<tr>
<td>Water Usage Charges</td>
<td>9,000</td>
<td></td>
<td>9,000</td>
</tr>
<tr>
<td>Soil Improvement</td>
<td>11,000</td>
<td></td>
<td>11,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>2,000</td>
<td></td>
<td>2,000</td>
</tr>
<tr>
<td>Resources Programs (includes filter strip)</td>
<td>10,000</td>
<td>3,500</td>
<td>13,500</td>
</tr>
<tr>
<td>Education Programs</td>
<td>30,000</td>
<td></td>
<td>30,000</td>
</tr>
<tr>
<td>Organic Certification</td>
<td>4,000</td>
<td></td>
<td>4,000</td>
</tr>
<tr>
<td>AgPark Marketing and Model</td>
<td>8,000</td>
<td></td>
<td>8,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>164,000</td>
<td>65,000</td>
<td>229,000</td>
</tr>
<tr>
<td>Overhead (10%)</td>
<td></td>
<td></td>
<td>16,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>180,400</strong></td>
<td><strong>65,000</strong></td>
<td><strong>245,400</strong></td>
</tr>
</tbody>
</table>
EXHIBIT F

Form Farming License

APPROVED FARMING LICENSE

This LICENSE (the "License") is dated for reference purposes as of ___________, 200_, and is by and between SUSTAINABLE AGRICULTURE EDUCATION, California non-profit corporation ("Licensor"), and __________________ ("Licensee").

BACKGROUND

A. Licensor is the tenant under that certain lease in which the City and County of San Francisco (the "City") is the Landlord, dated for reference purposes as of April 1, 2007 (as the same may have been or may be amended, the "Lease"), for certain premises in Alameda County, California, as more particularly described in the Lease (the "Premises"), currently operated as a working farm known as the Sunol Water Temple Agricultural Park (the "Ag Park Project").

B. Licensee engages in farming operations and desires to license the use of a portion of the Premises from Licensor for farming activities consistent with the permitted uses under the Lease.

C. Licensor and Licensee now desire to enter into this License on the terms and conditions set forth more particularly below.

D. Capitalized terms used but not defined herein shall have the respective meaning given in the Lease.

NOW, THEREFORE, for good and valuable consideration the receipt and sufficiency of which are hereby acknowledged, Licensor and Licensee agree as follows:

AGREEMENT

1. The License Premises. Licensor hereby confers to Licensee a revocable, personal, non-exclusive privilege to enter upon and use a portion of the Premises shown on Exhibit 1 (the "License Premises") for the limited purpose of growing crops on the Premises. This License gives Licensee a license only and notwithstanding anything to the contrary herein, this License does not constitute a grant of any ownership, leasehold, easement or other property interest or estate whatsoever in the License Premises or Premises, or any portion thereof.

2. Term.

   (a) The term of this License shall commence on ____________, 200_, and shall end on the earlier of the following (i) thirty (30) days written termination notice by either party to the other party, or (ii) twelve (12) months after the commencement date, or (iii) the expiration or termination of the Lease. Licensor may at its sole option freely revoke this License any time without cause or liability, and without any obligation to pay
any consideration to Licensee, including without limitation, consideration for unharvested crops, or any obligation to return to Licensee any part of the License Fee or other fees. Upon any such revocation, Licensee will immediately surrender the License Premises in the condition required hereunder.

(b) In the event that crops shall be standing and unharvested at the time of termination of the term hereof, the Licensor may, in its discretion, allow the Licensee an additional period of time as may be reasonably necessary to enable the Licensee, with the exercise of reasonable due diligence, to remove such crop or crops from said portion of the Premises.

(c) This License shall terminate without any residual rights of renewal at the end of twelve (12) months, or sooner as set forth in Section 2(a) and Section 17 herein. If Licensee wishes to continue as a farmer participant on the License Premises, the Licensee shall submit a new application to the Licensor, with no reserved rights or guarantee of approval.

3. **Registration.** Upon entering into this License, Licensee will submit a registration form to the Licensor (attached hereto as Exhibit 2(a)). The form will prompt Licensee to state their goals and objectives for their participation in the Ag Park Project. Each registered user must also complete an Ag Park Release Form (attached hereto as Exhibit 2(b)), Farm Plan Form (attached hereto as Exhibit 2(c)), and Organic Systems Plan (attached hereto as Exhibit 2(d)) (collectively, the "Registration Forms"). Any additions or changes to the information presented on these Registration Forms must be submitted in writing to Licensor prior to such changes being made.

4. **License Costs and Expenses.** Licensee shall bear all costs or expenses in connection with its use of the License Premises. Commencing on the date hereof and continuing for the term of this License, Licensee shall pay specified fees to Licensor (the "License Fees"). The fees, schedule and procedures for payment to Licensor are set forth in the “Fee Schedule and Instructions”, attached hereto as Exhibit 3.

5. **Subordinate to Lease.** This License is and will remain in every manner subject and subordinate to the terms and provisions of the Lease. Any expiration or termination of the Lease shall cause an automatic termination of this License without the need for any further action on the part of Licensor or City. Licensee shall not do, or omit to do, any act that could cause a breach or default under the terms of the Lease. Licensee shall comply with the covenants regarding use of the Premises set forth in Section 7.2 of the Lease, and with City's special provisions contained in Section 24 of the Lease including without limitation, Nondiscrimination in City Contracts (Section 24.21), Health Benefits for Covered Employees (Section 24.22), Notification of Limitations on Contributions (Section 24.23), MacBride Principles (Section 24.25), Conflicts of Interest (Section 24.26), Tropical Hardwood and Virgin Redwood Ban (Section 24.28), Tobacco Product Advertising Prohibition (Section 24.29), and Supervision of Minors (Section 24.32). Notwithstanding the above, Licensee acknowledges and agrees that City is not Licensee's landlord, and City shall have no responsibility or liability for any acts or omissions of Licensor with respect to this License, the License Premises or the Premises. The City would not be willing to consent to this License without the above agreement and the releases and waivers contained in this License. Licensee acknowledges that it has received a copy of the Lease.

6. **Use.** Licensee shall use the License Premises for growing seasonal crops on the Premises only and for no other purpose, in all cases, subject to the terms of this License
and the Lease. All other uses, such as educational events, shall require the prior written approval of Licensor, and shall be conducted consistent with the provisions of the Lease.

7. **Good Husbandry.** Licensee hereby promises and agree to conduct its farming activities on the License Premises in a good and farmer-like manner in accordance with the most-approved farming practices in the vicinity. Licensee agrees to conduct its practices consistent with the U.S.D.A. National Organic Program. Licensee agrees not bring on to the License Premises any hazardous materials and Licensee will obtain prior written approval from Licensor for any crop or soil amendments not approved under the National Organic Program.

8. **Ownership or Alternation of Improvements.** Licensee shall not place, or make any alteration to, any buildings, structures, installations or other facilities on the License Premises without the prior written consent of City and Licensor, pursuant to the terms and conditions of the Lease and the Management Plan (as defined in Section 11 below) contained therein. Any permitted improvements shall become the property of Licensor unless Licensor directs them to be removed at the termination of the term.

9. **Supplies.** Licensee will provide all necessary inputs, materials, and supplies necessary to conduct their farming operations and produce their crops.

10. **Maintenance.** Licensee shall at all times maintain the License Premises in good condition, order and repair, and free from unsightly accumulations of waste or odors. Licensor and City shall have no duty whatsoever for any repair or maintenance of the License Premises.

11. **Management Plan for Premises.** Licensee acknowledges receipt of the Management Plan governing the use and operation of the Premises, including without limitation, the License Premises (the “Plan”). Licensee shall comply with all requirements regarding use of the site by farming licensees contained in the Plan and any additions thereto that Licensor may provide to Licensee in writing. Licensee acknowledges that any breach of the requirements contained in the Plan shall be a material breach under the terms of the License.

12. **As-Is Condition.** Licensee acknowledges and agrees that the License Premises are being licensed in, and the License Premises are in, its "AS IS WITH ALL FAULTS" condition, without representation or warranty of any kind, and subject to all applicable Laws. Licensee acknowledges that neither Licensor, City, nor any of their respective Agents has made any representations or warranties, express or implied concerning any aspect of the Premises or the License Premises, and any such representation or warranty is hereby disclaimed. Licensor makes no representations or promises as to the productivity or fitness of the Premises for the Licensee’s purposes.

13. **Compliance With Laws.** Licensee shall promptly, and at its sole cost and expense, comply with all present and future Laws applicable to Licensee’s use and operation of the License Premises or the Premises.

14. **No Assignment.** This License is personal to Licensee and shall not be assigned, conveyed or otherwise transferred by Licensee under any circumstances. Any attempt to assign, convey or otherwise transfer this License shall be null and void and cause the immediate termination and revocation of this License.

15. **Default.** The failure of Licensee to perform or comply with any provision of this License when such performance or compliance is required by the terms hereof shall
constitute a breach of this License. Upon any such breach, Licensor may terminate this License on three (3) days' prior written notice to Licensee. Nevertheless, in the event of any breach by Licensee, Licensor shall have all the rights and remedies available to it at Law or in equity.

16. **Insurance.** Licensee shall present evidence of public liability insurance (minimum $1,000,000.00) for Licensee and its associated subcontractors, consultants and other agents of Licensee at the time of execution of this License. Licensee’s general liability statement shall name Licensor and City as additional insureds.

17. **Waiver of Claims.** Licensee covenants and agrees that neither Licensor nor City shall be responsible for, or liable to Licensee for, and to the fullest extent allowed by Law, Licensee hereby waives all rights against Licensor, City and their respective employees, agents and contractors and releases such parties from, any and all Losses (as defined in Section 18 below), including, but not limited to, incidental and consequential damages relating to any injury, accident or death of any person or loss or damage to any property, in or about the License Premises or any other City property, from any cause whatsoever, known or unknown. In connection with the foregoing releases, Licensee acknowledges that it is familiar with Section 1542 of the California Civil Code, which reads:

> A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor.

Licensee acknowledges that the releases contained herein include all known and unknown, disclosed and undisclosed, and anticipated and unanticipated claims. Licensee realizes and acknowledges that it has agreed upon this License in light of this realization and, being fully aware of this situation, it nevertheless intends to waive the benefit of Civil Code Section 1542, or any statute or other similar law now or later in effect. The releases contained herein shall survive any termination of this License.

18. **Indemnification.** Licensee, on behalf of itself and its successors and assigns, shall indemnify, protect, defend and hold harmless forever (the "Indemnity") Licensor and City, including, but not limited to, all of their respective boards, commissions, departments, agencies and other subdivisions, including, without limitation, the City's Public Utilities Commission, and all of their respective employees, agents and contractors, and their respective heirs, legal representatives, successors and assigns, and each of them (the "Indemnified Parties") from and against any and all claims, demands, losses, liabilities, damages, liens, injuries, penalties, fines, lawsuits, judgments and awards ("Losses") incurred in connection with or arising directly or indirectly, in whole or in part, out of this License, or the entry upon, or use or occupancy of the License Premises, the Premises or any other City property by Licensee or its officers, directors, employees, agents, contractors, invitees or guests (including volunteers engaged by Licensee to engage in the Permitted Uses specified in Exhibit D to the Lease), except to the extent resulting from the gross negligence or willful misconduct of the party seeking to be indemnified. The foregoing Indemnity shall include, without limitation, reasonable fees of attorneys, consultants and experts and related costs and the costs of investigating any Loss. Licensee specifically acknowledges and agrees that it has an immediate and independent obligation to defend Licensor, City and the other Indemnified Parties from any claim which actually or potentially falls within this indemnity provision even if such
allegation is or may be groundless, fraudulent or false, and that such obligation arises at
the time such claim is tendered to Licensee by Licensor or City and continues at all times
thereafter. Licensee’s obligations under this Section shall survive the expiration or sooner
termination of this License.

19. **Surrender.** Licensee shall surrender the License Premises in good condition,
order and repair, free from hazards and clear of all debris, immediately upon the earlier of
(i) the expiration or termination of this License, and (ii) the expiration or termination of
the Lease. At such time, Licensee shall remove all of its property from the License
Premises permitted hereunder, and shall repair, at its cost, any damage to the License
Premises caused by such removal. Licensee’s obligations under this Section shall survive
any termination of this License. Licensor has absolutely no obligation to renew or
otherwise enter into a new License or other occupancy agreement with Licensee at the
expiration or termination of the Lease or this License.

20. **Notice.** Any notice given under this License shall be delivered personally (receipt
required), or sent by certified mail, return receipt requested, to the Licensee at:
______________________________________________________, or to the Licensor at:
______________________________________________________, or to such other
address as either party may designate in a written notice given in accordance with this
Section.

21. **Modifications.** Due to the unique nature of each farming operation, there may be
additional terms to be included for specific operations. Any such additional terms shall
be consistent with the Lease and Management Agreement and set forth in a separate
exhibit, which shall be attached hereto and become a part hereof. Modifications to this
License shall be in writing, with mutual consent, and subject to the provisions of the
Lease.

22. **No Relocation Assistance; Waiver of Claims.** Licensee acknowledges that it
will not be a displaced person at the time this License is terminated or expires by its own
terms, and Licensee fully RELEASES, WAIVES AND DISCHARGES forever any and
all claims, demands, rights, and causes of action (including, without limitation,
consequential and incidental damages) against, and covenants not to sue, City, its
departments, commissions, officers, directors and employees, and all persons acting by,
through or under each of them, under any present or future Laws, including, without
limitation, any and all claims for relocation benefits or assistance from City under federal
and state relocation assistance laws (including, but not limited to, California Government
Code Section 7260 et seq.). Licensee shall Indemnify City and the other Indemnified
Parties (as defined in the Lease) for any and all Losses arising out of any relocation
assistance or benefits payable to Licensee.

23. **Disclosure.** Licensee understands and agrees that under the City’s Sunshine
Ordinance (San Francisco Administrative Code Chapter 67) and the State Public Records
Law (Government Code Section 6250 et seq.), apply to this License and any and all
records, information, and materials submitted to the City in connection with this License.
Accordingly, any and all such records, information and materials may be subject to
public disclosure in accordance with the City’s Sunshine Ordinance and the State Public
Records Law. Licensee hereby authorizes the City to disclose any records, information
and materials submitted to the City in connection with this License.

24. **General Provisions.** (a) This License is binding upon and will inure to the
benefit of the successors and assigns (as approved in writing by City) of Licensor and
Licensee. (b) The parties intend that this License and the Lease shall be the final
expression of their agreement with respect to the subject matter hereof and may not be contradicted by evidence of any prior or contemporaneous oral or written agreements or understandings. (c) The invalidation of any provision of this License, or of its application to any party, by judgment or court order, shall not affect any other provision of this License or its application to any other party or circumstance, and the remaining portions of this License shall continue in full force and effect, unless enforcement of this License as invalidated would be unreasonable or grossly inequitable under all the circumstances or would frustrate the purposes of this License. (d) Captions to the sections of this License are included for convenience only and are not intended and shall not be deemed to modify or explain any of the terms of this License. (e) This License shall be governed by, and in all respects construed in accordance with, the laws of the State of California. (f) This License may be executed in two or more counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument. (g) Licensor and Licensee acknowledge and agree that the City is a third party beneficiary under this License and as such has the power to enforce the terms hereof; provided however, that Licensee and Licensor acknowledge and agree that City has no responsibilities or obligation to any party by reason of this License. (h) Licensee agrees that the venue for any civil action filed concerning Licensee's obligations under the terms of this License, the Plan, and the Lease shall be the Superior Court for the City and County of San Francisco.

IN WITNESS WHEREOF, Licensor and Licensee have executed and delivered this License as of the date first above written.

**LICENSOR:**

SUSTAINABLE AGRICULTURE EDUCATION (SAGE),
a California non-profit corporation

By: _____________________________
Name: ___________________________
Title: ___________________________

By: _____________________________
Name: ___________________________
Title: ___________________________

**LICENSEE:**

By: _____________________________
Name: ___________________________
Address: _________________________
Telephone:_______________________
EXHIBIT F(1)
Depiction of License Premises

Licensee______________________

Total land licensed by this agreement: 4 acres
Parcels licensed by this agreement: #1 and 2
Land licensed by this agreement denoted by:

Scale
1" = 235'

1 acre =

435’ x 100’ = 1 acre

Conversion
43,560 sq.ft. = 1 acre

Note: This is a depiction of the parcel distribution and does not reflect exact field size and boundaries at the AgPark site.
EXHIBIT F(2)(a)-(d)

Ag Park Registration Forms

Exhibit 2(a) Personnel Registration Form

Primary Farmer Contact Information

Name____________________________ Organization:____________________________
Address ________________________________________________________________
Phone _______________ Cell Phone ______________Email______________________
SSN#:_________________ Employer Identification #:____________________________

Insurance Information (please enclose copies of both policies)
Liability Insurance Carrier________________________ Policy #___________________
Workers Compensation Carrier_____________________ Account #_________________

List of all Personnel who will have Key Access to Sunol AgPark, (maximum of 2)

Name___________________________________________________________________
Address ________________________________________________________________
Phone ______________ Cell Phone __________________ Email___________________
SSN#:____________________________

Name___________________________________________________________________
Address ________________________________________________________________
Phone _______________ Cell Phone ________________ Email _________________
SSN#:____________________________

List of all Personnel who will be Registered Users to Sunol AgPark

Name _____________________________ Phone _________________________
Name _____________________________ Phone _________________________
Name _____________________________ Phone _________________________
Name _____________________________ Phone _________________________
Name _____________________________ Phone _________________________
Exhibit 2(b) Release Form and Code of Conduct

First name___________________________ Last name________________________

Type of participant:
Key Access User □  Registered User □  Volunteer □  Education Program visitor □

Which farm operation? ___________________________________________________
If visitor or volunteer, date of visit________________________________________

Emergency Contact Information
Name___________________________________
Relationship______________________________
Phone #1_________________________________
Phone #2_________________________________
Phone #3_________________________________

Code of Conduct
As a visitor or volunteer at the Sunol AgPark I, _______________________________, hereby confirm that I will abide by the following rules of conduct while on the site.

1. I will remain within the boundaries of the Sunol AgPark
2. I will follow the instructions of the person(s) advising me
3. I will use respectful language and tone of voice
4. I will treat my peers and advisers with respect
5. I will not use farm substances or equipment without explicit permission and advising from an adviser.

Release Form
In addition, I hereby release the Sunol AgPark, its officers, employees, agents, students, volunteers and visitors from any claim or action whatsoever for damages, loss or injury suffered by me, or any claim brought against me, arising as a result of my activities on the Sunol AgPark.

Signed_____________________________________  Date__________
If above signatory is under the age of 18, this form must be signed by signatory’s parent/guardian.

Authorized Guardian_________________________  Date__________
**Exhibit 2(c) Farm Plan**

**Please complete the following table** (attach separate page if necessary):

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Variety/Type</th>
<th>Amount/Unit Grown (acres)</th>
<th>Harvest Season</th>
<th>Estimate Production (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
Exhibit 2(d) Organic Systems Plan

Describe, or attach a description of, your organic business or plans including processing and handling activities, storage operations, and co-processors involved. □ Description attached

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Please check all that apply to your organic activities:
ο I am applying for CCOF organic grower certification
ο I/We grow crops
ο I/We grow crops in the ground
ο I/We plant seed, annual or perennial planting stock
ο I/We grow seedlings or greenhouse crops
ο I/We use compost or manure
ο I/We own the crop at harvest
ο I/We store crops

Total acres to be certified at this location: _________________

When did you begin managing this parcel: _________________

List crops grown on this parcel, with the acreage for each crop. Attach a list if necessary.

<table>
<thead>
<tr>
<th>Crop</th>
<th># of Acres</th>
<th>Crop</th>
<th># of Acres</th>
<th>Crop</th>
<th># of Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

List the land use for the last 3 years. List all materials used. Please attach a separate page if you need more space.

<table>
<thead>
<tr>
<th>Year</th>
<th>Crops or land use</th>
<th>Brand name of all fertilizers &amp; pest control substances applied</th>
<th>Application date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20__</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This year 20___

This year 20___

This year 20___

Do you produce organic seedlings, transplants or greenhouse crops?  o YES  o NO

If yes, complete the following questions:
1) Are crops grown in soil mix?  o Yes  o No, explain: __________________________
2) Location of growing facility (must be Certified Organic):
________________________________________________________________________

3) Please describe all pest control procedures (in OSP section G5.0)
4) Please list all planting mixes, fertility and disease control materials (in OSP section G5.1)

Fertility Plan

Describe your “rotation” plan. If you use cover crops, describe type and frequency.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What are the major components of your soil and/or crop fertility plan?
 o Incorporation of crop residue
 o Minded gypsum or limestone
 o Mined minerals or powders
 o Biodynamic preparations
 o Plant materials
 o Foliar fertilizers
 o Manure
 o Side dressing or drip applications
 o Crop rotation
 o Compost
 o Cover crops including green manures
 o Soil inoculants
 o Blended fertilizers
 o Other: _____________________________
List or describe tillage and cultivation practices in the order performed throughout the crop season:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Monitoring Plan

How do you monitor the effectiveness of your fertility management plan?
o Soil observation   o Crop observation   o Crop yield comparison
o Other: __________________________

How often is monitoring performed?
o daily   o weekly   o monthly   o annually   o as needed   o other: __________________________

What type of testing do you perform? (Copies of tests must be available)
o N/A, no testing performed   o Soil tests   o Tissue tests   o Microbiological tests
o Crop quality testing   o Other: __________________________

How often is testing performed?
o daily   o weekly   o monthly   o annually   o as needed   o other: __________________________

Erosion Control

What practices do you use to prevent or minimize erosion?
o No-till or permanent cover
o Strip cropping   o Leveling
o Contour farming
o Terraces
o Conservation (minimum tillage)
o Micro-irrigate
o Windbreaks
o Winter cover or cover crops
o Other: __________________________
**Pest Management**

Complete the following matrix.

<table>
<thead>
<tr>
<th>Check which strategies you use:</th>
<th>Used for which type of pests:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weeds</td>
</tr>
<tr>
<td>Crop rotation</td>
<td></td>
</tr>
<tr>
<td>Cover cropping</td>
<td></td>
</tr>
<tr>
<td>Strip cropping, interplanting, or planting mixed species</td>
<td></td>
</tr>
<tr>
<td>Trap crops</td>
<td></td>
</tr>
<tr>
<td>Crop nutrient management</td>
<td></td>
</tr>
<tr>
<td>Sanitation, cleaning up debris, nesting areas, removal of disease vectors, weed seed sources, etc.</td>
<td></td>
</tr>
<tr>
<td>Growing location</td>
<td></td>
</tr>
<tr>
<td>Timing of planting</td>
<td></td>
</tr>
<tr>
<td>Resistant varieties or rootstock</td>
<td></td>
</tr>
<tr>
<td>Remove pest by hand (hoeing, pruning, picking, vacuum)</td>
<td></td>
</tr>
<tr>
<td>Mechanical cultivation (disc, plow, harrow, rototill, etc)</td>
<td></td>
</tr>
<tr>
<td>Mowing or grazing</td>
<td></td>
</tr>
<tr>
<td>Irrigation method or management</td>
<td></td>
</tr>
<tr>
<td>Mulching with biodegradable materials</td>
<td></td>
</tr>
<tr>
<td>Plastic or synthetic mulches or solarization</td>
<td></td>
</tr>
<tr>
<td>Plant beneficial habitat areas</td>
<td></td>
</tr>
<tr>
<td>Construct predator habitat (owl nests, perches, etc)</td>
<td></td>
</tr>
<tr>
<td>Release beneficial organisms</td>
<td></td>
</tr>
<tr>
<td>Construct barriers (fences, platforms, etc)</td>
<td></td>
</tr>
<tr>
<td>Traps</td>
<td></td>
</tr>
<tr>
<td>Flaming</td>
<td></td>
</tr>
<tr>
<td>Other physical/mechanical means (describe below)</td>
<td></td>
</tr>
</tbody>
</table>
Do you use substances for controlling insects or diseases?  
- No, N/A  
- Yes, complete below

Under what conditions will you use natural or allowed synthetic materials (insecticides, fungicides, etc.) to control pests?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

List all materials, including fertility and pest management materials used.

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Brand Name</th>
<th>Reason for Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

## EXHIBIT F(3)

Fee Schedule and Instructions

Licensee_____________________________________________________ # of acres_________

### License Fees $125/acre/month paid quarterly on the first day of each quarter

<table>
<thead>
<tr>
<th>Month</th>
<th>Owed</th>
<th>Due date</th>
<th>Amt received</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
<td>January 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
<td>April 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td></td>
<td>July 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td>October 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Water Fees $75/acre/month paid quarterly on the first day of each quarter

This annual rate assumes SAGE will not use more than 12,000 units (100 cubic feet) per year. Any volume of water used over and above this level in any one calendar year will be charged at the W-21 rate and will be calculated per farm operation based on quarterly meter readings. If applicable, this will be calculated, billed, and payable by December 15.

<table>
<thead>
<tr>
<th>Month</th>
<th>Owed</th>
<th>Due date</th>
<th>Amt received</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
<td>January 1</td>
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<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
<td>April 1</td>
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</tr>
<tr>
<td>July</td>
<td></td>
<td>July 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td>October 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td>Reconciliation</td>
<td>December 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Security Deposit (refundable) $150/acre/year paid at signing of license agreement

<table>
<thead>
<tr>
<th>Owed</th>
<th>Due date</th>
<th>Amt deposited to date</th>
<th>Date</th>
<th>Amt returned</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>June 2006</td>
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</tr>
</tbody>
</table>

### Meter Deposit (refundable) $600/meter/year paid at signing of license agreement

<table>
<thead>
<tr>
<th>Owed</th>
<th>Due date</th>
<th>Amt received</th>
<th>Date</th>
<th>Amt returned</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>June 2006</td>
<td></td>
</tr>
</tbody>
</table>

| Balance | $     |
| License | $     |
| Water   | $     |
| Deposits| $     |
| Subtotal| $     |
| Total Due on X date | $     |

SAGE LEASE
SanFran-215282.1 0099820-00703
Sunol Water Temple Agricultural Park 
Management Plan

Prepared for:
San Francisco Public Utilities Commission (SFPUC), Alameda County Resource Conservation District, and other Sunol AgPark Partners and Collaborators

Prepared by:
Sustainable Agriculture Education (SAGE), www.sagecenter.org

Funded by:
San Francisco Public Utilities Commission, Columbia Foundation, and USDA Risk Management Agency

March 2008
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Purpose and Structure of Management Plan

*Purpose*
The purpose of the Sunol AgPark Management Plan is to provide a sound management, operations, and financial framework to guide the fulfillment of the Sunol AgPark vision, goals, and objectives. The Management Plan outlines the rationale and strategies for phased development of the AgPark entity over the 9-year term of the lease agreement. An additional purpose of the Plan is to provide, for all participants, a comprehensive overview of the project and a development “roadmap” so that everyone involved can both understand the goals of the project and work together to achieve their realization.

*Structure*
The Management Plan consists of ten sections that present the context, management, and operations of the AgPark through narrative, graphics, and spreadsheets. The first four sections - Vision and Goals, Existing Conditions, Master Lease Overview, and Site Plan - provide background and context for the project. The next three sections - Agricultural Management Plan, Natural Resources Management Plan, and Public Education Management Plan - provide detail about the specific strategies involved in realizing the AgPark goals for these three defining elements. The sections that follow – Management and Partnerships, Implementation Plan, and Financial Plan - integrate the three element plans as a compiled site layout, a phased timeline of activities and tasks, and an eight-year budget projection. The Appendices section is comprised of all significant supplemental documents for the project, including the Farming License Agreement, business plans for current farmers, soil test results, Setback Area Plan, and current personnel. The Master Lease with SFPUC is a core document, but is placed as the final appendix due to its length.

*Background*
The Sunol Water Temple Agricultural Park is located on 18 acres of land in the Sunol Valley owned by the San Francisco Public Utilities Commission (SFPUC). It was established in early 2006 as a partnership between the San Francisco Public Utilities Commission (SFPUC) and the nonprofit organization, Sustainable Agriculture Education (SAGE).

The Sunol AgPark was initially proposed in 2005 when SAGE presented to SFPUC an overall concept and a funding strategy to support initial operations. The SFPUC and SAGE entered into a short-term lease agreement for the AgPark in 2006 that allowed SAGE to initiate site improvements and farming activities. In March 2007, SAGE entered into a 9-year lease with SFPUC for further development and operation of the Sunol AgPark. The lease’s detailed terms and conditions include a provision for SAGE to enter into subleases, or Licenses, with farmer
tenants. To-date, three farmers have signed License Agreements and began farming activities at the AgPark. In 2008, SAGE will likely sign up several other farmers which will result in most or all AgPark land being in production.

**SFPUC and SAGE Partnership**

The San Francisco Public Utilities Commission (SFPUC) is an agency of the City and County of San Francisco that provides water, power, and wastewater services to San Francisco, and also supplies water to an additional 1.6 million residents of three Bay Area counties. The operations of the SFPUC are governed by a five-member Commission. The five Commissioners are appointed by the Mayor and serve four-year terms.

SFPUC is responsible for management of 63,000 acres of watershed lands (40,000 acres in East Bay and 23,000 in the Peninsula) and 210 miles of rights-of-way. These lands are managed by the Land and Natural Resources Division of SFPUC, which is responsible for monitoring, protecting, and restoring these lands and ecological resources. The SFPUC gives high priority to its role as the steward of these natural resources for current and future generations.

The Sunol AgPark site is located within the extensive 700 square mile Alameda Creek watershed and within the 40,000-acre area of this watershed that is under SFPUC management. The AgPark is located at the site of the historic Sunol Water Temple and is adjacent to the corporate yard used by SFPUC for its Alameda Creek watershed maintenance and operations functions. Nearby are additional SFPUC lands leased for gravel extraction, ranching, recreation, and commercial nurseries.

Sustainable Agriculture Education (SAGE) is a nonprofit organization founded in 2001 and based in Berkeley, California. SAGE has a two-fold mission: to develop urban edge agriculture as a vital urban-rural interface; and to educate and engage a diverse public with sustainable agriculture and local food systems. A major focus of SAGE is the development of a working model for Urban Edge Agricultural Parks or AgParks, detailed in SAGE’s 2005 publication, the *Urban Edge Agricultural Parks Toolkit*.

In addition to founding and managing the Sunol AgPark project, SAGE conducts studies and publishes reports to promote understanding of AgParks, participates in public forums and conferences, and collaborates with public agencies and private landowners to plan and develop AgParks throughout California.

The primary partnership between the SFPUC and SAGE at the Sunol AgPark is being supported by close collaboration with additional key organizations. These include the Agriculture and Land-Based Training Association (ALBA) and the Alameda County Resource Conservation
District (ACRCD). ALBA has been a partner with SAGE in the development of the AgPark concept since 2003 and has provided advice at every phase of the development of the Sunol AgPark. The ACRCD has advised on the natural resources stewardship elements of the Sunol AgPark since its inception. Additional important partners include the East Bay Regional Park District, farmer partners, Sunol community residents, and local nonprofit organizations.

**Funders**

Primary funders of the Sunol AgPark are the Columbia Foundation and the USDA Risk Management Agency Community Outreach and Assistance Partnership Program (USDA RMA). SFPUC provided generous support towards the production of the Management Plan and towards the establishment of basic infrastructure. Additional support to date comes from the San Francisco Foundation and contributions from individuals.

**Management Plan Team**

Consultants and advisors who have contributed to the production of the Management Plan include: Amy Evans, ACRCD; Peter Rudnick, Janet Hatano; David Katz; Brett Melone, ALBA; and Briggs Nisbet. The plan was produced under the direction of Sibella Kraus, SAGE president, with support from SAGE board members, Renee Robin, Janet Smith-Heimer, and Chuck Teller, and with participation from SAGE staff, Kasper Koczab and Alethea Marie Harper.

Special thanks to SFPUC Commissioners and to SFPUC staff who have supported the creation of the AgPark from the outset: General Manager Susan Leal; Assistant General Manager Michael Carlin; Gary Dowd, Manager Real Estate Services, Tim Ramirez, Manager Land and Natural Resources Division; and Laura Spanjian, Assistant General Manager External Affairs. As SFPUC liaison to the AgPark, Watershed Resource Specialist Tim Koopmann facilitates technical assistance on natural resource issues and connections with local services and the Sunol community.
Vision and Goals

Vision

The Sunol AgPark is envisioned as an entity that integrates sustainable agriculture, natural resource stewardship, and public education about the agricultural, natural, and cultural resources of the Sunol Valley.

Principles

The guiding principles for the Sunol Water Temple Agricultural Park strive to integrate the three primary elements of our Vision, namely: Community Benefit Farming, Natural Resource Stewardship, and Public Education. The management of the Sunol AgPark will be guided by the following principles:

• Land access and farming opportunities for multiple small farmers whose production, marketing and education activities support local food systems.
• Protection and enhancement of the natural resources of land, water, and habitat on the site and, as feasible, in the environs.
• Experiential learning opportunities for multiple audiences related to the farming operations, Alameda Creek watershed, local ecology, and the agricultural and cultural history of the area.
• Management of the AgPark as a collaborative, sustainable system that is economically viable, ecologically sound, and provides value for all participants – the farmers, the Sunol community, SFPUC and SAGE, collaborators, and Bay Area residents.
• Demonstration of the feasibility of the AgPark concept by creating a working model.

Farming, resource stewardship, and public education are all important elements in the Sunol AgPark, and each of these elements is associated with a series of goals, described below. However, the agricultural operation – a working farm - is the organizing element and focus.

Agriculture Goals

1. Establish a working farm to optimize opportunities for multiple tenants to achieve stable, safe, and profitable business enterprises within a culture of cooperation.
2. Develop farming infrastructure, technical support, and management systems that support the operations and viability of the farmer tenants
3. Develop sustainable farming operations that conserve natural resources, enhance soil fertility, and that follow organic farming practices
Natural Resource Stewardship Goals

1. Protect and enhance natural resources overall through activities integral to and integrated with the sustainable agriculture practices.
2. Work with the USDA NRCS and ACRCD to complete the Conservation Plan for the AgPark and implement the conservation practices called for in the plan according to the plan’s timetable. Implement additional resource protection practices as needed.
3. Develop and maintain the AgPark Setback Area (filter strip, grass buffer and limited use zones as approved by SFPUC) and other common areas in order to prevent negative impacts to ground water and adjacent streams from farming practices and to provide enhanced habitat for pollinators and beneficial insects.
4. Effectively organize and utilize stewardship volunteers to assist AgPark staff with the planning, installation and maintenance of the filter strip, and with monitoring, farm clean-up and other tasks as needed under the leadership of the Natural Resources Coordinator.
5. Promote and facilitate experimentation and research that supports the goals of the AgPark agriculture and natural resources components.

Public Education Goals

Over the next three years, create and implement for diverse audiences, interpretive programs which achieve the following goals.

1. Offer programs for students that foster understanding of the connection between good nutrition, local agricultural production, natural resource stewardship.
2. Engage with youth groups and underserved urban youth to offer educational opportunities, including training, internships, and special projects related to nutrition, agriculture and natural resource conservation;
3. Provide educational and interpretive opportunities for the public to learn about sustainable agriculture and natural resource conservation, water conservation and use, the regional water distribution system, and the cultural and land use history of the region;
4. Engage local communities in workdays, education programs, and on-site special events.

Management and Partnership Goals

Realization of the Agriculture, Natural Resources, and Public Education Goals, will require the fulfillment of the following Administration and Management Goals:

1. Manage the AgPark’s agriculture, natural resource stewardship, and public education elements as a collaborative, sustainable system that is economically viable, ecologically sound, and provides value for all participants, stakeholders, and the community.
2. Demonstrate of the feasibility of the AgPark concept by creating a working model.
Existing Conditions

Site Context, Physical Setting, and Land Use History

This section covers the natural and cultural geography of the AgPark and its environs.

Context Maps

Context within the San Francisco Bay Area

![Map of San Francisco Bay Area](Image credit: Google Maps, Navteq)
Physical Setting and Land Use History

The 18-acre Sunol AgPark site is located at the edge of a 250-acre flat area that makes up the southwest corner of the 1,350-acre Sunol Valley. The Valley and the small, unincorporated town of Sunol are located 13 miles due east of Fremont and the San Francisco Bay and about 10 miles south of the town of Pleasanton. The valley lies within the 36,000-acre Alameda Creek watershed area that is owned and managed by the San Francisco Public Utilities Commission. In turn this SFPUC watershed area is part of the overall 700 square mile watershed for Alameda Creek.
Historically, the region around the Sunol Valley supported various types of native grasslands, chaparral and other scrub habitats, oak woodlands, and riparian woodlands. The regional landscape around the site today is primarily dominated by agricultural land uses such as cattle ranching, as well as gravel mining and commercial nursery operations.

The area was home to a thriving Native American population prior to the arrival of colonial settlers in the 1820s. Antonio Maria Sunol and Maria Bernal Sunol received a 14,000 acre land grant in the mid 1800s, establishing Rancho El Valle de San Jose, where they found that the fertile lands provided excellent pastures for their cattle. Following the Gold Rush, former miners settled in the community and became farmers.

In 1875, the Spring Valley Water Company purchased water and land rights in the Sunol Valley to provide water to San Francisco and Oakland. They hired famed architect Willis Polk to design a water temple to honor and celebrate the water resources that support the city. The Sunol Water Temple, modeled on the Temple of Vesta in Tivoli, Italy, was completed in 1910. The inscription circling the entablature reads: "I will make the wilderness a pool of water and the dry lands springs of water [from Isaiah 41:18b]. The streams whereof shall make glad the city [from Psalms 46:4]. This 60-foot high beaux arts landmark, which is located next to the AgPark, is still a prominent feature of the Sunol Valley. However, its function is less important today than it was previously. The converging waters of Alameda Creek, Arroyo de la Laguna, and the Pleasanton Wells pour down into a tile basin at the temple bottom. At one time half of San Francisco's water supply was delivered via the extensive pipeline built by the water company; today only a small amount is diverted for local use and storage. The rest is released into Alameda Creek.

The San Francisco Water Department purchased the Spring Valley Water Company in 1930. The Water Temple, with a small adjoining park area, was a popular spot for picnics and social gatherings for many decades. However, it gradually fell into disrepair and was seriously damaged in the 1989 Loma Prieta earthquake. It was restored by the present-day San Francisco Public Utility Commission (SFPUC) in 2000, after a successful campaign by local citizens. Today, the site is open to the public only on weekdays from 9 am to 3 pm and has a handful of visitors every day.

Recreation and agriculture were the dominant industries in Sunol Valley until World War II. Recreation continues to draw visitors to the Sunol area to enjoy the 15,000-acre Sunol Regional Ohlone Wilderness Park and other nearby parks operated by the East Bay Regional Park District. The area’s population is steadily rising as housing is developed.

Intensive agriculture developed in the Sunol Valley in the early 1900's when the lands around the water temple were planted with walnut orchards. Buildings that served as a hulling shed and processing plant for walnut production are today part of the SFPUC corporation yard and
used for equipment storage. Specialty crops, including strawberries, chives, and specialty lettuce were grown from the mid-1900’s to the late 80s. Over the last several decades hay production has been the primary crop grown on the site.

Context within the Alameda Creek Watershed

Climate, Hydrology, and Landforms

The Sunol Valley enjoys a Mediterranean climate of hot dry summers and mild, rainy winters. Average annual precipitation ranges from 10 to 20 inches (AWHCP, 2006). Once every two years the Alameda area will have storms that can produce 1 - 2 inches of rain in 24 hours. Mean annual temperature is 59° to 62° F. The frost-free season is 220 to 260 days.

Alameda Creek is a year-round creek that flows through the Sunol Valley in a westerly direction from its headwaters near Mount Hamilton out to the Bay through Niles Canyon, which starts approximately 300 feet south of the site. The Arroyo de La Laguna, a tree-lined seasonal stream, is a tributary of Alameda Creek with the confluence about 400 feet from the southwest edge of the AgPark. The Arroyo runs along the western boundary of the AgPark for approximately 600 feet, with the centerline of the creek approximately 100 feet from the AgPark boundary fence. Stream flow is subsurface during a majority of the dry season, from
June to October. Sunol Valley shallow groundwater levels are 20-30 feet below the ground surface (DEIR, 1999). (AWHCP, 2006). Direction of groundwater flow is parallel to Alameda Creek (AWHCP, 2006).

The AgPark site is bounded by the SFPUC corporation yard on the north, the entrance road to the Sunol Water Temple to the east, the Sunol Water Temple and woodlands to the south, and Arroyo de La Laguna to the west. The land is basically flat, but dips a little as it narrows towards the Water Temple area. The riparian corridor between the AgPark and Arroyo de La Laguna forms a lush canopy of trees and under-story plants. A panorama of low hills surrounds the site. The Hansen gravel quarry borders the site to the east. Large tracts of undeveloped open space occupy the hilly terrain to the south and west of the AgPark; these open space lands support a variety of ecological communities including non-native grasslands, scrub, and oak woodlands.

Landforms within and near the site indicate that alluvial processes continue to erode the low hills surrounding the Sunol Valley and deposit the resulting soil in the form of small alluvial fans near the hill/valley floor interface.

**Soil Profile**

According to the soil survey (USGS Soil Survey Alameda Area) completed in 1966, the soils of the AgPark are classified as Yolo Loam (YmA). It is a Class I soil that is among the most productive agricultural soils in the world. The Yolo series consists of well drained soils on alluvial fans. In a representative profile the surface layer is medium grayish brown, neutral loam and silt loam 24 inches thick. The underlying material is darker grayish brown and brown, a neutral silt loam to a depth of 60 inches or more. It is a well-drained soil with moderate permeability, meaning that the soil is suitable for crops using irrigation. The effective rooting depth is 60 inches or more with a high water holding capacity of 10 to 12 inches. As a result of its moderate permeability and gentle slope (0 – 3%), runoff is slow, with little chance of erosion from cultivation.

**Habitat and Vegetation**

**Non-cultivated Vegetation**

Currently the herbaceous vegetation on the AgPark site, excluding cultivated crops, consists of weedy, non-native species growing along the periphery of the cultivated area. Except for a double row of coast live oak (Quercus agrifolia) trees along the northern border of the site, the site contains no trees. It appears that these trees were planted approximately 12 years ago. Each tree is surrounded by an irrigation basin, and the remnants of a solid-set irrigation system that supplied water to the trees are present.
The vegetation on the site that emerges in the absence of cultivation is typically composed of a dense cover of annual grasses and ruderal forbs adapted to colonizing and persisting in disturbed areas associated with ‘upland’ ecological conditions. The plant community is generally dominated by non-native species; however, native grasses and wildflowers are commonly present in varying densities.

**Streamside or Riparian Habitat**

There is a wide band of existing riparian vegetation on the east bank of the Arroyo del la Laguna just west of the AgPark fence. The width of the bank varies from 75-120 feet as the creek bends toward the west in the vicinity of the confluence with Alameda Creek downstream of the AgPark. The banks of the Arroyo are densely vegetated with groundcover, shrubs, vines and an overstory of trees. This riparian plant community is part of the largest intact stand of Sycamore-Alluvial Woodland in the Alameda Creek Watershed and is an important interface between aquatic and terrestrial communities (AWHCP, 2006). The riparian corridor is situated outside of, but immediately adjacent to the AgPark property, extending west from the AgPark fence, and is undisturbed except for the SFPUC graveled service road that parallels the top of the bank just on the west side of the AgPark west fence.
Master Lease Overview

On March 27, 2007 a nine-year lease for the 18-acre AgPark site was finalized between SAGE and the SFPUC. The lease is a complex legal document of forty-two pages, with an additional 29 pages of Exhibits. One Exhibit is the Approved Farming License defining the relationship between the Master Lease holder, SAGE, and each tenant farmer at the Sunol AgPark. The lease sets out in detail the legal obligations, rights, and conditions governing both lessor and lessee and sets forth the conditions to enable SAGE to enter into subleases, or Licenses, with farmer tenants on the AgPark site.

Key Provisions

- **Permitted activities** include Community Benefit Farming, Natural Resource Stewardship, and Public Education. Each of these activities is described with some level of detail in the Master Lease.
- **Rent.** No rent will be charged by SFPUC for agricultural land.
- **Irrigation water supply and rates.** Irrigation Water Rates: SFPUC will supply irrigation water to the site and charge a fixed rate annual payment for water usage of $9,000, to be paid in four equal quarterly payments. This rate is based on estimated annual usage of 27.55 acre-feet of irrigation water for the entire AgPark. In the event that more is used, additional charges will be assessed by SFPUC at a predetermined rate.
- **Site security.** SFPUC will insure overall site security. The site is inside a secure area which is fully fenced with a gate that is locked, except during weekdays from 9 am to 3 pm to allow the public access to visit the Sunol Water Temple
- **Access to site.** SAGE and farmer tenants have access to the site from sunrise to sunset.
- **Liability.** Insurance to cover property, general liability, worker compensation where required and business automobile where required, will be the responsibility of SAGE and farmer tenants as appropriate.
- **Assignment, Subletting, Rents:** SAGE has the right to license individual farm plots to farmers for renewable one-year periods. The License Agreement with farmer tenants is an exhibit to the Master Lease.
- **Farming practices.** An Integrated Pest Management Plan will be prepared by SAGE for the site; a Pesticides Prohibition is in place.
- **Prohibitions.** Prohibitions include no on-site fuel storage and no planting of trees.
- **One-time grant.** SFPUC granted initial funding to be applied toward site improvements (a fence and irrigation main line and filter) and development of a Management Plan.

In addition, SFPUC can supply, at cost, hookups for potable water and electricity. To the extent feasible, SFPUC can also assist with minor support such as supplying interim resources (porta-potty), making repairs to water supply system, and allowing use of corporation yard meeting room for management meetings.
Site Plan

Program

The diagrams on the next two pages lay out the major physical elements of the Sunol Water Temple AgPark. The first diagram covers overall layout, showing fences, gates, roads, sheds, the filter strip, and acres assigned to each farming group. The second diagram illustrates the linear dimensions of these major physical elements.

For more detail on Agriculture, Natural Resources, and Public Education, please see the diagrams included in each chapter.
Agriculture Management Plan

Introduction

The core activity of the Sunol AgPark - the agricultural operation - is a working farm that provides small farmers with access to good quality land and opportunities to develop a small business enterprise. We further characterize the agricultural operations as community-benefit farming. This means that the farmers are committed to selling their crops locally, are involved with community food systems, and agree to offer some form of public agricultural education. The farmers themselves may fit the category or under-served farmers, who are starting out, have limited resources, or are, as immigrants, adapting to a new farming culture.

To achieve the AgPark’s community-benefit farming goals, technical assistance is provided to participating farmers to guide them in developing viable farm businesses that are local serving, are in compliance with organic farming practices, and that contribute to the protection and enhancement of the AgPark’s land, water and habitat.

Background

After preliminary planning, in February 2006 the SFPUC and SAGE entered into a short-term lease agreement that allowed SAGE to initiate farming operations. The first steps were to retain a part-time farm manager, make site improvements, and promote the opportunity to interested small-scale farmers.

During the spring of 2006, SAGE collaborated with the Agriculture and Land-Based Training Association (ALBA) and California FarmLink (CFL) to develop a detailed license agreement template for prospective farmers. This agreement, cross-referenced to the short-term lease agreement between SAGE and SFPUC, specified the terms and conditions for farmer tenants as well as the responsibilities of SAGE to provide various types of support for farmer tenants. SAGE then recruited farmer participants by means of outreach through ALBA, CFL, UC Cooperative Extension, Community College Horticultural programs, and through its own network. In spring 2006, three farmer groups signed agreements for a total of six acres. These pioneering farmers, described below, have since continued and expanded their operations.

In May 2006 the perimeter game fence was completed and in June, the irrigation mainline was installed and connected to a water supply. Shortly thereafter, the first farming operations began. In the fall of 2006, SAGE retained a local farmer to deep rip the field to break up the plow pan and to plant a cover crop of bell beans. During the 2006 season, 24 varieties of crops were grown resulting in 8,000 lb of food harvested from plantings started in mid-June.
In April 2007, the farmer tenants signed new one-year license agreements with SAGE to farm a total of 10 acres. These agreements, refined from those produced during the first year, were presented as an exhibit to and cross-referenced with, the nine-year Master Lease which SAGE and SFPUC finalized in March 2007. By the end of April, the cover crop was incorporated and planting had begun. During this first full growing season, the number of crop varieties more than doubled to a total of 49 types of fruits and vegetables, and the amount of production increased to 35,600 lb of food. The produce was distributed via a wide range of channels ranging from low-income CSA to San Francisco Bay Area gourmet restaurants. In addition, the farming operation provided hands-on learning opportunities to nearly 400 youth and over 800 adults in the form of field-trips and work-days.

Current Farming Operations
The three farming operations established at the AgPark since 2006 include two Bay Area nonprofit organizations and a nurseryman and plant breeder turned organic farmer. People’s Grocery and Iu-Mien Village Farms, sponsored by the East Bay Asian Youth Center (EBAYC), initiated small farming operations as an integral component of each of their respective food distribution, social benefit, and community and economic development programs. These programs provide an opportunity to advance organizational missions related to social justice and community health. Fred Hempel, a nurseryman and plant breeder raising specialty vegetable starts, operates under the farm name of Baia Nicchia. Fred has successfully expanded his backyard tomato breeding and seedling sales programs and now farms full-time. Business plans for these farming operations are in the appendices.

In 2008, these three farming operations are cultivating a total of 13.4 acres. SAGE is also in the process of finalizing a Farming License Agreement with one or two additional farmers, who would take the 4 acres of remaining land available.

Farming License Agreement
In accordance with the terms of the Master Lease, SAGE developed a Farmer License Agreement consisting of financial terms and conditions, requirements and prohibitions for operations. The six-page License Agreement has additional Exhibits as follows: Depiction of License Premises, Registration form, Release Form and Code of Conduct form Farm Plan form, Organic Systems Plan, and Fee Schedule.

Financial terms in effect from 2006 to the present, include the following;
• Rent: $1500 per acre per year, initially paid quarterly; in 2008 paid semi-annually
• Water fee: SFPUC flat rate of $9000 per acre, divided by number of acres in production; in 2008, water fee will be ~$700 per acre per year, paid semi-annually

1 Water fee based on a flat water rate of $9000 that SFPUC is charging SAGE.
• **Security deposit**: (refundable) $150 per acre per year, paid at signing and when acreage is added
• **Meter deposit** (refundable) $600 per meter paid at signing and when meters are added

Additional key terms and conditions include:
• **Term**: One year maximum term, no automatic renewal of the license. (This provision may be changed as soon as there is a farmer who demonstrates the capacity and who has the need for a longer term.)
• **Practices**. Organic practices are required.
• **Experience**. Farmers need to either demonstrate organic farming experience or work under the guidance of a mentor.
• **Improvements**. All improvements need to be pre-approved in writing.
• **Business Plan**. New farmers are required to submit a business plan that demonstrates capacity to undertake a License Agreement.

**Layout Plan**

The diagrams on the next two pages lay out all the major agricultural elements for the Sunol Water Temple AgPark. The first diagram includes roads, structures, acres assigned to each farming group, and the filter strip. The second diagram depicts existing and proposed irrigation lines, meters, caps, and risers.

These diagrams do not cover parking for the farmer groups. Farmers are required to park within the AgPark fence; to date informal parking along the farm roads has been adequate to meet parking needs. Parking for organized educational groups is covered in the Public Education chapter.
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IRRIGATION LAYOUT PLAN
SUNOL AGPARK

IRRIGATION LINE
□ WATER METER, EXISTING
□ WATER METER, POSSIBLE LOC.
• IRRIGATION LINE - GAP
○ IRRIGATION LINE - RISER

200'
Goals, Objectives, and Action Strategies

Goal 1: Establish a working farm that optimizes opportunities for multiple tenants to achieve stable, safe, and profitable business enterprises within a culture of cooperation.

Objective 1.1: Set Master Lease terms with SFPUC that are conducive to successful small farming operations.
• Strategy 1.1.A: Request re-negotiation of the Master lease with SFPUC, as needed, to change License terms that are overly restrictive for farmers and/or that prevent them from obtaining potential operating loans available to small or beginning farmers.

Objective 1.2: Set Farmer License Agreement terms that are conducive to successful small farming operations.
• Strategy 1.2.A: Annually review and refine, as feasible, License Agreements and farming terms
• Strategy 1.2.B: Renew and updating License Agreements with existing farmers, per an established procedure and schedule

Objective 1.3: Establish a clear, transparent, and timely procedure for recruiting, responding to and screening prospective new farmers; and for orienting those invited to sign a License Agreement.
• Strategy 1.3.A: Pro-actively recruit prospective farmers to optimize the overall mix of farmers
• Strategy 1.3.B: Communicate in a timely and systematic way with recruited/inquiring farmers
• Strategy 1.3.C: Develop an effective orientation procedure and materials

Objective 1.4: Facilitate communications between farmers and between farmers and SAGE
• Strategy 1.4.A: Organize and takes notes on regular farmer communications and meetings

Objective 1.5: Actively seek and utilize guidance from adviser groups such as ALBA and CA FarmLink to support the development and refinement of procedures and protocols

Objective 1.6: Ensure that farmers understand their roles and their responsibilities for providing the funding, resources, and systems needed for farm operations and improvements, including taking the actions below:
• Strategy 1.6.A: Meet financial terms of the License Agreement.
• Strategy 1.6.B: Develop a business plan to guide farming activities. This includes developing an annual budget, identifying personnel responsible for farming and
management of their plot, crops to be grown, harvesting plans; target markets; and resources required for the venture to be successful.

- **Strategy 1.6.C**: Develop a field plan and maintain a plot log to record crops planted, and areas planned for rotation
- **Strategy 1.6.D**: Follow organic practices and maintain all record-keeping required for certification
- **Strategy 1.6.E**: Maintain sound pest management and weed management practices
- **Strategy 1.6.F**: Provide basic tools needed to farm, such as crop seed, plants and hand tools (long handled hoes of several types, shovels, harvest knives), wheelbarrows, two-wheel hand carts, wheeled flame weeder with fuel, backpack sprayers for applying foliar fertilizer, drip tape. If heavier equipment such as a tractor, truck, or van is required, it is the responsibility of the farmer to furnish it.
- **Strategy 1.6.G**: Have a food safety plan in place
- **Strategy 1.6.H**: Arrange for, or provide resources for, technical training as needed, beyond resources provided by SAGE
- **Strategy 1.6.I**: If a group, not an individual, holds the License Agreement, designate a manager or director to coordinate farming activities and to be the primary contact with SAGE, to organize regular meetings and communications with their member participants, and to ensure that all responsibilities are understood and coordinated.
- **Strategy 1.6.I**: Participate in AgPark education events, such as field days and festivals, and initiate and/or engage with public education programs for school and youth groups.

**Objective 1.7**: Carry out monitoring and evaluation

- **Strategy 1.7.A**: Conduct and compile season-end evaluations w/ farmers
- **Strategy 1.7.B**: Produce reports per requirements of funders
- **Strategy 1.7.C**: Produce an annual report for SAGE participants, partners, and stakeholders, documenting progress toward goals and new challenges and opportunities

**Goal 2: Develop farming infrastructure, technical support, and management systems that support the operations and viability of the farmer tenants**

**Objective 2.1**: Provide site administration and management, with responsibilities including:

- **Strategy 2.1.A**: Oversee site management and planning in a systematic way
- **Strategy 2.1.B**: Ensure that all legal, safety and health issues are properly addressed, including development of a food safety plan
- **Strategy 2.1.C**: Coordinate communications with SFPUC and between partners
- **Strategy 2.1.D**: Organize and convene Sunol AgPark Farmer Advisory Committee.

**Objective 2.2**: Develop, as funding permits, and manage improvements

- **Strategy 2.2.A**: Construct a small on-site management and welcome shed
- **Strategy 2.2.B**: Provide or support construction of tool sheds with shade areas for
each farmer

- Strategy 2.2.C: Through SFPUC, arrange for hook-ups for potable water and electricity, and made road improvements
- Strategy 2.2.D: Manage, plan up-keep on, and repair as needed, all infrastructure improvements, including the fence, irrigation systems, sheds, utilities, and roads
- Strategy 2.2.A: Contract with service providers as needed for maintenance of improvements.

Objective 2.3: Provide technical assistance for the farmers

- Strategy 2.3.A: Support the production of business plans, and implementation in field planning and market planning; initial support of 5-15 hours per farmer in 2008, will decrease in subsequent years
- Strategy 2.3.B: Provide limited technical assistance and ‘trouble-shooting’ support for field planning and marketing, ~3 days per week during the growing season in 2008. Support will lessen over time.
- Strategy 2.3.C: Coordinate, and fund as feasible, other types of specific technical support needed by the farmers

Objective 2.4: Establish protocols for mutual farmer-SAGE accountability and redress of grievances

**Goal 3: Develop sustainable farming operations that conserve natural resources, enhance soil fertility, and that follow organic farming practices**

Objective 3.1: Formulate and implement a multi-year soil fertility management plan with farmer partners.

- Strategy 3.1.A: Conduct annual soil testing for all farm plots; advise farmers on managing inputs to address soil fertility as indicated by test results
- Strategy 3.1.B: Establish relationships with fertility input suppliers that can service the site; encourage and oversee coordinated purchase and application of materials. Each farmer is required to bear costs for and/or manage directly the application of fertility materials such as compost or composted animal manures, foliar feeds, and other fertility materials to ensure that soil fertility is maintained and improved.

Objective 3.2: Oversee transition to and maintenance of certifiable organic practices

- Establish timeline, tasks, and responsibilities, and provide sufficient support, for all farmers to achieve and maintain certifiable organic practices on their plots.

Objective 3.3: Initiate farmers program with pest management best practice guidelines
Strategy 3.3.A: Priorities include timely management of bindweed and Bermuda grass

Objective 3.4: Establish links to Natural Resources and Public Education objectives and action strategies.

**Challenges and Lessons Learned**

There are a number of challenges in developing the agricultural operations. This is a pilot project for SAGE and there are no similar models to draw from. The project has experienced advisors but no template to follow in establishing the multiple terms, conditions, procedures, and protocols involved in the development and management of the agricultural operations for multiple farmer tenants. In essence, SAGE is learning the difference between an abstract model and a working pilot.

- **Farmers involved have less experience than anticipated.** The farmers attracted to and now engaged in the AgPark have less farming experience, including conversance with organic practices and marketing experience, than was anticipated in the original model for this project.
- **Addition technical support and management time needed.** Sunol SAGE has had to hybridize the AgPark model to incorporate more management time both on-site and administrative, and more types of technical assistance needed by beginning farmers. This technical support is being provided by the part-time contracted farm manager and by ALBA.
- **More management required has meant fewer resources for improvements.** The original plan to provide or subsidize tool-sheds and possibly greenhouses for farmers needed to be scaled back and the timeline for completing AgPark signage got pushed back a year to 2008.
- **License and water fees may be too restrictive.** License fees of $1500 per acre and water fees of $900/acre in 2007 and $600/acre in 2008, may need to be lowered once the AgPark operations are stabilized in order for farmers to be competitive.
- **Limited license term likely to impede improvements by farmers.** The SFPUC Master Lease limits Farming License terms to renewable, one year terms. This restriction was likely wise in the start-up years, but may need to be changed once tenants stabilize, in order to facilitate their multi-year investment.
- **Success of the individual farmers is interdependent with the success of the AgPark overall.** A primary challenge facing the AgPark in realizing its vision and goals is that the behavior and success of individual farmer tenants will have a significant impact on whether or not the AgPark as an entity achieves its vision and goals. SAGE cannot control the success of its farmer tenants. However, the definition of clear expectations, roles and responsibilities for all parties involved; close collaboration in the implementation of the Management Plan; and oversight for the farmers’ business plans, will support a
cooperative working environment conducive to achieving the goals of the AgPark and of the individual farmers.

The Management Plan aims to provide a road map that address these challenges and lessons learned to date and to foresee and forestall other challenges that may arise in the future.

Protocols

**Soil Management**

The management approach employed at the AgPark adheres to good sustainable agriculture and organic farming practices. The guiding principle is to "feed the soil, not the crop". This means that the soil is the main medium for crop nutrients and that nutrients are held in the soil and become available to the crop plants through natural processes as the plants grow. Effort is made to enhance soil organic matter content and overall fertility using cover crops, compost, composted animal manures, and natural rock minerals, as needed to supply certain nutrients. Occasionally, specialized fertility materials such as seaweed and fish fertilizers, blood meal, guano, and other concentrated sources of nitrogen and micronutrients are applied at planting or as foliar sprays to meet plant growth needs in the near term.

Because organic matter in soil enhances water and nutrient holding capacity and improves soil structure, managing to optimize soil organic matter can enhance productivity and environmental quality, and can reduce the severity and impacts of natural phenomena, such as drought, atmospheric events, and disease. As a potential added benefit, increasing soil organic matter levels can reduce atmospheric CO2 levels that contribute to climate change.

In addition to following the soil fertility guidelines above, the following guiding principles will be followed to insure proper conservation of the soil resource at the AgPark:

- Use of heavy equipment and vehicles will be avoided when soil contains moisture levels that will exacerbate soil compaction.
- All infrastructure such as buildings and roads will be sited and developed to minimize loss of soil areas to non-crop producing functions.
- Every effort will be made to prevent incidental contamination of soils with gravel, remnant drip irrigation tubing, leaking fluids from vehicles and equipment, and any sort of trash or waste material.
- As needed, deep ripping will be used to break up the compacted layer, called "plow pan" that develops just under the layer of soil that is disturbed by normal annual cultivation, by using rototillers, moldboard plow, or various types of harrows.
- Soil tests will be conducted annually to determine nutrient and organic matter levels so that practices can be adjusted to ensure continued high fertility and soil improvement.
Pest Management

Pest management, including weeds, insects, and vertebrate pests, will conform to National Standards on Organic Agricultural Production and Handling, as administered by the U.S.D.A. Since, it includes an integrated pest management component, the Organic Systems Plan required as part of organic certification will suffice for the Integrated Pest Management Plan required under the terms of the Master Lease with SFPUC.

Invasive, exotic weeds are a special problem at the park as they exhibit the ability to quickly colonize disturbed or open soil areas, which is the prevailing condition within the agricultural operations at the site. In addition, each of these plant pests do not have natural enemies present that can help control their populations. The two weed plants that are currently established and spreading at the site are Bermuda grass and bindweed.

The major emphasis on pest management at the AgPark is placed on prevention through the use of cultural and biological control methods. Careful attention to crop rotation and crop residue incorporation will help prevent population buildup. If pest problems emerge, the farm manager will encourage prompt action by farmers before problems reach serious damaging levels, as pests are more effectively controlled when their populations are low.

Cultural controls include timing of planting and harvest of crops, using trap crops where appropriate, and providing optimum growing conditions for crops so that they can withstand insect feeding and can out-compete weeds. Good crop plant nutrition, based on well managed soil fertility will result in rapidly growing plants that are relatively stress free, making them more resistant to damage from pests.

Maintaining habitat for beneficial insects will also augment pest management. The insectary border and the filter strip that will be established and managed by SAGE at the AgPark (see Natural Resource Section for detailed description) will be key resources in this regard.

Organically acceptable chemical controls such as soaps, oils, pyrethrins, BT, and sulfur may be used, subject to the organic standards mentioned above. Other pest management techniques can include the introduction of biocontrol agents and mechanical control approaches such as floating row covers used as pest barriers.

AgPark staff will plan control measures and insure that proper timing and implementation occurs. Farmers with little pest management experience need to receive pest management information and training. To ensure successful implementation, relatively in-expensive management tools such as a wheel mounted flame weeder, wheel cultivator, and gopher traps, could be initially provided by the AgPark along with farmer training in their use. Over time, the farmers can acquire additional equipment for their own use.
**Water Resource Management**

The primary water on the site is the supply of irrigation water delivered by SFPUC via pipeline. This water is derived from various surface storage facilities operated by SFPUC in the region. It is high quality irrigation water that has not been treated to make it suitable as a potable water supply. SFPUC is planning to deliver a supply of potable water to the site in 2008.

Irrigation water is delivered to growing crops using a drip irrigation system that applies water on the soil surface in close proximity to the crop rows. Drip tubing/tape is the primary emitter system used.

Given the proximity of Arroyo de La Laguna creek to the west of the site, and the gentle slope of the land to the creek, there is a possibility of potential contamination of ground water that could arise if large amount of fertilizer with soluble components was used in conjunction with substantial irrigation. Under current practices and soil management guidelines being followed, this is a very remote possibility. In addition, some agricultural activities will be restricted in the area adjacent to the creek and the vegetative filter strip (referenced above) will reduce sediment and surface water movement into the riparian zone outside the fence.

Any waste water flows produced, such as drain water from washing crops or hand washing, will be disposed using approved methods of below ground drainage, such as a leachline. Drain water disposal will not occur within the setback zone in proximity of the creek. No strong cleaners or sources of contamination will be introduced into the drain water system.

**Farmer Qualifications**

The Sunol AgPark encourages the participation of farmers with the following qualifications:

- Experience with farming on a small scale and using organic practices
- Experience with direct marketing and engaging with local food systems
- Interest in cooperating with the other AgPark farmers
- Interest in and ability to actively contribute to the development of the AgPark model
- Willingness to participate in the public education programs; with experience preferable
- Overall, a good fit with the mix of current farmers.

Due to the fact that plots at the AgPark are limited, SAGE will focus on proactively recruiting new farmers as space is available.

**Admission of New Farmers**

From 2008 forward, admission of new farmers is a four step part process.

- People inquiring about possible participation in the AgPark, or people solicited by SAGE, are sent a 1-page application form, are encouraged to visit the site and talk with the existing farmers, and talk with SAGE staff.
- Depending on factors including the experience and needs of the prospective farmer and
his/her fit in the current mix of farmers, SAGE either encourages submission of a business plan or informs the applicant about the reason(s) why he/she did not qualify to become a tenant at the Sunol AgPark.

- The business plan is reviewed by SAGE staff and the Agricultural Advisory Committee and comments are sent to the applicant. Applicant must revise the plan based on feedback and resubmit.
- Following a final review process, the applicant is either invited to participate within certain set terms, or is informed that they will not be invited at this time.

**Revising Farmer License Agreement**

SAGE and the Agricultural Advisory Committee will review all terms and conditions in the Farmer License Agreement on an annual basis. This will be done at the end of the calendar year which is also the end of the growing season and the end of the one-year license term. Every effort will be made to address problematic issues to the extent feasible within the terms of the Master Lease with SFPUC and within SAGE’s capacity. Primary issues are likely to be license fees, water fees, and mutual roles and responsibilities of the farmers and SAGE.

**Renewing Farmer License Agreement**

Farmer License Agreements are expected to be automatically renewed providing that all terms and conditions have been met.

**Responding to Grievances**

In the event that a dispute occurs between two or more farmer tenants, SAGE will only act as mediator if resolution cannot be achieved between the tenants themselves. If a resolution cannot be reached between the tenants, ALBA will endeavor to seek input from all interested parties, including the Advisory Committee, but reserves the right to take unilateral action to resolve the issue. All civil laws and ordinances are applicable at the AgPark and will be pursued to the fullest extent of the law through local authorities. Actions found or suspected to be against local laws will be reported as criminal activity and AgPark license privileges for the farmer(s) involved will be revoked until resolution is achieved.

In the event that a dispute or grievance arises between SAGE and farmer tenant(s), the tenant(s) must submit in writing a description of the problem and at least two suggest alternatives to resolve the issue. SAGE will seek input from the Advisory Committee and respond in writing within 14 days, with a suggested course of action to resolve the issue. In the event that a mutually agreeable resolution cannot be reached, SAGE and farmer tenants will equally share the cost of mediation in an attempt to reach resolution. In the event mediation is not successful, legally binding arbitration will be pursued, with the costs shared equally among all parties.
Infrastructure

SAGE provides the following infrastructure:
- Game fence with secure gates
- Pressurized irrigation mainline, metered for each farm operation
- Design for tool shed and shade area for each farm operation (and structures if feasible)
- Central management shed and meeting area. This area will have potable water in 2008.
- Port-a-potties, until/unless more permanent facilities can be established.

Staffing

SAGE is developing a position for a Sunol AgPark Education and Site Director. This position will be filled starting in 2009 pending the commitment of multi-year funding. In the interim, SAGE has a contract Site and Farm Manager position in place. This contract position primarily has on-site responsibilities, with considerable planning and administrative support from SAGE staff. Peter Rudnick, an experienced farmer, who has overseen the site development and who has advised the farmer tenants since the inception of the AgPark, will continue in this contract position for 2008.
Natural Resources Management Plan

Introduction

The Natural Resources Management Plan outlines goals, objectives and action strategies to ensure that AgPark natural resources will be protected and sustained. Sustainable management of site’s natural resources is synergistic with the sustainable agricultural practices followed on the site. In an agro-ecosystem, nurturing and careful management of natural resources makes the agriculture more productive over time. In turn, the ecological complexity of organic farming increases the stability of the overall ecosystem.

Background

As described in detail in the Existing Conditions section of this plan, the setting of the AgPark is ideal for farming. The land features Class 1 soils on nearly level terrain, high quality water with excellent delivery, a climate conducive to year-round cropping, all within close proximity to the urban centers of the East Bay. In addition, one of the most valuable and scenic elements of the AgPark setting is the location of the farm adjacent to the banks of the Arroyo de la Laguna-where the mature, layered, riparian forest and shaded creek supports a rich array of wildlife.

The natural resources that form the backbone of the AgPark- prime soil, nurturing climate, quality surface water and groundwater, natural and introduced vegetation, wildlife, will be protected and enhanced through various mechanisms, outlined in this section of the management plan. In addition, the previous Agriculture Element of this plan describes the sustainable farm practices foster the protection of natural resources.

The AgPark is planning a number of conservation practices to protect and enhance the soils, vegetation and water resources at the site. These are being funded in part by the USDA Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP). A Conservation Plan for the AgPark, which will be completed in 2008, outlines the farm’s natural resources that are considered during the planning process, and which includes detailed recommendations and specifications for conservation practices. Additional resource protection activities will also be undertaken as needed when new enterprises materialize at the AgPark, such as the potential native plant nursery. These conservation practices include:

**EQIP funded practices**

- **Filter Strip:** A 15’ wide by 800’ long strip of land just inside the west fence that will be primarily grass that will trap and filter soil particles that are carried there by runoff from the upslope farmland. The filter strip will contain a row of small trees, shrubs, and forbs that will attract and support pollinators and beneficial insects- these plants will be a mix of
natives, perennial herbs and other useful plants. Nest boxes and perches for birds will be located in the strip as appropriate. A meandering path will weave through the plantings with information on the use and value of the plants to the farm and wildlife.

- **Grass Buffer:** A 15’ wide strip of grass and wildflowers that is situated adjacent to and just east of the filter strip. This is a continuation of the filter strip and will also trap and filter particles and infiltrate runoff. It is mowed occasionally, not cultivated, and is reseeded as necessary to maintain a dense groundcover.

- **Limited Use Zone:** A designated 30’ wide strip of farmland adjacent to and immediately east of the grass buffer in which organic farming is allowed, but other uses that could contribute excess nutrients or runoff are not allowed.

- **Cover crop:** Annual seeding of 18 acres of the farm with a legume (’06 and ’07 were bell beans) in order to reduce erosion, add organic material and restore nitrogen to the soil; seeded in late fall, disked in just before spring planting begins.

- **Road surfacing:** Funding to improve the permanent road surfaces to reduce erosion, i.e., by application of gravel to roadbed

Additional conservation measures -

- **Other insectary plantings:** Additional permanent plantings may be undertaken along the east fence and north fence; seasonal insectary planting strips may be incorporated into the crop rotations.

- **Livestock enclosure filter strips:** Grass filter strips 2’-4’ wide may be installed and maintained on the down-slope side(s) of pens

- **Compost piles or windrows:** Piles that contain manures are covered in winter

- **Grass strip.** -5’ wide strip of grass along the west fence south of the filter strip

It is envisioned that SAGE staff, Natural Resource Sub-Committee, volunteers and other partners will collaborate effectively to carry out the conservation practices and other land protection measures that will result in a vigorous farming enterprise and a fully protected farm environment. Therefore, objectives and action strategies are included which indicate the process (normally who, when) by which the natural resources conservation activities will be implemented.
Layout Plan

The layout plan that follows depicts the location and extent of the conservation practices, including the filter strip, grass buffer, limited use zone, insectary plantings, grass strip, as well as natural site features such as slope, and water and drainage features.

For more detail on the filter strip, grass buffers, and limited use zone, please see the appendices.
Goals, Objectives, and Action Strategies

Goal 1: Protect and enhance natural resources overall through activities integral to and integrated with the sustainable agriculture practices.

Objective 1.1 AgPark Advisory Committee has a role in monitoring natural resources protection
• Strategy 1.1.A: AgPark Advisory Committee assesses quarterly the upcoming farm operations and suggests steps to address any potential impacts in a memo to follow one week after the advisory committee meeting.
• Strategy 1.1.B: AgPark Advisory Committee suggests to SAGE when additional research or actions are necessary to ensure natural resource protection; SAGE provides written response with actions within 2 weeks or sooner if urgent.

Objective 1.2 Natural Resources Coordinator (2-4 hours/wk) monitors natural resources protection activities
• Strategy 1.2.A: SAGE identifies party (Natural Resources Coordinator or Site Manager) to be responsible for monitoring natural resources protection activities and reporting to Advisory Committee quarterly
• Strategy 1.2.B: Natural Resources Coordinator finds, trains and organizes work of volunteers

Objective 1.3 Conduct routine photo monitoring of natural resource conditions as they relate to land management practices.
• Strategy 1.3.A: Advisory Committee assigns staff or volunteers to monitor conditions
• Strategy 1.3.B: Develop system for documentation and files at SAGE for storing documents
• Strategy 1.3.C: Document natural resource conditions

Objective 1.4 Provide natural resources information to AgPark participants
• Strategy 1.4.A: Provide natural resources information to farmers as needed
• Strategy 1.4.B: Provide natural resources information to those conducting education programs at the AgPark

Goal 2: Work with the USDA NRCS and ACRCD to complete the Conservation Plan for the AgPark and implement the conservation practices called for in the plan according to the plan’s timetable. Implement additional resource protection practices as needed.

Objective 2.1 Conservation Plan completion and implementation
• Strategy 2.1.A: AgPark Advisory Committee coordinates with USDA NRCS and ACRCD to assure the development of a complete plan by June 2008.
• Strategy 2.1.B: AgPark Advisory Committee reviews progress quarterly on implementation
Objective 2.2 Demonstrate the appropriate application and implementation of practices (as detailed in Conservation Plan)

- Strategy 2.2.A: Demonstrate composting beginning 2008: cover compost piles during winter months to avoid saturation of piles and leaching of nutrients.
- Strategy 2.2.B: Demonstrate cover cropping beginning Fall 2006; plant in late Fall ideally just before rainy season begins.
- Strategy 2.2.C: Demonstrate filter strip/hedgerow/insectary plantings beginning Fall 2007; reseed annually to maintain stem density, continue to plant native plants and others to increase habitat for pollinators and beneficial insects.
- Strategy 2.2.D: Demonstrate water use efficiency by irrigating plantings and crops with drip irrigation or other water-saving techniques.
- Strategy 2.2.E: Demonstrate use of IPM practices per the Organic Farming Systems Plan.

Objective 2.3 Maintain the “grass strip” along central and south portion of West fence.

- Strategy 2.3.A: Mow and otherwise maintain the 5’ wide “grass strip” as necessary in dry months to reduce the fuel load and to inhibit weed growth.

Objective 2.4 Ensure that livestock pens have a grass filter strip.

- Strategy 2.4.A: Livestock pens shall have a 3-5’ wide strip of grass on the down-slope side, and pens will be cleaned of manure on a regular basis. Mow and otherwise maintain the grass filter strip as necessary to maintain a dense vegetative cover and to inhibit weed growth. Pens not allowed in the setback area.

Objective 2.5 Ensure that compost piles are covered in winter months.

- Strategy 2.5.A: Provide information to farmers.
- Strategy 2.5.B: Provide tarp to farmers for trial.

Objective 2.6 Keep the AgPark grounds trash-free and maintain public facilities (e.g. restrooms) and equipment storage/work areas in an environmentally benign condition.

- Strategy 2.6.A: See tasks of the natural resources coordinator and farm manager; volunteers.
- Strategy 2.6.B: SAGE staff and AgPark Advisory Committee coordinate to ensure that the AgPark environment is maintained trash and pollutant-free. Monthly clean ups and trash/recycling hauling- tasks assigned.
- Strategy 2.6.C: AgPark sanitary facilities installed and maintained by SAGE staff or other designated party as frequently as necessary.
- Strategy 2.6.D: AgPark sheds and work areas, and associated equipment does not contribute contaminants to surface or groundwater. Advisory Committee reviews complaints/progress quarterly.
Objective 2.7 demonstrate additional practices as deemed necessary for other farm enterprises
• Strategy 2.7.A: Native Plant Nursery - to be determined based on nursery setup
• Strategy 2.7. B: Containerized plantings enterprise in “grass strip” – weeding
• Strategy 2.7. C: For beekeeping enterprise – no practices necessary
• Strategy 2.7.D: For other enterprises as they occur

Objective 2.8 Photo documentation and monitor success of practices
• Strategy 2.8.A: Photo document and monitor the practices installed
• Strategy 2.9.B: Documentation for EQIP payments

**Goal 3: Develop and maintain the AgPark setback areas (filter strip, grass buffer and limited use zones as approved by SFPUC) in order to prevent negative impacts to ground water and adjacent streams from farming practices and to provide enhanced habitat for pollinators and beneficial insects.**

Objective 3.1 AgPark staff will oversee the planned implementation and maintenance of the setback areas (3 zones) as outlined in the Management Plan, Conservation Plan and the AgPark setback report by ACRCD (see appendix).
• Strategy 3.1.A: Filter strip development and maintenance annual work plan approved by AgPark Advisory Committee, spring 2008. Progress assessed quarterly by Committee. Natural Resources Advisor is lead staff.
• Strategy 3.1.B: Limited Use Zone, Filter Strip, Grass Buffer descriptions are provided to all SAGE farmers Spring 2008, so that all involved parties are current on allowable practices in these areas.

Objective 3.2 Seek funding to complete filter strip plantings
• Strategy 3.2.A: SAGE identifies responsible party to identify and obtain funding
• Strategy 3.2.B: implement EQIP projects at filter strip in a timely manner in order to receive payment

Objective 3.3 Organize volunteers to install and maintain plantings
• Strategy 3.3.A: SAGE identifies lead staff for organizing and utilizing by February 28 2008
• Strategy 3.3.B: Develop timeline for volunteer work projects by March 15 2008
• Strategy 3.3.C: Begin bringing in volunteers to help plant filter strip by March 2008
Goal 4: Effectively organize and utilize stewardship volunteers to assist AgPark staff with the planning, installation and maintenance of the filter strip, and with monitoring, farm clean-up and other tasks as needed under the leadership of the Natural Resources Coordinator.

Objective 4.1 Form volunteer organization
• Strategy 4.1.A: Advisory Committee assigns organizing role to staff
• Strategy 4.1.B: AgPark Advisory Committee and responsible staff member develop strategy by April 2008 and begin to recruit volunteers for tasks involving planting, maintenance, cleanup monitoring and other tasks.

Objective 4.2 Install plantings
• Strategy 4.2.A: SAGE staff oversees volunteer work and reporting to Advisory Committee quarterly

Objective 4.3 Maintain plantings and monitor
• Strategy 4.3.A: maintain plantings
• Strategy 4.3.B: document success, monitor, assess and evaluate

Goal 5: Promote and facilitate experimentation and research that supports the goals of the AgPark agriculture and natural resources components.

Objective 5.1 Staffing and plan
• Strategy 5.1.A: Advisory Committee assigns staff or a volunteer to oversee and stimulate research
• Strategy 5.1.B: Develop plan and protocols for activity this

Objective 5.2 Incorporate farmer needs

Objective 5.3 Continue to gather information and reference materials on AgPark natural resources to ensure that resource protection practices are adequate and effective.
• Strategy 5.3.A: Advisory Committee assigns staff or volunteer to develop, gather and maintain this material
• Strategy 5.3.B: Develop system for files at SAGE for storing documents

Objective 5.4 Provide natural resources information to farmers as needed

Objective 5.5 Provide natural resources information to those conducting education programs at the AgPark
Protocols

See Setback Area report by ACRCD for information on filer strip, grass buffer, limited use zone. See NRCS Conservation Plan for specs on EQIP practices

Correcting Noncompliant Practices
Process for natural resource protection concerns to be aired and addressed by Advisory Committee to be determined.

Other
New activities and enterprises at the AgPark should be evaluated in terms of natural resource protection

Infrastructure Requirements

Irrigation water to filter strip (completed 1/08), irrigation system installation and maintenance

Staffing Outline

Proposed: Natural Resources Coordinator 2-4 hours/week
Develops and coordinates volunteer program for undertaking installation, maintenance and monitoring of conservation practices such as the filter strip, park cleanup, and other tasks that directly protect natural resources. These tasks could also be carried out by the Site Manager. Additional tasks to be undertaken by SAGE staff or contractors include:
• coordinating volunteers to undertake installation and maintenance of filter strip, cleanups
• grant writing to find additional funding to support maintenance of plantings.
• documentation and research on natural resources and management
• developing and disseminating information among all AgPark users about natural resources protection strategies.

Resources
• AgPark Conservation Plan by USDA NRCS
• AgPark Setback Report by ACRCD
• Other documents developed by SFPUC (see appendix of setback report)
Introduction

The education and interpretive programs for students, teachers, and community groups are fundamental to the Sunol AgPark model. These programs foster environmental awareness and connection to place, promote sustainable agriculture, and natural resource and watershed stewardship.

Overview

The Education Plan encompasses three major themes, or programmatic elements, that focus on the Sunol AgPark farming operations, regional ecosystem, natural landscape features, and cultural history. The three themes are:

- Community Health, Food Systems and Sustainable Agriculture
- History of Agriculture and Water Systems in Sunol Valley
- Natural Resource Stewardship

The thematic structure builds flexibility and range into the Education Plan that allows for a spectrum of programs to be developed in partnership with local agencies and groups, and is aimed at reaching a broad audience that includes the general public, community interest groups, K-12 schools, students and educators.

Community Health, Food Systems and Sustainable Agriculture

Key concepts:

- fresh produce and healthy eating
- locally-produced food and sustainable food systems
- organic food production
- healthy diet and food preparation
- historically and locally adapted crops
- crop diversity and development

With increased obesity a national crisis, there is a heightened awareness of the need to educate the public, and school-age children in particular, about the importance of eating a

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1 The Education Component of the Sunol AgPark Management Plan was informed by informational interviews with the following people: AgPark Farmers (Fred Hempel, Baia Nichia; Lew Chien Saelee, Mien Farming Collaborative; Peter Rudnick, Farm Manager Sunol AgPark); with Major Partners (Amy Evans, ACRCD; Chris Boynton & Molly Nakahara, Nutrition Learning Community Coalition, Alameda County of Education; Carla Schultheis, SFPUC; Eric Herron & Margaret Kelly, East Bay Regional Park District; Beth Ann Bentley, Sunol Glen School), and with representatives from other programs (Martha Berthelsen, Watershed Project; Karen Pahler, Boy Scouts of America; Jim Choe, Camp Arroyo; Joyce Bufford, Math Science Nucleus, Fremont).
healthy diet. Studies show that thirty-eight percent of the children in Alameda County are obese, and one in two children of color in Alameda County are at risk for developing diabetes as adults.

The California Department of Education has allocated funds for school garden programs as part of the effort to teach students the long term value of eating well. Administered through the Alameda County Office of Education, seventy percent of schools in Alameda received start-up funds for school gardens for the 2007-2008 school year.

Sustainable agriculture practices are integrated into most school garden programs. The many benefits of eating locally produced food as well as of farming methods which utilize organic practices are highlighted and incorporated into the state’s school science curriculum.

**History of Agriculture and Water Systems in Sunol Valley**

Key concepts:
- Local farming history and community history (See Physical Setting and Land Use History, page 10.)
- Water resources and water distribution systems; to be developed in partnership with SFPUC.

**Natural Resource Stewardship**

Key concepts:
- Creeks and watersheds and the relationship of water resources to farming and urban development
- Water use, conservation and watershed stewardship
- Native plant habitats and ecology

The Sunol Valley a 36,000 acre alluvial valley is situated within the Alameda Creek watershed, surrounded by hills. The watershed encompasses several seasonal and year-round creeks that feed Alameda Creek which arises from its headwaters near Mount Hamilton. The native ecology of the region included native grasslands, chaparral and scrub habitats, oak woodlands, and riparian, or streamside, woodlands. Today, the valley landscape is dominated by agriculture, cattle grazing, commercial nursery operations, and gravel mining.

The AgPark is located along the east bank of Arroyo de la Laguna, a tributary of Alameda Creek, near the confluence of the two streams. The Hansen gravel quarry borders the AgPark to the east. Large tracts of undeveloped open space occupy the hilly terrain to the south and west of the site. These open space lands support a variety of ecological communities including non-native grasslands, scrub, and oak woodlands. Landforms within and near the site indicate that alluvial processes continue to erode the low hills surrounding the Sunol Valley and deposit the resulting soil in the form of small alluvial fans near the hill and valley floor interface.
Program Elements of the Education Plan

Place-based, Experiential Learning. Experiential learning emphasizes connections to specific places and environments in which the learning process is integrated with individual actions. The AgPark’s educational mission to promote sustainable agriculture and foster environmental stewardship is rooted in an experiential learning approach, place-based education, and hands-on activities. The AgPark offers programs for school groups and the public, opportunities to visit the farm on a regular basis, and engages participants in the processes of food production, sustainable agriculture practices, and natural resource protection.

Interpretive Programs. Tours of AgPark farm operations offer visitors an education in a less structured format, providing a range of experiences, from pre-planned and organized docent-led programs to self-guiding trails with interpretive signage. Interpretive programs focus on natural history and processes, cultural history, historic landmarks, and environmental issues. This can include talks and lectures by AgPark staff or invited speakers, docent-guided tours of the AgPark farm and natural areas, historic structures, exhibits and displays, and demonstrations of historical farming techniques.

Classes and Workshops. These are one-time and on-going programs for school classes, student interest or service groups, community groups, and the public. Other institutions, organizations and local groups may partner with the AgPark to develop curricula or to offer classes and workshops on site.

Summer Camp. Extended programs for school-age children can offer a combination of farm-related and environmental or nature programs, held either on-site or at nearby established camps in partnership with the site owner, agency, or community foundation. Camps may target groups, such as underserved communities, or be self-selecting. Project-oriented programs may be geared to specific activities or seasons related to the agricultural production cycle.

Community Events. Farm festivals, farm-day markets, harvest events, and celebrations of local history can be forums for educational experiences, highlighting the AgPark mission and resources.

Layout Plan

The diagrams on the next two pages lay out the major physical elements required for the Sunol Water Temple AgPark education plan. The first diagram covers teaching areas, storage areas, bus parking, and recommendations for the future interpretive center and restrooms. The second diagram lays out preliminary requirements for signage.
NOTES:
1. LOCATE MOVEABLE PICNIC TABLES BENEATH OAK TREES. AREA SHOULD ACCOMMODATE 30 USERS
2. IF ALLOWABLE, REPLACE PORT-A-POTTIES BENEATH OAK TREES WITH COMPOSTING TOILETS
3. PROVIDE MOVEABLE SEATING SUCH AS STRAW BALES AT GATHERING AREA
4. PROVIDE NON-PERMANENT SHADE STRUCTURE (SUCH AS LIGHT-WEIGHT TRELLIS OR GAZEBO) AT GATHERING AREA
5. FUTURE INTERPRETIVE CENTER TO BE LOCATED ADJACENT TO WATER TEMPLE; INCLUDE RESTROOMS AND LUNCH AREAS TO ACCOMMODATE 30-60 VISITORS

30 JANUARY 2008
PUBLIC EDUCATION LAYOUT PLAN
SUNOL AGPARK
NOTES:
1. PLACE AGPARK IDENTIFICATION SIGN AT MAIN ENTRANCE ON PALOMA WAY
2. IDENTIFICATION SIGNS AT AGPARK FENCE SHOULD INCLUDE INFORMATION ON BECOMING A SUPPORTER OF THE AGPARK AND WHO TO CONTACT TO ARRANGE FOR A TOUR
3. IN FUTURE, DEVELOP INTERPRETIVE SIGNAGE SYSTEM TO COVER THE HISTORY AND FEATURES OF THE SITE, INCLUDING BOTH AGRICULTURAL AND NATURAL RESOURCE ELEMENTS

30 JANUARY 2008
PRELIMINARY SIGNAGE LAYOUT PLAN
SUNOL AGPARK

200'
Goals, Objectives, and Action Strategies

Goal 1: Offer programs for students that foster understanding of the connection between good nutrition, local agricultural production, natural resource stewardship.

Objective 1.1: Develop educational curricula and experiential learning programs for school children K-8. Creation of a Teacher Advisory Group, and 6 pilot field trips for these grade levels (three for 4th grade and three for 6th grade).

- Strategy 1.1 A: Form a Teacher Advisory Group which will meet quarterly to give guidance to the development of the program (Yr 1)
- Strategy 1.2: Develop ACRCD & EBRP pilot program for 6 pilot field trips (three for 4th grade and three for 6th grade); programs will be formally evaluated (Yr 1)
  - Strategy 1.2a: Contract with an educational evaluator to formally evaluate programs.
  - Strategy 1.2 b: Based on the results of the pilot testing, ten field trips will be offered in the fall, and ten in the spring; Yr 2)
  - Strategy 1.2 c: Pre-visit and post-visit materials for the school programs will be created, (Yr 2)
- Strategy 1.3: With the assistance of the Teacher Advisory Group, teacher workshop programs will be offered. Two workshops will be offered each year (Yrs 2 and 3)
- Strategy 1.4: Transportation will be provided for school groups (Yr 2)
- Strategy 1.5: Develop pilot overnight program with EBRPD for 3 classes. Program elements from the AgPark and EBRPD partnership will be combined for an overnight program targeted to students from a wider area, such as San Francisco, for an extended experience exploring the Ohlone wilderness and the AgPark; EBRPD school camp at Sunol Regional Park & provision of camping equipment. (Yr 3)
- Strategy 1.6: Collaborative pilot program with Sunol Elementary School for school garden program, AgPark site visits and curriculum developed. (Yr 1)
- Strategy 1.7: Full curriculum for the AgPark on-site program (Yr 3)
- Strategy 1.8: Construct classroom for 30 students (modeled on potting shed from Camp Arryo) (Yr 3)
- Strategy 1.9: AgPark acquires bus for transporting school groups to programs (Yr 3)

Goal 2: Engage with youth groups and underserved urban youth to offer educational opportunities, including training, internships, and special projects related to nutrition, agriculture and natural resource stewardship.

Objective 2.1: Develop after-school leadership and practical learning programs for grades 9-12
- Strategy 2.1a: AgPark after-school program in partnership with Hayward Unified School District (Yr 1)
- Strategy 2.1b: Conduct summer pilot program with Hayward Unified youth farmers (Yr 1)
• Strategy 2.1c: Develop pilot after-school program with EBACY (Yr 2)
• Strategy 2.1d: Conduct pilot week-long leadership program
• Strategy 2.1e: Genetics curriculum development for after-school program (Yr 3)
• Strategy 2.1f: 3 week-long leadership camps in partnership with EBRPD (Yr 3)
• Strategy 2.1g: Farmer’s market teen entrepreneur & marketing skills program (Yr 3)

Goal 3: Provide educational and interpretive opportunities for the public to learn about sustainable agriculture and natural resource conservation, water conservation and use, the regional water distribution system, and the cultural and land use history of the region.

Objective 3.1: Establish a volunteer docent program for public tours and interpretive programs
• Strategy 3.1a: Develop docent training materials (Yr 1)
• Strategy 3.1b: Conduct joint training sessions with EBRPD (Yr 1)
• Strategy 3.1c: Recruit volunteer docents (Yr 1)
• Strategy 3.1d: Docent-led tours & special projects (Yr 2)
• Strategy 3.1e: Ongoing docent training (Yr 2)
• Strategy 3.1f: New docent training class with EBRPD (Yr 3)

Objective 3.2: Establish adult volunteer stewardship programs and internships for college students
• Strategy 3.2a: Work with master gardeners program to plant filter strip (Yr 1)
• Strategy 3.2b: Ohlone College student internships with AgPark farmers (Yr 1)
• Strategy 3.2c: Program development for filter strip, strawberry field, creek vegetation stewardship projects (Yr 1)
• Strategy 3.2d: Native plant propagation for stewardship projects (Yr 2)
• Strategy 3.2e: Planning for demonstration garden on site (Yr 2)
• Strategy 3.2f: Recruit special needs adult volunteer groups (Yr 2)
• Strategy 3.2g: College internship program development (Yr 2)
• Strategy 3.2h: Identify stewardship projects for scout groups (Yr 2)
• Strategy 3.2i: Native plant nursery days (Yr 3)
• Strategy 3.2j: Demonstration garden implementation (Yr 3)
• Strategy 3.2k: Create “Friends of the AgPark” volunteer stewardship program (Yr 3)

Objective 3.3: Develop infrastructure for on-site classroom and volunteer stewardship programs
• Strategy 3.3a: Build storage shed for tools and materials (Yr 1)
• Strategy 3.3b: Install signage for the interpretive trails and public access areas of AgPark and Water Temple (Yr 1)
• Strategy 3.3c: Build shade structure for plant propagation (Yr 1)
• Strategy 3.3d: Begin infrastructure planning for Year 2 (Yr 1)
• Strategy 3.3e: Install public bathrooms (Yr 2)
• Strategy 3.3f: Acquire tables and chairs for classroom and demo areas (Yr 2)
• Strategy 3.3g: Install potable water facility (Yr 2)
• Strategy 3.3h: Build basic outdoor kitchen (Yr 2)
• Strategy 3.3i: Construct native plant nursery (Yr 3)

Goal 4: Engage the local community in workdays, education programs, and special events at the AgPark.

Objective 4.1 Develop community involvement programs and events
• Strategy 4.1a: Conduct 1 workshop by StopWaste.org (Yr 1)
• Strategy 4.1b: Conduct 1 joint event with EBRPD
• Strategy 4.1c: Hold 2 “family days” (Yr 2)
• Strategy 4.1d: Hold 2 community workshops (Yr 2)
• Strategy 4.1e: Host 2 events in partnership with EBRPD (Yr 2)
• Strategy 4.1f: Farmer’s market on selected weekends (Yr 3)

Goal 5: Facilitate collaborations between SAGE, education partners, school projects/activities, and community programs.

The following organizations, described in more detail in the Management and Partnership Section, are identified as potential partners in the activities and actions described above:

Sunol/Glen Elementary School
One goal of SAGE is to develop the AgPark so that it becomes a valuable asset for the Sunol community. The local elementary school is within easy walking distance of the AgPark. The staff and parents are very eager to partner with and participate in the AgPark’s education programs.

San Francisco Public Utility Commission (SFPUC)
The Sunol AgPark operates on land owned by SFPUC. The agency’s report, Preliminary Landscape and Recreation Plan for Sunol, envisions the area as a public recreation destination with service and interpretive infrastructure that supports and implements SFPUC’s Water Enterprise Environmental Stewardship Policies. The SFPUC has plans for building an interpretive center on site and is in consultation with partner agencies such as the East Bay Regional Park District, which has recently acquired adjacent parkland. Future infrastructure development planned for the park includes a trail system, interpretive signage, a center offering interpretive displays, workshop and demonstration cooking facilities.

East Bay Regional Park District (EBRPD)
The District has a broad mandate to engage in public education through its well-developed and
extensive naturalist programs throughout the East Bay, and specifically at the Sunol/Ohlone regional wilderness. EPRP has offered to develop a new pilot program that includes the AgPark in a regional natural and cultural history and environmental interpretation program. In addition to its naturalist programs, EBRPD also currently has a stream study and stewardship program.

**The Alameda County Resource Conservation District**
The ACRCD has developed a proposal for a pilot demonstration for students that includes natural resources exploration and stewardship activities.

**Alameda County Office of Education**
The office sponsors the Nutrition Learning Coalition as well as the California Instructional School Gardens Consortium. The Office has abundant access to teachers and information on school and community programs to promote healthy eating. The office can provide assistance in identifying teacher needs, developing and implementing teacher workshops, and helping to define and initiate pilot programs.

**Alameda County Waste Management Authority**
The agency supports StopWaste.org, which funds workshops and technical training in organic gardening practices for communities and schools.

**Baia Nicchia, Iu-Mien Village Farms, and People’s Grocery**
These three entities are currently farming at the AgPark. Baia Nicchia trains interns in organic farming and provides educational opportunities to high school students from the Hayward Unified School District and the ASA Academy in West Oakland and to K-8 students from Marin Elementary School in Albany and the MLK Jr. Middle School in Berkeley. Baia Nicchia will extend their educational programming on a pilot-program basis by offering educational and internship opportunities to high school students associated with the other farming groups at Sunol AgPark.

The East Bay Asian Youth Center, sponsor of the Iu-Mien Village Farms, and People’s Grocery, also both have missions of offering educational and training opportunities to youth and of educating their target audiences in the value of healthy eating, and raising awareness of the link between diet and health.

**Community Volunteers**
There are several local models for volunteer stewardship programs that engage in activities such as invasive plant removal, native plant seed collection, propagation and revegetation under the direction of trained educators or program coordinators. Volunteer stewardship programs are offered by East Bay Regional Park District, The Watershed Project, Save The Bay, and established creek groups like Alameda Creek Alliance.
Challenges

Transportation Needs and Audience Development
The AgPark is currently not accessible directly by public transportation. While some schools can provide private drivers, in order to expand the school audience and work with underserved urban populations, the transportation issues must be addressed. Providing transportation is an essential element in audience development and the ability to offer a wide range of programs.

Teachers most often cite the cost of transportation as the barrier to taking more field trips. In general, teachers in Alameda County tend to plan one or two field trips per year but even when the program admission is free they are constrained by the difficulties and costs of field trip transportation. Transportation costs are the largest expense for most field trips. While involving parents in arranging carpools or collecting fees are options in many districts, parent participation is often least reliable in the schools most in need.

Solutions to Transportation Issues by Year
Year One:
1) Walking. Sunol Glen elementary school is within easy walking distance to the park.

2) Parent drivers. A limited number of schools still have the ability to provide parent drivers. Some schools in nearby Pleasanton, Livermore and Fremont can provide their own transportation

3) Subsidized private bus. On a limited basis, using East Bay Regional Park funds which are designated for transporting under-served audiences. This will be especially helpful during the pilot phase of development.

Year Two:
It is the hope that the program can expand its reach in Year Two. The following transportation options have been discussed:
1) Contracting with Sunol Elementary school to utilize their bus when it is available.
2) Exploring if AC transit will run a special bus between BART and the park.
3) A partnership with BART that could provide transportation.

Year Three:
The key to expanding access to the AgPark is the availability of a bus for the exclusive use of AgPark programs, to transport school groups, after-school participants, and volunteers to the site.
1) Explore corporate sponsorship for a bus. Possible sponsors include Google, Yahoo!
Kaiser Permanent Foundation or Clorox.
2) Build vehicle purchase into a larger grant proposal.
3) Bio-fuel vehicle conversion

**Public Access Issues**
SFPUC and the farmers have a mandate to protect and preserve the water, farm and natural resources at the site. The need for greater public access needs to be balanced with these mandates.

Some of the issues to be addressed:
1) The optimal location to conduct educational programs on Arroyo de la Laguna creek.
2) Lead time required to secure permission from SFPUC for event access. Currently this is 6 weeks prior to any event.
3) Hours the park is open to the public. Currently the park is open 9 to 3 Monday – Friday. Expanded hours will be needed for after-school programs and weekend events.
4) Parking space and location for school buses or other vehicles.
5) Liability releases for volunteers and staff engaged in activities at the AgPark.

**Protocols**
Scheduling procedures must be worked out so that all programs work in harmony with the Farmers, SFPUC permission requirements and SAGE staff needs.

**Infrastructure Requirements**
In order to make the site more accommodating for larger numbers of people, the following elements need to be implemented. All improvements must meet the standard put forth in the Americans with Disabilities Act.

**Year One**
Pilot programs can be run with a minimum of infrastructure improvement. The most pressing need is a shed to store educational materials, sheltering materials and first aid equipment. A shade structure will also allow programs to go forward under varying weather conditions.

Year one is a planning year for the more extensive improvements during Year Two.

**Year Two**
Installation of the following is needed in Year Two to accommodate classroom visits, workshops, and volunteer activities:
• Flush toilets
• Potable water
• Tables and chairs for 60 people
• An outdoor kitchen (such as the one at project Life Lab at UC Santa Cruz)

**Year Three**
A classroom for 40 students. Modeled after the Organic Learning Center at Camp Arroyo this classroom will be built with green principles. There will be space for 40 students to work, electricity powered by solar panels, storage for materials and sinks. This will allow for year round educational activities and expanded.

**Beyond Year Three**

**Interpretive Center**
A dynamic interpretive center which allows visitors to explore the rich resources of the site. The center would have interactive exhibits, a space for changing exhibitions, and a demonstration kitchen to accommodate workshops and special events. The center is a planned infrastructure improvement of the SFPUC and they are actively engaged in discussions with EBRPD as a potential partner in building a center that would serve the needs of both agencies.

**Staffing Outline**

There are two related skill sets needed to design and implement educational programs at the AgPark:

**Education Program Director**
Working under the direction of SAGE, the Education Program Director will oversee refinement and implementation of the long range Education Plan. The Ed Director will develop relationships with partners, develop programs, supervise program evaluation, develop audiences, and manage the education program budget. The Ed Director will also contribute ideas and input into the general planning of the AgPark.

The position requires someone who has had experience with environmental education program development, an ability to work with diverse groups of people, and strong written and oral communication skills. Fundraising and grant writing experience would also be valuable.

As the AgPark education program grows, the Ed Director may need to hire a program coordinator to assist the Director and oversee specific programs.
**Education Garden Coordinator**

The position’s primary responsibilities are to work with the Farm Manager and Farmers and Education Program Director to develop and maintain resources specifically for public education at the AgPark. They will be responsible for the filter area, the strawberry patch and development of a demonstration garden. They will provide additional support and security whenever the public is present, and may assist in conducting workshops and demonstrations.

The Garden Coordinator should have experience managing a demonstration or teaching garden and be knowledgeable and proficient in sustainable agriculture methods and technologies. The Coordinator must be is able to work with diverse groups of people, manage volunteers, and plan and implement stewardship programs. This position will also require additional support as programming grows in the AgPark.
## Phasing Plan Overview

### Sunol AgPark Education Programs 3-Year Matrix

<table>
<thead>
<tr>
<th>Target Audiences</th>
<th>Program Type</th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>School groups K-8</td>
<td>Educational curricula &amp; experiential learning</td>
<td>* ACRCD &amp; EBRP pilot program: 6 classes</td>
<td>* develop pre &amp; post visit materials</td>
<td>* pilot overnight program with EBRPD: 3 classes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Teacher Advisory Group</td>
<td>* teacher workshops</td>
<td>* full curriculum development for the site</td>
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<tr>
<td></td>
<td></td>
<td>* Sunol/Glen elementary school pilot programs</td>
<td>* offer 20 programs</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>* full Sunol/Glen elementary school partnership program launched</td>
<td></td>
</tr>
<tr>
<td>School groups 9-12</td>
<td>After-school leadership &amp; practical learning</td>
<td>* summer pilot with Hayward Unified youth farmers</td>
<td>* pilot after-school program with EBACY</td>
<td>* genetics curriculum development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* after-school program, Hayward Unified</td>
<td>* pilot week-long leadership program</td>
<td>* 3 week-long leadership camps with EBRPD</td>
</tr>
<tr>
<td>Public &amp; Interest Groups</td>
<td>Docent program</td>
<td>* recruitment</td>
<td>* docent-led tours &amp; special projects</td>
<td>* new docent training class with EBRPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* develop training materials</td>
<td>* ongoing docent training</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>* joint training with EPRPD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community involvement</td>
<td></td>
<td>* 1 workshop conducted by StopWaste.org</td>
<td>* 2 family days</td>
<td>* farmers market on selected weekends; teen participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* 1 joint event with EPRPD</td>
<td>* 2 community workshops</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>* 2 joint events with EPRPD</td>
<td></td>
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<tr>
<td>Event rentals</td>
<td></td>
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<td></td>
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<tr>
<td>Stewardship projects</td>
<td></td>
<td>* filter strip plants</td>
<td>* native plant propagation</td>
<td>* native plant nursery days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* creek vegetation</td>
<td>* demo garden planning</td>
<td>* demo garden implemented</td>
</tr>
<tr>
<td>Adults &amp; Student Volunteers</td>
<td>Internships</td>
<td>* Ohlone college interns &amp; farmers</td>
<td>* college internship prog. development</td>
<td>* develop “Friends of the AgPark” with senior centers &amp; residents (i.e. Rossmore)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* master gardeners in filter strip</td>
<td>* identify projects for scouts</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>* work with special needs adult groups</td>
<td></td>
</tr>
<tr>
<td>All AgPark visitors &amp; program participants</td>
<td>Infrastructure improvements</td>
<td>* shed for materials</td>
<td>* bathrooms</td>
<td>* classroom for 30 students (modeled on potting shed from Camp Arroyo)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* signage for the Water Temple &amp; AgPark</td>
<td>* potable water</td>
<td>* native plant nursery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* shade structure</td>
<td>* tables and chairs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* planning for Yr 2</td>
<td>* outdoor kitchen</td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>Transportation</td>
<td>* private cars &amp; subsidized buses</td>
<td>* public transportation prog.</td>
<td>* AgPark acquires own bus.</td>
</tr>
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</tbody>
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Management and Partnerships

Introduction

As an entity – and as a new model - that integrates sustainable agriculture, natural resource stewardship, and public education, the Sunol AgPark is a complex undertaking. It requires a compelling vision. It requires participation of many partners and collaborators. It also requires the creation of a feasible - yet flexible - development, management, and operating systems to coordinate and foster the common goals of multiple stakeholders.

This section first outlines the overall management goals, objectives, and strategies for the AgPark. Then follows a description of the key partners and their role, descriptions of the committees serving the AgPark, and outline of the staffing plan. The organizational chart at the end of the section shows the relationships between the players.

Goals, Objectives, and Action Strategies

Goal 1. Manage the AgPark’s agriculture, natural resource stewardship, and public education elements as a collaborative, sustainable system that is economically viable, ecologically sound, and provides value for all participants, stakeholders, and the community.

Objective 1.1: Establish, broaden, and deepen all partnerships and collaborations that currently underlie, and could contribute to, the success and sustainability of the AgPark

- **Strategy 1.1.A.** Meet annually with SFPUC to address Master Lease or other issues, pursue opportunities, and deepen partnership
- **Strategy 1.1.B.** Form a Sunol AgPark Advisory Committee, including the following members: staff from SAGE, SFPUC, ACRCD, ALBA; other key stakeholders; a representative from the community of Sunol; and representatives from the Farmer, Natural Resources, and Education sub-committee,
- **Strategy 1.1.C.** Organize meetings two to four times per year; engage the Ad Comm. in all major decisions, issues, and opportunities; and coordinate other communications
- **Strategy 1.1.D.** Seek out, engage with, and respond to all other major partners and collaborators (not on the Advisory Committee)
- **Strategy 1.1.E.** Interact with other SAGE staff and Board; and engage with other SAGE activities as needed

Objective 1.2: Provide overall administration and management, with responsibilities including:

- **Strategy 1.2.A:** Hire and manage staff; retain and oversee contractors and consultants; and prepare job and project descriptions;
- **Strategy 1.2.B:** Collect water & license fees, pay water fees to SFPUC
• Strategy 1.2..C: Provide sound fiscal management and oversight
• Strategy 1.2..D: Raise funds, as needed, to develop/sustain/enhance operations and infrastructure development and maintenance; seek opportunities for collaborative fundraising

Objective 1.3: Foster communication and collaboration between agriculture, natural resource stewardship, and public education personnel and elements

**Goal 2. Demonstrate of the feasibility of the AgPark concept by creating a working model**

Objective 2.1: Create and disseminate informational materials
• Strategy 2.1..B: Produce PPT/DVD and/or print materials providing a concise overview of the Sunol AgPark, as an example of the AgPark model

Objective 2.2. Compile technical and graphic resources
• Strategy 2.1..A: If feasible, produce a development Manual to be published in 2009.
• Strategy 2.1..B: As feasible, collect, document, and compile planning, land use, legal, agronomic, and economic resources that can be utilized in the development of other AgParks

**Partners and their Roles**

**SAGE**
SAGE created the vision for the AgPark, negotiated the lease with SFPUC and brought in the farmers and partners to get the project underway. As it completes the production of this Management Plan, SAGE will now have the responsibility for overseeing its implementation. SAGE is a small organization; its key role with the AgPark will be working with partners and collaborators to guide and support the implementation of this Plan.

**SFPUC**
The SFPUC is the land-owner and holder of the Master Lease for the AgPark. The agency provides access to site and is responsible for security of the area which includes the SFPUC corporation yard and the Water Temple, as well as the AgPark. It also provides initial funding towards management planning and towards site improvements, mainly the construction of the perimeter game fence. The agency established the irrigation hookup from their mainline and provides irrigation water for a fee. The agency will also provide a nearby hookup for potable water and for electricity. The AgPark will pay the cost of these utilities. To the extent feasible, SFPUC also assist with infrastructure support such as farm road grading and occasional use of their corporation-yard meeting room.

SFPUC has a strong interest in building an interpretive center adjacent to the Sunol Water
Temple. The agency’s report, Preliminary Landscape and Recreation Plan for Sunol, envisions the area as a public recreation destination with service and interpretive infrastructure that supports and implements SFPUC’s Water Enterprise Environmental Stewardship Policies. The SFPUC has plans for building an interpretive center on site and is in consultation with partner agencies such as the East Bay Regional Park District, which has recently acquired adjacent parkland. Features such as a native plant nursery, a farmer’s market, trails, visitor facilities, parking areas, and surfaced roads could be part of the interpretive center plan. The center would be planned to serve the general public as well as special groups and events.

**Alameda County Resource Conservation District**

Alameda County Resource Conservation District (ACRCD) and the USDA Natural Resources Conservation Service (NRCS) collaborate as the Conservation Partnership to serve as the lead conservation agency in Alameda County. This Partnership provides technical and educational services for natural resource conservation and agriculture enhancement. It collaborates with many local partners as well as with state and federal agencies and other organizations to develop and implement various conservation and agricultural strategies.

ACRCD provides technical assistance to the AgPark consistent with the mission of the agency to facilitate agriculture enhancement, resource conservation, and implementation of National Resource Conservation Service (NRCS) and local watershed programs. ACRCD provides technical assistance and funding through the EQIP program to implement conservation practices at the AgPark, including cover cropping, implementation of filter strips, and road development.

ACRCD will also assist SAGE in planning and implementing natural resource education and stewardship programs at the AgPark, such as their existing Watershed Adventures programs and other workshops and training sessions, as well as creation of resource stewardship programs for volunteers who would plant and maintain the filter strip buffer. ACRCD staff have sketched out a pilot program for school groups that would focus on the riparian habitat of the creek, creating a curriculum that would be specific to the site. ACRCD is currently directing several programs engaging teens in stewardship projects; these programs could serve as a model for similar programs at the AgPark.

ACRCD will participate as an informal advisor to SAGE and as a member of the Sunol AgPark Advisory Committee, and its Natural Resources Stewardship subcommittee.

**Agriculture and Land-based Training Association (ALBA)**

ALBA provides educational and economic opportunities for limited-resource, aspiring and immigrant farmers. The program enrolls aspiring farmers on an annual basis. After completing a crop plan and a business plan, farmer participants can qualify to lease ALBA farmland. Initial land lease agreements are 10% of market rate for equivalent farmland. Farmers are charged
fees for equipment and irrigation usage. Farming operations are at ALBA’s 110-acre Rural Development Center, an organic farm eight miles south of the city of Salinas.

ALBA has collaborated with SAGE since 2003 in the development of the AgPark concept as well as a close advisor and partner in the development of the Sunol AgPark. Moving forward, as funding becomes available, ALBA can provide agronomic training and technical assistance to AgPark farmers with assistance tailored for specific issues as requested. ALBA can also provide training and ongoing assistance for other aspects of farming including seed selection, planting schemes, crop rotations, and post-harvest handing. ALBA can provide overall guidance to SAGE on best practices in setting up and managing programs for limited-resource, new entry farmers, as well as best practices for setting lease rates and developing technical support services for aspiring and new-entry farmers. ALBA will participate as an informal advisor and member of the Sunol AgPark Advisory Committee and its Agricultural subcommittee.

Other Partners and Collaborators
Below is a description of additional partners that have supporting roles in the development of the AgPark and/or are likely to in the near future.

Alameda County Office of Education (ACOE)
Responding to the current crisis in childhood obesity, Alameda County schools are working to establish on-site school gardens as learning tools to teach nutrition. Educators recognize the value to their students of visiting working farms, learning about agricultural production and distribution processes in connection with personal nutrition, and food-related natural resource conservation. ACOE staff, including Chris Boynton, Director of Nutrition Learning Community Coalitions, and Molly Nakahara, Farm Manager for the Tennyson High school farm garden project, have indicated that there would likely be enthusiastic support from their office for programs that worked with the theme of food systems and nutrition. Alameda County Office of Education is a key partner in reaching teachers. They can assist in planning teacher workshops, curriculum development and publicity. ACOE staff would be invited to participate on the AgPark Teacher Advisory Committee.

Alameda County Waste Management Authority
The agency supports StopWaste.org, which funds workshops and technical training in organic gardening practices for communities and schools.

California FarmLink (CFL)
California FarmLink was founded in 1998 as a non-profit organization to support family farms and conserve farmland in California by linking aspiring farmers with experienced farmers; and by promoting techniques and disseminating information that facilitate intergenerational farm transfers. It manages several loan funds that provide operating capital to new farmers and has
extensive experience is identifying and qualifying new-entry farmers.

California FarmLink assists SAGE in identifying and screening potential farmer candidates for the AgPark and in ensuring farmer access to CFL loan programs. CFL can provide training and ongoing assistance to help farmers develop business plans, including tracking and evaluation systems, and assist them in obtaining access to capital once their business plan is completed. CFL will participate as an informal advisor and may become a member of the Sunol AgPark Advisory Committee and its Agriculture subcommittee.

**East Bay Regional Park District (EBRPD)**
The East Bay Regional Park District has extensive park and preserve lands in the AgPark watershed, has a long history of public service and education in the greater East Bay community, and has a working relationship with SFPUC due to the proximity of the two agencies’ lands and a shared mission to promote responsible stewardship of natural resources. Park staff have expressed a strong interest in collaborating with the AgPark and SFPUC to develop public education programs in the Sunol Valley. EBRPD staff Margaret Kelly (since retired) and Erica Herron have identified the following areas for possible collaboration:

- **School Programs** - Creating interpretive programming for school groups to be led by park naturalists. These could be conducted entirely at the AgPark or combine, for example, a morning program at nearby Ohlone Wilderness with an afternoon program at the AgPark.
- **Transportation** - Assisting with transportation to the AgPark for students from lower income area.
- **Docent Training** – Providing docent training for volunteers leading interpretive programs at the AgPark. The park district has a very successful docent training program and has offered to help run the initial training class.
- **Summer Leadership Program** – EBRPD has offered to partner with SAGE to create a summer leadership program for teens. The park district has offered Camp Ohlone in neighboring Sunol Wilderness, which has appropriate housing, for the participants as well as use of equipment (tents, cooking equipment).
- **Interpretive Center** – EBRPD is very interested in exploring construction of a new interpretive center to serve the growing populations of eastern Alameda County. With the recent acquisition of the Tyler Ranch, in the Sunol Valley vicinity, there is interest in the SFPUC Sunol Water Temple for such a center that would serve both the water temple park and the park district ranch lands.

**Sunol/Glen Elementary School**
One goal of SAGE is to develop the AgPark so that it becomes an integral and deeply valued asset for the Sunol community. The local elementary school is within easy walking distance of the AgPark, and school staff and parents are eager to partner with and participate in the development of the AgPark’s education programs. Sunol/Glen elementary school can be a crucial link between the AgPark and the larger community.
Currently, Sunol/Glen Elementary School is in the process of strengthening and expanding their environmental education programs. They have had an active school garden program for several years and have plans for an outdoor environmental classroom. The staff sees an opportunity to create pilot programs that can be a model for other elementary classrooms.

Sunol/Glen elementary school should have special status as a partner with the Ag/Park. Because of their proximity, the school can be a crucial link between the AgPark and the community as the farming project and environmental programs grow and develop over time.

Year One will be a planning year with meetings with school staff and parents to determine how to take advantage of the many opportunities at the AgPark. Grades 4 and 6 will also be a part of the pilot program for field trips. Ideally in the second year, other grade levels will be brought on board to complete long term projects at the park. Older students can be taught to work with younger students at the park. Some students may also be involved in weekend interpretation for family events.

**AgPark Farmers**
The three farmer tenants currently producing crops at the AgPark are all committed to expanding public awareness of the importance and value of locally grown produce within their communities.

- **Iu-Mien Village Farms** is an organic farmer’s collective comprised of five Lao Iu-Mien farmers from Oakland. Founded in April 2006, Iu-Mien Village Farms is dedicated to fostering health and wellness among its owners by growing and selling high-quality organic produce. Iu-Mien Village Farms is a project of the East Bay Asian Youth Center (EBAYC), a private non-profit 501c3 community organization dedicated to inspiring young people to be life-long builders of a just and compassionate multi-cultural society.

- **People’s Grocery** is an Oakland-based organization dedicated to community food justice. Brahm Ahmadi, the organization’s Executive Director, sees the AgPark farming efforts as part of their mission to provide fresh produce to low-income families, and provide jobs and employment training for urban youth.

- **Baia Nicchia** is a small farm specializing in tomato seedling starts and tomato breeding as well as growing a range of vegetable crops which they sell at farmers’ markets and to restaurants. Baia Nicchia is working with student farmers from Tennyson High School in Hayward, and with college interns from Ohlone College. They are developing presentations on plant genetics, utilizing tomatoes, for secondary biology students.

All new AgPark farmers will be selected in part, based on their interest and experience in educating the public. As the educational programs expand, the roles of the current farmers in public education need to be carefully considered. Future funding should include additional compensation for farmers as they expand their roles in educating the general public.
The Watershed Project (TWP)
The Watershed Project (TWP) is a non-profit organization with a mission to educate and inspire communities to protect their watershed. They offer in-classroom programs and workshops for the public, and partner with Alameda County StopWaste in that agency’s Bay-Friendly program. TWP staff teach many of the Bay-Friendly free workshops held throughout Alameda County, and are the county coordinator helping to bring the program to other Bay Area counties and schools. TWP also offer consultation and capacity-building services for watershed and creek groups. They are experienced in volunteer recruitment and volunteer leadership training. TWP has built and managed a native plant nursery at the Richmond headquarters site and brought volunteers to collect seed, propagate and plant natives grown at the site.

Opportunities for collaboration between The Watershed Project and the Sunol AgPark could include conducting Bay-Friendly workshops on site, other workshops on sustainable gardening practices, and watershed-friendly gardening. Groceries from the Garden, a TWP workshop for school garden managers and educators could be a model for curriculum development at Sunol/Glen Elementary School and for school programs at the AgPark.

Community Volunteers
There are several local models for volunteer stewardship programs that engage in activities such as invasive plant removal, native plant seed collection, propagation and revegetation under the direction of trained educators or program coordinators. Volunteer stewardship programs are offered by East Bay Regional Park District, The Watershed Project, Save The Bay, and established creek groups like Alameda Creek Alliance.

Advisory Committees

Sunol AgPark Advisory Committee
The Sunol AgPark Advisory Committee helps guide the development of the AgPark and ensures its linkage with its partners and collaborators. An initial Advisory Committee, formed in 2006, included the following members: staff from SFPUC, the San Francisco Department of Public Health, Sunol-Glen School District, Alameda County Resource and Conservation District, Sunol Ohlone Regional Wilderness, Alameda County Office UC Cooperative Extension, and San Francisco Unified School District. This committee will be revived in early 2008. It will meet at least twice annually and will communicate as needed in order to advise on all major decisions, issues, and opportunities. New members may be added so that there is sufficient stakeholder representation. Subcommittees, both standing and ad hoc, will be formed to address specific issues about farming, natural resources, and education in a timely and more detailed manner. These will include:

- Farmer group consisting of all farmer tenants; led by the AgPark Director or the Site/Farm Manager; meets regularly during the growing season
• **Agriculture subcommittee** consisting of small farmer experts and a representative of the farmer tenants; led by the AgPark Director or the Site/Farm Coordinator; meets at least twice per year

• **Education committee** consisting of partners and collaborators; advises on development of educational programs; led by the Education Coordinator or AgPark Director

• **Teacher advisory committee** ad hoc group consisting of K-8 teachers, eager to advise of programming at the AgPark; led by the Education Coordinator or AgPark Director

• **Natural resources subcommittee** consisting of natural resources experts; led by the AgPark Director, Natural Resources Coordinator, or Site/Farm Coordinator

Other subcommittees may be formed as needed. Subcommittees must include at least one member who is part of Sunol AgPark Advisory Committee, but will be encouraged to include other members as well. Roles of these subcommittees will be defined in the coming year.

**Staffing Plan**

The AgPark anticipates hiring an overall Sunol AgPark Director by early 2009, assuming the availability of funding. The position will have a special focus on the development of all the education programs, but will also oversee the agriculture and natural resources activities. In the interim, responsibilities and tasks, detailed below, will be divided between current SAGE administrative staff and several part-time, project-specific contract positions as outlined in the following bullets.

• **SAGE Executive Director** will oversee the project and the implementation of the Management Plan

• **SAGE administration and bookkeeping staff** will provide administrative support

• **Farm/Site Manager** will oversee improvements and site issues

• **Education Program Coordinator** will coordinate pilot education programs and events

• **Natural Resources Coordinator** will coordinate natural resources activities

**Administration, Development, and Outreach Tasks**

In 2008, all of the tasks below will be carried out by the SAGE President and SAGE administration and bookkeeping staff. Starting in 2009, most of these tasks will be assumed by the new Sunol AgPark Director, with oversight provided by the Executive Director and with reduced, but continued support from SAGE administration and bookkeeping staff.

• **Project development and oversight.** Manage communications with SFPUC headquarters, including Master Lease review, updates, and extensions; develop and manage all other partner relationships; convene quarterly meetings of Advisory Committee; hire and oversee staff and contractors; oversee project management; direct project development; oversee review/refinement of License Agreement; represent project at major events.

• **Outreach, public relations, and communications.** Plan /produce website updates about AgPark activities and farmers; produce regular e-newsletter linked to SAGE website; plan
strategy for and disseminate e-newsletters; produce PPT’s, e-mail blasts, reports and other materials as needed

• **Grants management.** Grant research, proposal writing; grant report writing, communicating with granting agency representative, coordinating project activities with grant scope of work; grant budget management

• **Bookkeeping.** Oversee and process payables and receivables per the budget and license agreements; maintain project bookkeeping files; produce monthly, quarterly, and annual financial statements;

• **Office support.** Provide office support to farm/education manager(s); maintain filing and office systems for project; provide communications and meeting planning management and support;

• **Events.** Plan and/or provide logistical support for AgPark activities, events, field days, etc.

**Farm and Site Management Tasks**

In 2008, the tasks below will be carried out by the Farm and Site Coordinator on a contract basis, with considerable planning and administrative support from SAGE. Peter Rudnick, an experienced farmer, who has overseen the site development and who has advised the farmer tenants since the inception of the AgPark, will continue in this contract position. He also plans to farm one to two acres and to teach – by demonstrating - organic farming practices and sound marketing practices. Starting in 2009, most of the farm and site management administrative tasks will be assumed by the new Sunol AgPark Director. However, there will be a continued position for an experienced onsite farmer coordinator to address technical farming issues and manage site issues. In addition there will be continued support from a small farmer incubation expert, Brett Melone the Executive Director of ALBA, and farmer training in business management. The expectation is that as the farmers become more experienced, needs for technical assistance will diminish, and their capacity to in fact provide support in the form of infrastructure management will increase.

• **Farmer extension**
  – Review/refine license terms
  – Distribute license agreements to all farmers in triplicate, collect signed agreements, copies of insurance and any other required documents, file SAGE copy, file a copy in the farm shed, and send a copy to farmers
  – Convene start of season meeting of farmers, including review of field plans
  – Organize regular monthly or semi-monthly meetings of farmers during the growing season, including noticing with agenda, and reporting with notes
  – Provide one-on-one technical assistance to farmers (up to 4 hours per month), in the areas of irrigation management, pest management, weed management, soil fertility, tillage and field preparation, water-quality planning, crop selection and planting, food safety, and quality control
- Support and oversee documentation by farmers of progress towards specific outcomes per their business and field plans (e.g. production, sales, profitability, educational activities, etc.), and evaluate progress.
- Coordinate and support farmers receiving additional mentoring, per the terms of the license agreement; in general, oversee and support farmers’ development and success.
- Arrange trainings.
- Foster and support cooperation between farmers and provide conflict resolution between farmers and between farmers and staff.
- Help create mentoring network between experienced farmers and beginning farmers.
- Monitor adherence to license terms.
- Communicate with farmers on program, policy, or other related issues.
- Conduct surveys and annual review with each farmer prior to contract renewal.
- Produce/refine evaluation form; distribute to farmers; and compile results.
- Convene year-end meeting of farmers at end of growing season, including discussion of challenges, issues, and evaluations; review of license terms proposed for coming season; start planning for coming season.
- Create volunteer activities for farmers and recruit their participation;
- Manage and document prospective farmer inquiries and recruitment, admission process, and orientation.

**Organic certification and integrity.** Plan and oversee all aspects of organic certification for the AgPark; plan and implement trainings; support farmers with practices and paperwork. Once certification is obtained, ensure the compliance with NOP rules by all tenants; gather and review OFIR sheets from each farmer on a regular basis; research products using the OMRI website; schedule annual CCOF inspection with each farmer; develop an AgPark Organic Systems Plan; communicate directly with CCOF staff as needed; investigate potential organic integrity problems.

**Security.** Ensure that SFPUC restrictions on gate security and parking are followed; track issuance and collection of all keys to the AgPark gate; develop and train farmers in protocol for keeping all gates secure; develop and oversee maintenance of site log; investigate and document security incidents.

**Health and safety.** Ensure that a serviceable first aid kit is on site; oversee maintenance of on-site portable toilets; ensure that trash and recycling receptacles are placed and emptied; intervene in situations that do not appear safe; provide technical advice to farmers in creating safe working environments; place non-potable water signs on all irrigation water spigots; create a Personal Injury Prevention Plan for SAGE employees/interns/volunteers; develop/refine and implement a protocol for health and safety of visitors.

**Irrigation system management.** Oversee management and maintenance of the irrigation system; develop systems for training farmers in its operation and maintenance; identify problems; maintain system; plan and prioritize repairs; read water meters every month.
log, and calculate and recommend water rate adjustments for farmers, if/as needed; work with SFPUC for water quality monitoring on a regular basis throughout the growing season.

- **Management of other infrastructure and improvements.** Manage improvements, including maintenance and repair, of roads, gates, fences; plan and manage construction/installation of sheds for SAGE and farmers; organize and oversee farmers’ construction/installation of their greenhouses.

- **Coordination of land management activities.** Manage soil improvement operations for the site as a whole if/as needed beyond adherence to organic practices; coordinate purchase and application of and shared payment for amendments; oversee compost management.

- **Pest management.** Monitor fields to identify emerging pest problems; ensure that appropriate pest management actions are taken by farmers to prevent adverse impact to the operation as a whole; identify, obtain technical assistance, and help implement measures to address management of pest problems.

- **Maintenance and enhancement of common areas.** Ensure that common areas are kept clean and maintained; plan and prioritize any landscaping/planting (e.g. around the entrance and around the back gathering area, finding low-cost or no-cost materials; maintain AgPark signage and shed; supervise volunteers and/or groups in planting or maintenance activities.

- **Monitoring and evaluation:** Read grant proposals and work plans that pertain to job responsibilities; implement M & E work plan, which may include regular surveying, leading meetings, documentation, photographs, and reporting.

- **Farmer meetings.** Convene regular (at least monthly) meetings of the farmers during the growing season to discuss and resolve issues; to coordinate farm activities; and organize participation in education, natural resources, and general AgPark activities and events.

- **Agricultural Advisory committee management.** Advise on membership of the agricultural advisory committee; convene quarterly meeting; seek advice and input from committee members as needed.

- **Public relations.** Proactively seek ways to connect with and engage the local Sunol community, including continuing to explore interest in establishing a community garden; be the main contact person for visitors; coordinate activities with the Education Program Coordinator; represent the AgPark at events.

- **Miscellaneous:** attend SAGE staff meetings; read and respond to emails; provide all documentation to Office Manager (such as timesheets, monthly reports, receipts, etc.)

**Education Program Tasks and Responsibilities**

Once funding is in place, the Sunol AgPark Director will have as a major responsibility, oversight, refinement, and implementation of the long range Education Plan. This person will develop relationships with partners, develop programs, supervise program evaluation, develop audiences, and manage the education program budget. The Ed Director will also contribute ideas and input into the general planning of the AgPark.
The position requires someone who has had experience with environmental education program development, an ability to work with diverse groups of people, and strong written and oral communication skills. Fundraising and grant writing experience would also be valuable.

As the AgPark education program grows, the Director will likely need to hire a program coordinator to assist with and oversee specific programs. The primary responsibilities of the prospective Education Garden Coordinator are to work with the Farm Manager and Farmers and Education Program Director to develop and maintain resources specifically for public education at the AgPark. They will be responsible for the filter area, the strawberry patch and development of a demonstration garden. They will provide additional support and security whenever the public is present, and may assist in conducting workshops and demonstrations.

The Garden Coordinator should have experience managing a demonstration or teaching garden and be knowledgeable and proficient in sustainable agriculture methods and technologies. The Coordinator must be is able to work with diverse groups of people, manage volunteers, and plan and implement stewardship programs. This position will also require additional support as programming grows in the AgPark.

In the interim, the tasks above will be assumed by an Education Program Coordinator, contracted on a project basis.

**Natural Resources Coordination Tasks**

Natural Resources coordination and management tasks are outlined in detail as strategies in Natural Resources Management Section. An outline of the key tasks includes: completion and implementation of the Natural Resources Conservation Plan; completion of the filter strip and grass border; planning and implementation of an additional insectary strip, hedgerows, and ornamental plantings, such as climbing roses along the fence (if the Ag Advisory group decides to establish these); care for all the above vegetative practices and for the established oak trees on site; if needed; enhancement of habitat for native species in select areas; supervision of volunteer groups in planting or maintenance activities; documentation of species, changes, etc. through photo documentation; review of annual soil analysis; and oversight on cover cropping on fallow fields.

The Sunol AgPark Director, once hired, will oversee all these tasks. In the interim, and after this position is filled, natural resources experts, the Site Coordinator, the Education Program Coordinator, farmers, and volunteers, are all expected to make various kinds of contributions to the Natural Resources Stewardship effort.
SAGE Board
& President

SAGE AgPark
Advisory Committee

- Agriculture Subcommittee
  - Farmer/Site Manager
  - Farmer Group
- Education Subcommittee
  - Teacher Advisory Group
  - Education Coordinator (2002 only)
- Natural Resources Subcommittee
  - Natural Resources Coordinator (2002 only)

- Sunol AgPark Site and Education Director (starting in 2003)
- SAGE Admin Staff
- Fundraiser (2003 only)

Partners
SFPUC, AGRCID, EBFPO, ALBA, etc.
Implementation Plan

Overview

The matrix that follows shows the Goals, Objectives, and Strategies for the Agriculture, Natural Resources, and Education programs, as well as for overall Management and Administration. The Objectives and Strategies matrix is organized by a timeline, 2008 to 2012 by quarter and by the party responsible. In the colored version of the matrix, responsible parties are allowed indicated by a unique color, per the chart below. This matrix will be used as a basis for refining and coordinating tasks over the various management areas of the project.

<table>
<thead>
<tr>
<th>Responsible Party</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tbody>
<tr>
<td>SAGE*</td>
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<td>SFPUC</td>
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<td>Natural Resources or Education Coordinator</td>
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<td>Partner Organizations**</td>
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<td>Farmer Tenants</td>
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* Includes Advisory Committee unless otherwise noted **ACRCD, Sunol Elem. Sch., EBRPD, etc.

### Sunol Water Temple AgPark Project Schedule - Agriculture

<table>
<thead>
<tr>
<th>Goal 1: Establish a working farm</th>
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<tbody>
<tr>
<td><strong>Obj 1.1 Set good terms for small farming</strong></td>
</tr>
<tr>
<td>Annually review Master Lease; as needed; request changes to terms overly restrictive for farmers SAGE</td>
</tr>
<tr>
<td><strong>Obj 1.2 Review/refine License Agreement terms</strong></td>
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<tr>
<td>Review license agreement terms annually; revise as needed SAGE</td>
</tr>
<tr>
<td><strong>Obj 1.3 Set procedure to recruit new farmers</strong></td>
</tr>
<tr>
<td>Pro-actively recruit prospective farmers to optimize overall mix of farmers SAGE</td>
</tr>
<tr>
<td>Communicate in a timely and systematic way with recruited/applying farmers SAGE</td>
</tr>
<tr>
<td><strong>Obj 1.4 Facilitate communications</strong></td>
</tr>
<tr>
<td>Set schedule/process for regular meetings &amp; communications between/with farmers SAGE</td>
</tr>
<tr>
<td><strong>Obj 1.5 Seek guidance from adviser groups</strong></td>
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<tr>
<td>2008</td>
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<tr>
<td><strong>Obj 1.6 Ensure farmers understand their responsibilities</strong></td>
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<tr>
<td>Meet financial terms of license agreement Farmers</td>
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<tr>
<td>Develop business plan and annual budget Farmers</td>
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<tr>
<td>Develop field plan, maintain plot log Farmers</td>
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<tr>
<td><strong>Farms background practices and maintain records required for certification Farmers</strong></td>
</tr>
<tr>
<td>Follow organic practices and maintain records required for certification Farmers</td>
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<tr>
<td>Maintain sound pest management and weed management practices Farmers</td>
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<tr>
<td>Provide basic tools needed for farming Farmers</td>
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<tr>
<td>Have a food safety plan in place Farmers</td>
</tr>
<tr>
<td>Designate manager/director to coord farming activities, communicate with SAGE, and ensure license terms are met Farmers</td>
</tr>
<tr>
<td>Arrange add'l technical training as needed Farmers</td>
</tr>
<tr>
<td>Participate in AgPark education programs; initiate and/or participate in K-8 and youth education programs Farmers</td>
</tr>
<tr>
<td><strong>Obj 1.7 Carry out agriculture-related monitoring/evaluation</strong></td>
</tr>
<tr>
<td>Conduct and compile season-end evaluations w farmers</td>
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<tr>
<td>Produce reports per requirements of funders</td>
</tr>
<tr>
<td>Contribute to reports for AgPark participants, partners, and stakeholders</td>
</tr>
</tbody>
</table>

### Goal 2: Support operations of farmers

| **Obj 2.1 Provide site/farmer admin and mgmt SAGE** |
| Coordinate communication between farmers and onsite SFPUC liaison SAGE | 2008 | 2009 | 2010 | 2011 | 2012 |
| **Obj 2.2 Develop/improve infrastructure** |
| Ensure all legal, safety and health issues are properly addressed SAGE | 2008 | 2009 | 2010 | 2011 | 2012 |
| Develop food safety plan SAGE | 2008 | 2009 | 2010 | 2011 | 2012 |
| Provide sound/fiscal mgmt/oversight SAGE | 2008 | 2009 | 2010 | 2011 | 2012 |
| Construct a small mgmt/wELCOME shed SAGE | 2008 | 2009 | 2010 | 2011 | 2012 |
| Provide or support construction of tool sheds with shade areas for each farmer | 2008 | 2009 | 2010 | 2011 | 2012 |
| Through SFPUC, arrange for hook-ups for potable water and electricity | 2008 | 2009 | 2010 | 2011 | 2012 |
### Sunol Water Temple AgPark Project Schedule - Agriculture

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<td>Q1</td>
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</table>

#### AGRICULTURE

- With SFPPUC, plan for and make road improvements
- Manage infrastructure improvements: incl fence, irrigation systems, sheds, utilities, and roads

Obj 2.3 Supply technical assistance to farmers

- Support for production/refinement of business plans: 5-15 hrs/farmer/yr; less in following years
- On-site ‘trouble-shooting’ support, field-planning, marketing support, available ~ 3 days/week during the growing season
- Coordinate other technical support needed by the farmers by connecting them to service providers

Obj 2.4 Set protocols for mutual farmer-SAGE accountability

#### Goal 3: Devel. sust. farming operations

Obj 3.1 Formulate/implement multi-year soil fertility mgmt plan

- Develop fertility plan based on available resources, soil testing, and capabilities of farmers
- Establish relationships with fertility input suppliers that can service the site. Initiate fertility program
- Maintain and improve soil fertility; perform an annual soil test and manage inputs to address soil fertility as indicated by test

Obj 3.2 Overseer transition to and maintenance of certifiable organic practices

- Establish timeline, tasks, responsibility for all farmers to achieve organic certification
- Each farm operation must comply with organic farming procedures and must follow all steps to become a certifed organic farm

Obj 3.3 Initiate farmer program covering pest mgmt guidelines

- Timely management of bindweed and Bermuda grass

Obj 3.4 Establish links to Natural Resources and Public Education objectives and strategies.
### Sunol Water Temple AgPark Project Schedule - Natural Resources

<table>
<thead>
<tr>
<th>Objective</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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<tbody>
<tr>
<td><strong>Goal 1: Protect and enhance nat. resources</strong></td>
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<tr>
<td>Obj 1.1 Ad Comm monitors NR protection</td>
<td>Ad Comm</td>
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<tr>
<td>Assess farm operations each quarter, issue memo on addressing any impacts</td>
<td>Ad Comm</td>
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<tr>
<td>Notify SAGE when additional research or actions are needed</td>
<td>Ad Comm</td>
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<tr>
<td>Obj 1.2 NR coord monitors NR protection activities</td>
<td>SAGE</td>
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<tr>
<td>Identify party responsible for monitoring NR</td>
<td>SAGE</td>
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<tr>
<td>Coordinate volunteers</td>
<td>SAGE</td>
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<tr>
<td><strong>Goal 2: Complete/Implement Conserv. Plan</strong></td>
<td>SAGE</td>
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<tr>
<td>Obj 2.1 Cons. Plan completion/implementation</td>
<td>SAGE</td>
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<tr>
<td>Coord w/ NRCS/ACRCD to complete plan</td>
<td>SAGE</td>
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<tr>
<td>Review implementation progress quarterly</td>
<td>SAGE</td>
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<tr>
<td>Obj 2.2 Demonstrate appropriate practices</td>
<td>SAGE</td>
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<tr>
<td>Demonstrate composting</td>
<td>SAGE</td>
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<tr>
<td>Demonstrate cover cropping</td>
<td>SAGE</td>
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<tr>
<td>Demonstrate filter strip/hedgerow/ins egetory plantings; reseed annually</td>
<td>SAGE</td>
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<td>Demonstrate water use efficiency</td>
<td>SAGE</td>
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<td>Demonstrate IPM</td>
<td>SAGE</td>
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<td>Obj 2.3 Maintain “grass strip”</td>
<td>SAGE</td>
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<tr>
<td>Mow and otherwise maintain grass strip</td>
<td>SAGE</td>
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<tr>
<td>Obj 2.4 Grass filter strips for livestock pens</td>
<td>SAGE</td>
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<tr>
<td>Mow and otherwise maintain 3-5’ strips on downslope sides; clean pens of manure</td>
<td>SAGE</td>
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<tr>
<td>Obj 2.5 Cover compost piles in winter months</td>
<td>SAGE</td>
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<tr>
<td>Provide information to farmers</td>
<td>SAGE</td>
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<tr>
<td>Provide tarp to farmers for trial</td>
<td>SAGE</td>
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<tr>
<td>Obj 2.6 Keep park trash-free, maintain facilities</td>
<td>SAGE</td>
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<tr>
<td>See tasks for NRC, farm mgr, volunteers</td>
<td>SAGE</td>
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<tr>
<td>Ensure park is maintained trash- and pollutant-free</td>
<td>SAGE</td>
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<tr>
<td>Install and maintain sanitary facilities</td>
<td>SAGE</td>
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<tr>
<td>Ensure sheds, work areas, and equip do not contaminate surface or ground water.</td>
<td>SAGE</td>
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<tr>
<td>Obj 2.7 Demonstrate other practices</td>
<td>SAGE</td>
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<tr>
<td>Native plant nursery - determine based on setup</td>
<td>SAGE</td>
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<tr>
<td>Containerized plantings - weeding</td>
<td>SAGE</td>
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<tr>
<td>Beekeeping - no practices necessary</td>
<td>SAGE</td>
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<td>For other enterprises as they occur</td>
<td>SAGE</td>
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<td>Obj 2.8 Photodocument / monitor practices</td>
<td>SAGE</td>
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<td>Photodocument and monitor practices</td>
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<td>Document for EQIP payments</td>
<td>SAGE</td>
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<tr>
<td>SUNO Water Temple AgPark Project Schedule - Natural Resources</td>
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<tr>
<td><strong>NATURAL RESOURCES</strong></td>
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<tr>
<td><strong>Goal 3: Develop/maintain setback areas</strong></td>
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<tr>
<td>Obj 3.1 Overseer/develop/maintainance of setbacks</td>
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<tr>
<td>Approve annual workplan</td>
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<td>Provide descriptions of filter strip, grass buffer, limited use zone to farmers</td>
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<tr>
<td><strong>Obj 3.2 Seek funding for filter strip plantings</strong></td>
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<tr>
<td>Identify responsible party to raise funds</td>
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<td>Implement EQIP projects in timely manner</td>
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<tr>
<td><strong>Obj 3.3 Volunteers to install/maintain plantings</strong></td>
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<tr>
<td>Identify volunteer coordinator/organizer</td>
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<tr>
<td>Develop timeline for volunteer projects</td>
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<tr>
<td>Start bringing in volunteers</td>
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<td><strong>Goal 4: Organize stewardship volunteers</strong></td>
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<tr>
<td>Obj 4.1 Form volunteer pool/organization</td>
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<td>Assign organizing role</td>
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<tr>
<td>Develop volunteer recruitment strategy, working with volunteer organizer</td>
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<tr>
<td><strong>Obj 4.2 Install plantings</strong></td>
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<tr>
<td>Overseer volunteer work</td>
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<tr>
<td>Maintain plantings</td>
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<tr>
<td>Document, monitor, assess, evaluate</td>
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<td><strong>Goal 5: Promote experimentation/research</strong></td>
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<td>Obj 5.1 Staffing and plant</td>
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<tr>
<td>Assign staff/volunteer to oversee research</td>
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<td>Develop plan and protocols</td>
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<td><strong>Obj 5.2 Incorporate farmer needs</strong></td>
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<tr>
<td><strong>Obj 5.3 Gather/maintain ref materials at SAGE</strong></td>
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<tr>
<td>Assign staff to develop/maintain materials</td>
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<td>Develop filing system at SAGE office</td>
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<tr>
<td><strong>Obj 5.4 Provide NR info to farmers as needed</strong></td>
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<tr>
<td><strong>Obj 5.5 Provide NR info to educators on site</strong></td>
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### Sunol Water Temple AgPark Project Schedule - Public Education

<table>
<thead>
<tr>
<th>Goal 1: Student Programs</th>
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<th>2009</th>
<th>2010</th>
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<tbody>
<tr>
<td>Pilot 6 field trips</td>
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<td>Contract with evaluator</td>
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<td>20 field trips offered</td>
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<td>Pre and post materials created</td>
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<tr>
<td>Teacher workshops</td>
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<tr>
<td>Provide transportation to AgPark</td>
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<tr>
<td>Pilot overnight program 3 classes</td>
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<tr>
<td>Sunol Elementary School Partnership</td>
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<tr>
<td>Planning and implementing full curriculum</td>
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<td>Bus acquired for transportation</td>
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<tr>
<th>Goal 2: Youth Group Programs</th>
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<tbody>
<tr>
<td>Object 2.1 After school &amp; summer programs</td>
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<tr>
<td>Partnership with Hayward Unified</td>
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<tr>
<td>Summer pilot with Hayward Unified</td>
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<td>Pilot after school program with EBACY</td>
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<tr>
<td>Week long leadership program</td>
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<td>Genetics program for high school</td>
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<td>Week long leadership camps with EBRP</td>
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<tr>
<td>Teen run farmers market</td>
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<tr>
<th>Goal 3: General Public Programs</th>
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<tbody>
<tr>
<td>Object 3.1 Docent Program</td>
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<td>Develop docent training materials</td>
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<td>Conduct joint docent training with EBRP</td>
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<tr>
<td>Recruit volunteer docents</td>
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<tr>
<td>Docent tours and special projects</td>
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<td>On-going docent training</td>
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<tr>
<td>New docent class</td>
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<tr>
<td>Object 3.2 Adult volunteer stewardship programs</td>
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<tr>
<td>Work with master gardeners on filter strip</td>
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<td>Ohio University Interns with farmers</td>
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<tr>
<td>Program development for filter strip</td>
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<td>Native plant propagation for stewardship</td>
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<tr>
<td>Planning for demonstration garden</td>
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<tr>
<td>Recruit special needs volunteers</td>
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<tr>
<td>Expand college internships</td>
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<td>Identify projects for scout groups</td>
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<tr>
<td>Native plant nursery days</td>
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<tr>
<td>Demonstration garden implementation</td>
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<tr>
<td>Create &quot;Friends of the AgPark&quot;</td>
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<tr>
<td>Object 3.3 Develop infrastructure for on-site</td>
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<tr>
<td>Classroom &amp; volunteer stewardship programs</td>
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<tr>
<td>Build shed for tools and materials</td>
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<td>Create signage &amp; install to identify AgPark</td>
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<tr>
<td>Build shade structures</td>
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<td>Begin infrastructure planning for yr 2</td>
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<tr>
<td>Install public bathrooms</td>
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<tr>
<td>Acquire tables and chairs for classroom</td>
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<tr>
<td>Install potable water</td>
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<tr>
<td>Build basic outdoor kitchen</td>
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<td>Build a classroom for 30 students</td>
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<td>Construct native plant nursery</td>
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<tr>
<td>PUBLIC EDUCATION</td>
<td>2008</td>
<td>2009</td>
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<td><strong>Goal 4: Engage local community</strong></td>
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<tr>
<td><strong>Education Programs, work days &amp; events</strong></td>
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<tr>
<td>Obj 4.1: Develop community involvement</td>
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<tr>
<td>Programs and events</td>
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<tr>
<td>Conduct 1 workshop by StopWaste.Org</td>
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<tr>
<td>Conduct 1 joint event with EBRP</td>
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<tr>
<td>Hold two &quot;family days&quot;</td>
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<td>Hold 2 community workshops</td>
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<tr>
<td>Host 2 events by EBRP</td>
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<tr>
<td>Farmers market on selected weekends</td>
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<tr>
<td><strong>Goal 5: Facilitate collaborations between</strong></td>
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<tr>
<td><strong>SAGE, education partners &amp; school programs</strong></td>
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<tr>
<td>Obj 5.1: Create education advisory board</td>
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<tr>
<td>Obj 5.2: Create teacher advisory board</td>
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<tr>
<td>Obj 5.3: Facilitate plans for interpretive center</td>
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</table>
### Sunol Water Temple AgPark Project Schedule - Management and Administration

<table>
<thead>
<tr>
<th>MANAGEMENT AND ADMINISTRATION</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tbody>
<tr>
<td><strong>Goal 1: Manage the AgPark as a sustainable, collaborative system</strong></td>
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<tr>
<td><strong>Obj 1.1 Establish, broaden, and deepen all partnerships and collaborations</strong></td>
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<tr>
<td>Meet annually with SFPUC to address Master Lease or other issues, pursue opportunities, and deepen partnership</td>
<td>SAGE</td>
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<tr>
<td>Form a Sunol AgPark Advisory Committee</td>
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<tr>
<td>Engage and communicate with the Ad Comm on all major issues; organize 2-4 meetings per year</td>
<td>SAGE</td>
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<tr>
<td>Seek out, engage with, and respond to all other major partners and collaborators (not on the Ad Comm)</td>
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<tr>
<td>Host visitors to the AgPark site</td>
<td>SAGE</td>
<td>Partners</td>
<td>Farmers</td>
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<tr>
<td>Interact with other SAGE staff and Board; and engage with other SAGE activities as needed</td>
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<tr>
<td>Produce qtrly electronic newsletter for Sunol AgPark ‘community’, public land managers and associated decision-makers</td>
<td>SAGE</td>
<td>Partners</td>
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<tr>
<td>Produce an annual report for AgPark participants, partners, and stakeholders</td>
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<tr>
<td><strong>Obj 1.2 Provide overall administration and management</strong></td>
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<tr>
<td>Hire and manage staff; retain and oversee main contractors and consultants</td>
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<tr>
<td>Collect water and license fees, pay water fees to SFPUC and all other payables</td>
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<tr>
<td>Produce annual budget, provide sound fiscal management and oversight</td>
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<tr>
<td>Raise funds, as needed, to develop/sustain/enhance operations and infrastructure development and maintenance; seek opportunities for collaborative fundraising</td>
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<tr>
<td>Carry out/oversee monitoring and evaluation</td>
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<td>Produce reports per requirements of funders</td>
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<tr>
<td><strong>Obj 1.3 Foster collaboration between ag, nat res, and public education elements</strong></td>
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<tr>
<td><strong>Goal 2: Demonstrate feasibility of AgPark concept</strong></td>
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<tr>
<td><strong>Obj 2.1 Create informational materials on AgParks</strong></td>
<td>SAGE</td>
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<tr>
<td>Produce PPT/DVD and/or print materials providing a concise overview of AgParks using the Sunol AgPark model</td>
<td>SAGE</td>
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<tr>
<td><strong>Obj 2.2 Compile technical &amp; graphic resources</strong></td>
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<tr>
<td>Compile planning, land use, legal, agronomic, and economic resources related to developing an AgPark, if feasible</td>
<td>SAGE</td>
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<tr>
<td>Produce development manual to be published in 2009, if feasible</td>
<td>SAGE</td>
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Financial Plan

Background and Financials Introduction

SAGE has secured funding from several sources to cover the establishment and start-up costs of the AgPark. Funding for the AgPark to date includes $100,000 from the Columbia Foundation, $50,000 from the USDA Risk Management Agency, and $15,000 from the San Francisco Foundation. The SFPUC provided a one-time grant of $65,000 towards development of this management plan and towards installation of the perimeter fence and an irrigation water distribution system. In addition, SAGE has raised $2,500 from a fundraising event in the fall of 2006.

In February 2007 SAGE entered into a contract with the USDA Natural Resources Conservation Service EQIP Program that will supply cost-share funding to SAGE to accomplish a variety of conservation measures on the AgPark property over a three-year period extending through the end of 2009. The contract will provide a 75% cost share to SAGE, with a total cost share payment not to exceed $18,701 over the period. The funds will be used to establish a filter strip, including planting, pipeline and irrigation system costs, planting cover crops, and performing erosion control measures on possible roadways on the site. Funds will be paid to SAGE as refunds for actual expenditures made after the project work is completed each season.

Financials that follow include a detailed budget projection for 2008-2015 and an actual budget for 2007. The budget for the next eight years is projected so that the agriculture function and natural resource stewardship activities are self-sufficient. The educational programs are scalable depending on the availability of funding.

Funding sources being approached primarily for education program development, include: community, Bay Area, and education-focused foundations; public agencies involved with the overlap between natural resources stewardship and public education; and 3-‘E’ - focused businesses in Alameda County and in the Bay Area.

In addition, the project is cultivating in-kind support and engagement from a wide-range of community organizations and agencies, involved in bridging sustainable food and agriculture, natural resources stewardship, and community economic development.
<table>
<thead>
<tr>
<th>Table 1. Sunol AgPark Eight Year Development &amp; Operating Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>-------</td>
</tr>
<tr>
<td><strong>REVENUE</strong></td>
</tr>
<tr>
<td>Contributions Income</td>
</tr>
<tr>
<td>Deposit</td>
</tr>
<tr>
<td>Land security, meters (incl. all refunds)</td>
</tr>
<tr>
<td>Water meters</td>
</tr>
<tr>
<td>Land security</td>
</tr>
<tr>
<td>Fee for Services</td>
</tr>
<tr>
<td>Grants</td>
</tr>
<tr>
<td>General Program</td>
</tr>
<tr>
<td>Farmer support and technical assistance</td>
</tr>
<tr>
<td>EQIP (or other Nat. Res. Stewardship grants/cost-share)</td>
</tr>
<tr>
<td>Education Program Grants</td>
</tr>
<tr>
<td>License Fees ($1500/ac/yr, reduced to $1200/ac/yr in 10)</td>
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<tr>
<td>Water fees</td>
</tr>
<tr>
<td>Education Program Fees</td>
</tr>
<tr>
<td>K-8 school programs (average of $5/child)</td>
</tr>
<tr>
<td>Youth programs - organizational partnership contribution</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
</tr>
<tr>
<td><strong>EXPENSES</strong></td>
</tr>
<tr>
<td><strong>Administration</strong></td>
</tr>
<tr>
<td>Personnel</td>
</tr>
<tr>
<td>Project oversight, SAGE Exec Dir. ($75 K + .30% fringe)</td>
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<tr>
<td>Admin support &amp; bookkeeping (av. $40 K + 20% fringe)</td>
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<tr>
<td>SAGE AgPark and Food Systems Manager ($45K + 28% fr.)</td>
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<tr>
<td>Sunol AgPark Dir ($46 K + 28% fr.)</td>
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<tr>
<td>Professional &amp; Contract Services</td>
</tr>
<tr>
<td>Management Plan consultants</td>
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<tr>
<td>Fundraiser/grant writer</td>
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<tr>
<td>Public Relations</td>
</tr>
<tr>
<td><strong>Direct expenses</strong></td>
</tr>
<tr>
<td>Insurance</td>
</tr>
<tr>
<td>Sunol AgPark logo (completion)</td>
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<tr>
<td>Meeting expenses: AgPark Advisory Committee</td>
</tr>
<tr>
<td>Printing Main Plan &amp; mailing mats (ann newsletter, DVD, etc.)</td>
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<tr>
<td>SAGE staff + Sunol Dir: travel allowance to site</td>
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<tr>
<td>Berkeley - Sunol (24 RT/yr @ $44</td>
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<tr>
<td>Conference/travel costs for presentations</td>
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<tr>
<td><strong>Sub-total Administration expenses</strong></td>
</tr>
<tr>
<td><strong>Agriculture and Site Management</strong></td>
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<tr>
<td>Professional &amp; Contract Services</td>
</tr>
<tr>
<td>Sitefarm manager - contract @ $30/hr</td>
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<tr>
<td>Sunol AgPark Dir ($48 K + 28% fr.)</td>
</tr>
<tr>
<td>Incubation Farmer Consultant - ALBA (+CA FarmLink?)</td>
</tr>
<tr>
<td>Table 1. Sunol AgPark Eight Year Development &amp; Operating Budget</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
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<tr>
<td>Farmer trainings (organic practices, mktg, bus.mgmt, etc)</td>
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<tr>
<td>Improvements</td>
</tr>
<tr>
<td>Management/welcome shed construction</td>
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<tr>
<td>Electrical and potable water hook-up</td>
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<tr>
<td>Licensee sheds and greenhouses</td>
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<tr>
<td>Common areas landscaping materials</td>
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<tr>
<td>Signage at main gate</td>
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<tr>
<td>Water meters</td>
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<tr>
<td><strong>Management &amp; Operations</strong></td>
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<tr>
<td>Organic certification costs</td>
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<td>Soil Improvement</td>
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<td>Pest management</td>
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<tr>
<td>Compost (off-farm inputs for a 6' x 20' pile)</td>
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<td>Repairs/maintenance: irrigation system, fence, shed</td>
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<td>Road improvements and maintenance</td>
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<tr>
<td>Common area maintenance - contract tractor work</td>
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<tr>
<td>Management/welcome shed furniture</td>
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<tr>
<td>Tools, First Aid kit, office supplies, camera</td>
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<tr>
<td>Port-a-potties servicing contract/yr</td>
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<tr>
<td>Utilities: electrical, potable water</td>
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<tr>
<td>Farm/site manager - travel allowance</td>
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<td><strong>Sub-total Agriculture and site expenses</strong></td>
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<td><strong>Public Education</strong></td>
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<td>Education program development consultant</td>
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<tr>
<td>Education/event coordinator @ $30/hr</td>
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<tr>
<td>Education/event coordinator, travel costs</td>
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<tr>
<td>Sunol AgPark Educ &amp; Site Dir (548 K + 28% fr.)</td>
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<tr>
<td>Education Program Teacher</td>
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<tr>
<td>Curriculum developer</td>
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<tr>
<td>Education program evaluator, for K-8 and Youth programs</td>
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<tr>
<td><strong>Improvements</strong></td>
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<tr>
<td>Interpretive signage</td>
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<tr>
<td>Education area: storage shed</td>
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<tr>
<td>Shade-cloth structure</td>
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<tr>
<td>Outdoor kitchen</td>
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<tr>
<td>Outdoor classroom (with roof and half walls)</td>
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<tr>
<td>Folding tables and chairs</td>
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<tr>
<td>SFPCU-EBPDP collab.: Interpretive Center</td>
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<td>Planning and Development</td>
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<tr>
<td>Table 1. Sunol AgPark Eight Year Development &amp; Operating Budget</td>
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<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>K-8 School Programs: Development &amp; Management</strong></td>
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<tr>
<td>Educational materials (pre- and post) for schools</td>
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<tr>
<td>allowance for school program</td>
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<tr>
<td>2,500 2,000 2,000 2,000 2,000 2,000 2,000 2,000</td>
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<tr>
<td>School (Grades 4-8) pilot program deve/impl/spring ’08</td>
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<tr>
<td>time and materials contract</td>
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<td>3,500</td>
</tr>
<tr>
<td>School (Grades 4-8) program (2-3 classes/ 60 kids per visit)</td>
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<tr>
<td>10fall ‘08, 20’09, 30’10 (Ed Dir salary)</td>
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<tr>
<td>Transportation allowance (contracted van, bus, etc.)</td>
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<tr>
<td>$200 per group of 60 kids</td>
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<td>2,000 4,000 6,000 6,000 6,000 6,000 6,000 6,000</td>
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<tr>
<td>Teacher Advisory Group (4 - 6 teachers)</td>
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<tr>
<td>Allowance for travel, meeting expenses</td>
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<td>300 300 300 300 300 300 300 300</td>
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<tr>
<td>Youth Group Programs: Development &amp; Management</td>
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<tr>
<td>Summer youth pilot program deve/implmentation</td>
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<tr>
<td>natural resource, farming, art activities</td>
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<tr>
<td>5,000</td>
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<tr>
<td>Summer youth program (8-10 kids for 1 wk &lt; 4 wks)</td>
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<tr>
<td>Site/Ed Dir. + specialists + expenses</td>
</tr>
<tr>
<td>3,000 6,000 6,000 6,000 6,000 6,000 6,000 6,000</td>
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<tr>
<td>Transportation allowance (contracted van, bus, etc.)</td>
</tr>
<tr>
<td>$300/wk/group</td>
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<tr>
<td>300 600 1,200 1,200 1,200 1,200 1,200 1,200</td>
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<tr>
<td><strong>Docent Program: Development &amp; Management</strong></td>
</tr>
<tr>
<td>Development cost</td>
</tr>
<tr>
<td>once developed, is task of Site/Ed Dir</td>
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<tr>
<td>1,500</td>
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<tr>
<td><strong>Community Programs: Development &amp; Management</strong></td>
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<tr>
<td>Field days, family days, celebrations, etc.</td>
</tr>
<tr>
<td>allowance</td>
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<tr>
<td>1,500 2,250 2,250 2,250 2,250 2,250 2,250 2,250</td>
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<tr>
<td><strong>Sub-Total Public Education expenses</strong></td>
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<tr>
<td>21,850 40,782 58,914 58,014 57,014 61,414 61,414 61,414</td>
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<tr>
<td><strong>Natural Resources Stewardship</strong></td>
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<tr>
<td><strong>Professional &amp; Contract Services</strong></td>
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<tr>
<td>Natural Resources Stewardship coordinator, @ $33/hr</td>
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<tr>
<td>80 hrs/2008 (prior to Site/Ed Dir ’08)</td>
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<td>2,400</td>
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<tr>
<td>Sundl AgPark Dir ($48 K + 28% fr.)</td>
</tr>
<tr>
<td>1/2 time &lt; full time; 5% of job is NFS mngt</td>
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<tr>
<td>1,536 3,072 3,072 3,072 3,072 3,072 3,072 3,072</td>
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<tr>
<td>Natural Resources Stewardship school/youth program dev.</td>
</tr>
<tr>
<td>ACRCD staff</td>
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<tr>
<td>2,400 2,400</td>
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<tr>
<td>Natural Resources Stewardship consultation</td>
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<tr>
<td>ACRCD staff, no cost for limited hours</td>
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<tr>
<td><strong>Improvements</strong></td>
</tr>
<tr>
<td>Filter strip establishment and annual maintenance</td>
</tr>
<tr>
<td>plants, planting, irrigation design/mile.</td>
</tr>
<tr>
<td>250 250 250 250 250 250 250 250</td>
</tr>
<tr>
<td>Grass strip annual re-seeding and maintenance</td>
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<tr>
<td>allowance</td>
</tr>
<tr>
<td>500 250 250 250 250 250 250 250</td>
</tr>
<tr>
<td>Hedgerow/insectary plantings, establ and ann maintenance</td>
</tr>
<tr>
<td>allowance</td>
</tr>
<tr>
<td>250 250 250 250 250 250 250 250</td>
</tr>
<tr>
<td><strong>Management &amp; Operations</strong></td>
</tr>
<tr>
<td>Educational materials for farmers</td>
</tr>
<tr>
<td>allowance</td>
</tr>
<tr>
<td>150 250 250 250 250 250 250 250</td>
</tr>
<tr>
<td>Educational materials for school and youth programs</td>
</tr>
<tr>
<td>existing materials at cost</td>
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<tr>
<td>500 500 500 500 500 500 500 500</td>
</tr>
<tr>
<td><strong>School and Youth Program, Natural Resources Component</strong></td>
</tr>
<tr>
<td>Program deve: filter strip stewardship, creek walks, etc.</td>
</tr>
<tr>
<td>allowance</td>
</tr>
<tr>
<td>2,500 2,500</td>
</tr>
<tr>
<td>Lead programs</td>
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<tr>
<td>ACRCD staff, nat res coord, Site Dir</td>
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<tr>
<td><strong>Adult Volunteer Stewardship Programs</strong></td>
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<tr>
<td>Development</td>
</tr>
<tr>
<td>no $; advised by ACRCD and EBRPD</td>
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<tr>
<td>Materials and incidentals</td>
</tr>
<tr>
<td>allowance</td>
</tr>
<tr>
<td>250 250 250 250 250 250 250 250</td>
</tr>
<tr>
<td><strong>Sub-total Natural Resources Stewardship expenses</strong></td>
</tr>
<tr>
<td>8,200 8,186 4,572 4,572 4,572 4,572 4,572 4,572</td>
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<tr>
<td><strong>Sub-total Expenses</strong></td>
</tr>
<tr>
<td>104,681 95,843 115,096 105,673 104,573 108,973 108,973 107,893</td>
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<tr>
<td><strong>SAGE overhead</strong> (office, phone, rent, etc.)</td>
</tr>
<tr>
<td>10% of expenses</td>
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<tr>
<td>10,465 9,534 11,510 10,567 10,457 10,897 10,897 10,789</td>
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<tr>
<td><strong>Total Expenses</strong></td>
</tr>
<tr>
<td>115,149 105,427 126,606 115,240 115,030 119,870 119,870 118,682</td>
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<tr>
<td><strong>Net Income</strong></td>
</tr>
<tr>
<td>-43,949 -2,427 -3,706 1,660 2,870 1,030 1,030 -3,782</td>
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<tr>
<td><strong>Balance carried forward from previous year</strong></td>
</tr>
<tr>
<td>50,000 6,051 3,624 -82 1,578 4,447 5,477 6,507</td>
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<tr>
<td><strong>Balance at end of year</strong></td>
</tr>
<tr>
<td>6,051 3,624 -82 1,578 4,447 5,477 6,507 2,724</td>
</tr>
</tbody>
</table>
Table 1. Sunol AgPark Budget, 2007

<table>
<thead>
<tr>
<th>From farmers</th>
<th>Columbia</th>
<th>USDA</th>
<th>SFF</th>
<th>SFPUC</th>
<th>EQIP</th>
<th>Lease</th>
<th>Water</th>
<th>Deposits</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>Balance, Jan 1, ’07</td>
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</table>

Ordinary income/Expense

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<th>Water</th>
<th>Deposits</th>
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<td>Contributions Income</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Deposit</td>
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<td>Fee for Services</td>
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<td>Grants</td>
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<td>16,663</td>
<td>15,000</td>
<td>65,000</td>
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<td>13,650</td>
<td>7,554</td>
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Expense

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<th>SFPUC</th>
<th>EQIP</th>
<th>Lease</th>
<th>Water</th>
<th>Deposits</th>
<th>TOTAL</th>
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<td>Printing and Reproduction</td>
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<td>0</td>
<td>0</td>
<td>-787</td>
</tr>
<tr>
<td>Rent</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Supplies</td>
<td>0</td>
<td>2,932</td>
<td>0</td>
<td>5,201</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8,133</td>
</tr>
<tr>
<td>Telephone</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Travel &amp; Ent</td>
<td>0</td>
<td>1,655</td>
<td>0</td>
<td>1,319</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2,974</td>
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<tr>
<td>Water</td>
<td>0</td>
<td>0</td>
<td>566</td>
<td>0</td>
<td>0</td>
<td>6,466</td>
<td>0</td>
<td>0</td>
<td>7,054</td>
</tr>
<tr>
<td>Total Expense</td>
<td>12,274</td>
<td>25,575</td>
<td>50,113</td>
<td>0</td>
<td>0</td>
<td>6,466</td>
<td>0</td>
<td>0</td>
<td>94,220</td>
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<tr>
<td>Net Ordinary Income</td>
<td>22,726</td>
<td>-6,712</td>
<td>15,000</td>
<td>14,887</td>
<td>0</td>
<td>13,650</td>
<td>1,068</td>
<td>750</td>
<td>59,388</td>
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<tr>
<td>Contribution to Overhead @10%</td>
<td>1,433</td>
<td>871</td>
<td>6,188</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8,492</td>
<td></td>
</tr>
<tr>
<td>TOTAL EXPENSE</td>
<td>13,707</td>
<td>26,247</td>
<td>56,301</td>
<td>0</td>
<td>0</td>
<td>6,466</td>
<td>0</td>
<td>0</td>
<td>102,721</td>
</tr>
<tr>
<td>Net Income</td>
<td>21,293</td>
<td>-9,584</td>
<td>15,000</td>
<td>8,699</td>
<td>0</td>
<td>13,650</td>
<td>1,068</td>
<td>750</td>
<td>50,896</td>
</tr>
<tr>
<td>Balance, Dec 31, '07</td>
<td>21,293</td>
<td>-9,584</td>
<td>15,000</td>
<td>-5,111</td>
<td>0</td>
<td>13,650</td>
<td>1,068</td>
<td>750</td>
<td>37,086</td>
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</table>
APPENDIX A: 2008 FARMING LICENSE AGREEMENT

APPROVED FARMING LICENSE, 2008

This LICENSE (the "License") is dated for reference purposes as of __________, 200_, and is by and between SUSTAINABLE AGRICULTURE EDUCATION, California non-profit corporation ("Licensor"), and ________________ ("Licensee").

BACKGROUND

A. Licensor is the tenant under that certain lease in which the City and County of San Francisco (the "City") is the Landlord, dated for reference purposes as of April 1, 2007 (as the same may have been or may be amended, the "Lease"), for certain premises in Alameda County, California, as more particularly described in the Lease (the "Premises"), currently operated as a working farm known as the Sunol Water Temple Agricultural Park (the "Ag Park Project").

B. Licensee engages in farming operations and desires to license the use of a portion of the Premises from Licensor for farming activities consistent with the permitted uses under the Lease.

C. Licensor and Licensee now desire to enter into this License on the terms and conditions set forth more particularly below.

D. Capitalized terms used but not defined herein shall have the respective meaning given in the Lease.

NOW, THEREFORE, for good and valuable consideration the receipt and sufficiency of which are hereby acknowledged, Licensor and Licensee agree as follows:

AGREEMENT

1. **The License Premises.** Licensor hereby confers to Licensee a revocable, personal, non-exclusive privilege to enter upon and use a portion of the Premises shown on Exhibit 1 (the "License Premises") for the limited purpose of growing crops on the Premises. This License gives Licensee a license only and notwithstanding anything to the contrary herein, this License does not constitute a grant of any ownership, leasehold, easement or other property interest or estate whatsoever in the License Premises or Premises, or any portion thereof.

2. **Term.**

   (a) The term of this License shall commence on ____________, 200_, and shall end on the earlier of the following (i) thirty (30) days written termination notice by either party to the other party, or (ii) twelve (12) months after the commencement date, or (iii) the expiration or termination of the Lease. Licensor may at its sole option freely revoke this License any time
without cause or liability, and without any obligation to pay any consideration to Licensee, including without limitation, consideration for unharvested crops, or any obligation to return to Licensee any part of the License Fee or other fees. Upon any such revocation, Licensee will immediately surrender the License Premises in the condition required hereunder.

(b) In the event that crops shall be standing and unharvested at the time of termination of the term hereof, the Licensor may, in its discretion, allow the Licensee an additional period of time as may be reasonably necessary to enable the Licensee, with the exercise of reasonable due diligence, to remove such crop or crops from said portion of the Premises.

(c) This License shall terminate without any residual rights of renewal at the end of twelve (12) months, or sooner as set forth in Section 2(a) and Section 17 herein. If Licensee wishes to continue as a farmer participant on the License Premises, the Licensee shall submit a new application to the Licensor, with no reserved rights or guarantee of approval.

3. **Registration.** Upon entering into this License, Licensee will submit a registration form to the Licensor (attached hereto as Exhibit 2(a)). The form will prompt Licensee to state their goals and objectives for their participation in the Ag Park Project. Each registered user must also complete an Ag Park Release Form (attached hereto as Exhibit 2(b)), Farm Plan Form (attached hereto as Exhibit 2(c)), and Organic Systems Plan (attached hereto as Exhibit 2(d)) (collectively, the "Registration Forms"). Any additions or changes to the information presented on these Registration Forms must be submitted in writing to Licensor prior to such changes being made.

4. **License Costs and Expenses.** Licensee shall bear all costs or expenses in connection with its use of the License Premises. Commencing on the date hereof and continuing for the term of this License, Licensee shall pay specified fees to Licensor (the "License Fees"). The fees, schedule and procedures for payment to Licensor are set forth in the “Fee Schedule and Instructions”, attached hereto as Exhibit 3.

5. **Subordinate to Lease.** This License is and will remain in every manner subject and subordinate to the terms and provisions of the Lease. Any expiration or termination of the Lease shall cause an automatic termination of this License without the need for any further action on the part of Licensor or City. Licensee shall not do, or omit to do, any act that could cause a breach or default under the terms of the Lease. Licensee shall comply with the covenants regarding use of the Premises set forth in Section 7.2 of the Lease, and with City's special provisions contained in Section 24 of the Lease including without limitation, Nondiscrimination in City Contracts (Section 24.21), Health Benefits for Covered Employees (Section 24.22), Notification of Limitations on Contributions (Section 24.23), MacBride Principles (Section 24.25), Conflicts of Interest (Section 24.26), Tropical Hardwood and Virgin Redwood Ban (Section 24.28), Tobacco Product Advertising Prohibition (Section 24.29), and Supervision of Minors (Section 24.32). Notwithstanding the above, Licensee acknowledges and agrees that City is not Licensee's landlord, and City shall have no responsibility or liability for any acts or omissions of Licensor with respect to this License, the License Premises or the Premises. The City would not be willing to consent to this License without the above agreement and the releases and waivers contained in this License. Licensee acknowledges that it has received a copy of the Lease.

6. **Use.** Licensee shall use the License Premises for growing seasonal crops on the Premises only and for no other purpose, in all cases, subject to the terms of this License and the Lease. All other uses, such as educational events, shall require the prior written approval of Licensor, and shall be conducted consistent with the provisions of the Lease.
7. **Good Husbandry.** Licensee hereby promises and agree to conduct its farming activities on the License Premises in a good and farmer-like manner in accordance with the most-approved farming practices in the vicinity. Licensee agrees to conduct its practices consistent with the U.S.D.A. National Organic Program. Licensee agrees not bring on to the License Premises any hazardous materials and Licensee will obtain prior written approval from Licensor for any crop or soil amendments not approved under the National Organic Program.

8. **Ownership or Alternation of Improvements.** Licensee shall not place, or make any alteration to, any buildings, structures, installations or other facilities on the License Premises without the prior written consent of City and Licensor, pursuant to the terms and conditions of the Lease and the Management Plan (as defined in Section 11 below) contained therein. Any permitted improvements shall become the property of Licensor unless Licensor directs them to be removed at the termination of the term.

9. **Supplies.** Licensee will provide all necessary inputs, materials, and supplies necessary to conduct their farming operations and produce their crops.

10. **Maintenance.** Licensee shall at all times maintain the License Premises in good condition, order and repair, and free from unsightly accumulations of waste or odors. Licensor and City shall have no duty whatsoever for any repair or maintenance of the License Premises.

11. **Management Plan for Premises.** Licensee acknowledges receipt of the Management Plan governing the use and operation of the Premises, including without limitation, the License Premises (the "Plan"). Licensee shall comply with all requirements regarding use of the site by farming licensees contained in the Plan and any additions thereto that Licensor may provide to Licensee in writing. Licensee acknowledges that any breach of the requirements contained in the Plan shall be a material breach under the terms of the License.

12. **As-Is Condition.** Licensee acknowledges and agrees that the License Premises are being licensed in, and the License Premises are in, its "AS IS WITH ALL FAULTS" condition, without representation or warranty of any kind, and subject to all applicable Laws. Licensee acknowledges that neither Licensor, City, nor any of their respective Agents has made any representations or warranties, express or implied concerning any aspect of the Premises or the License Premises, and any such representation or warranty is hereby disclaimed. Licensor makes no representations or promises as to the productivity or fitness of the Premises for the Licensee's purposes.

13. **Compliance With Laws.** Licensee shall promptly, and at its sole cost and expense, comply with all present and future Laws applicable to Licensee's use and operation of the License Premises or the Premises.

14. **No Assignment.** This License is personal to Licensee and shall not be assigned, conveyed or otherwise transferred by Licensee under any circumstances. Any attempt to assign, convey or otherwise transfer this License shall be null and void and cause the immediate termination and revocation of this License.

15. **Default.** The failure of Licensee to perform or comply with any provision of this License when such performance or compliance is required by the terms hereof shall constitute a breach of this License. Upon any such breach, Licensor may terminate this License on three (3) days' prior written notice to Licensee. Nevertheless, in the event of any breach by Licensee, Licensor shall have all the rights and remedies available to it at Law or in equity.
16. **Insurance.** Licensee shall present evidence of public liability insurance (minimum $1,000,000.00) for Licensee and its associated subcontractors, consultants, and other agents of Licensee at the time of execution of this License. Licensee’s general liability statement shall name Licensor and City as additional insureds.

17. **Waiver of Claims.** Licensee covenants and agrees that neither Licensor nor City shall be responsible for, or liable to Licensee for, and to the fullest extent allowed by Law, Licensee hereby waives all rights against Licensor, City and their respective employees, agents, and contractors and releases such parties from, any and all Losses (as defined in Section 18 below), including, but not limited to, incidental and consequential damages relating to any injury, accident or death of any person or loss or damage to any property, in or about the License Premises or any other City property, from any cause whatsoever, known or unknown. In connection with the foregoing releases, Licensee acknowledges that it is familiar with Section 1542 of the California Civil Code, which reads:

> A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor.

Licensee acknowledges that the releases contained herein include all known and unknown, disclosed and undisclosed, and anticipated and unanticipated claims. Licensee realizes and acknowledges that it has agreed upon this License in light of this realization and, being fully aware of this situation, it nevertheless intends to waive the benefit of Civil Code Section 1542, or any statute or other similar law now or later in effect. The releases contained herein shall survive any termination of this License.

18. **Indemnification.** Licensee, on behalf of itself and its successors and assigns, shall indemnify, protect, defend and hold harmless forever (the "Indemnity") Licensor and City, including, but not limited to, all of their respective boards, commissions, departments, agencies, and other subdivisions, including, without limitation, the City's Public Utilities Commission, and all of their respective employees, agents, and contractors, and their respective heirs, legal representatives, successors, and assigns, and each of them (the "Indemnified Parties") from and against any and all claims, demands, losses, liabilities, damages, liens, injuries, penalties, fines, lawsuits, judgments, and awards ("Losses") incurred in connection with or arising directly or indirectly, in whole or in part, out of this License, or the entry upon, or use or occupancy of the License Premises, the Premises or any other City property by Licensee or its officers, directors, employees, agents, contractors, invitees or guests (including volunteers engaged by Licensee to engage in the Permitted Uses specified in Exhibit D to the Lease), except to the extent resulting from the gross negligence or willful misconduct of the party seeking to be indemnified. The foregoing Indemnity shall include, without limitation, reasonable fees of attorneys, consultants, and experts and related costs and the costs of investigating any Loss. Licensee specifically acknowledges and agrees that it has an immediate and independent obligation to defend Licensor, City, and the other Indemnified Parties from any claim which actually or potentially falls within this indemnity provision even if such allegation is or may be groundless, fraudulent or false, and that such obligation arises at the time such claim is tendered to Licensee by Licensor or City and continues at all times thereafter. Licensee's obligations under this Section shall survive the expiration or sooner termination of this License.
19. **Surrender.** Licensee shall surrender the License Premises in good condition, order and repair, free from hazards and clear of all debris, immediately upon the earlier of (i) the expiration or termination of this License, and (ii) the expiration or termination of the Lease. At such time, Licensee shall remove all of its property from the License Premises permitted hereunder, and shall repair, at its cost, any damage to the License Premises caused by such removal. Licensee’s obligations under this Section shall survive any termination of this License. Licensor has absolutely no obligation to renew or otherwise enter into a new License or other occupancy agreement with Licensee at the expiration or termination of the Lease or this License.

20. **Notice.** Any notice given under this License shall be delivered personally (receipt required), or sent by certified mail, return receipt requested, to the Licensee at: ______________________________________________________, or to the Licensor at: ______________________________________________________, or to such other address as either party may designate in a written notice given in accordance with this Section.

21. **Modifications.** Due to the unique nature of each farming operation, there may be additional terms to be included for specific operations. Any such additional terms shall be consistent with the Lease and Management Agreement and set forth in a separate exhibit, which shall be attached hereto and become a part hereof. Modifications to this License shall be in writing, with mutual consent, and subject to the provisions of the Lease.

22. **No Relocation Assistance; Waiver of Claims.** Licensee acknowledges that it will not be a displaced person at the time this License is terminated or expires by its own terms, and Licensee fully RELEASES, WAIVES AND DISCHARGES forever any and all claims, demands, rights, and causes of action (including, without limitation, consequential and incidental damages) against, and covenants not to sue, City, its departments, commissions, officers, directors and employees, and all persons acting by, through or under each of them, under any present or future Laws, including, without limitation, any and all claims for relocation benefits or assistance from City under federal and state relocation assistance laws (including, but not limited to, California Government Code Section 7260 et seq.). Licensee shall Indemnify City and the other Indemnified Parties (as defined in the Lease) for any and all Losses arising out of any relocation assistance or benefits payable to Licensee.

23. **Disclosure.** Licensee understands and agrees that under the City's Sunshine Ordinance (San Francisco Administrative Code Chapter 67) and the State Public Records Law (Government Code Section 6250 et seq.), apply to this License and any and all records, information, and materials submitted to the City in connection with this License. Accordingly, any and all such records, information and materials may be subject to public disclosure in accordance with the City's Sunshine Ordinance and the State Public Records Law. Licensee hereby authorizes the City to disclose any records, information and materials submitted to the City in connection with this License.

24. **General Provisions.** (a) This License is binding upon and will inure to the benefit of the successors and assigns (as approved in writing by City) of Licensor and Licensee. (b) The parties intend that this License and the Lease shall be the final expression of their agreement with respect to the subject matter hereof and may not be contradicted by evidence of any prior or contemporaneous oral or written agreements or understandings. (c) The invalidation of any provision of this License, or of its application to any party, by judgment or court order, shall not affect any other provision of this License or its application to any other party or circumstance, and the remaining portions of this License shall continue in full force and effect, unless enforcement of this License as invalidated would be unreasonable or grossly inequitable under all the circumstances or would frustrate the purposes of this License.
(d) Captions to the sections of this License are included for convenience only and are not intended and shall not be deemed to modify or explain any of the terms of this License. (e) This License shall be governed by, and in all respects construed in accordance with, the laws of the State of California. (f) This License may be executed in two or more counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument. (g) Licensor and Licensee acknowledge and agree that the City is a third party beneficiary under this License and as such has the power to enforce the terms hereof; provided however, that Licensee and Licensor acknowledge and agree that City has no responsibilities or obligation to any party by reason of this License. (h) Licensee agrees that the venue for any civil action filed concerning Licensee’s obligations under the terms of this License, the Plan, and the Lease shall be the Superior Court for the City and County of San Francisco.

IN WITNESS WHEREOF, Licensor and Licensee have executed and delivered this License as of the date first above written.

**LICENSOR:**

SUSTAINABLE AGRICULTURE EDUCATION (SAGE),
a California non-profit corporation

By: _____________________________  
Name: ___________________________  
Title: ____________________________

By: _____________________________  
Name: ___________________________  
Title: ____________________________

**LICENSEE:**

By: _____________________________  
Name: ___________________________  
Address: _________________________  
Telephone: _______________________
EXHIBIT 1: Depiction of License Premises

Licensee ____________________________  Total Acres Licensed _______
EXHIBIT 2 (a)-(d)
Ag Park Registration Forms

Exhibit 2(a) Personnel Registration Form

Primary Farmer Contact Information

Name____________________________ Organization:____________________________
Address ________________________________________________________________
Phone _______________ Cell Phone ______________ Email______________________
SSN#:_________________ Employer Identification #:____________________________

Insurance Information (please enclose copies of both policies)
Liability Insurance Carrier________________________ Policy #___________________
Workers Compensation Carrier_____________________ Account #_________________

List of all Personnel who will have Key Access to Sunol AgPark, (maximum of 2)

Name_______________________________________ SSN#:____________________________
Address ________________________________________________________________
Phone _______________ Cell Phone ______________ Email______________________

Name_______________________________________ SSN#:____________________________
Address ________________________________________________________________
Phone _______________ Cell Phone ______________ Email______________________

List of all Personnel who will be Registered Users to Sunol AgPark

Name____________________________ Phone _______________________
Name____________________________ Phone _______________________
Name____________________________ Phone _______________________
Name____________________________ Phone _______________________
Exhibit 2(b) Release Form and Code of Conduct

First name___________________________ Last name________________________

Type of participant:
Key Access User □  Registered User □  Volunteer □  Education Program visitor □

Which farm operation? ________________________________

If visitor or volunteer, date of visit__________________________

Emergency Contact Information
Name___________________________________
Relationship______________________________
Phone #1_________________________________
Phone #2_________________________________
Phone #3_________________________________

Code of Conduct
As a visitor or volunteer at the Sunol AgPark I, ______________________________, hereby confirm that I will abide by the following rules of conduct while on the site.

1. I will remain within the boundaries of the Sunol AgPark
2. I will follow the instructions of the person(s) advising me
3. I will use respectful language and tone of voice
4. I will treat my peers and advisers with respect
5. I will not use farm substances or equipment without explicit permission and advising from an adviser.

Release Form
In addition, I hereby release the Sunol AgPark, its officers, employees, agents, students, volunteers and visitors from any claim or action whatsoever for damages, loss or injury suffered by me, or any claim brought against me, arising as a result of my activities on the Sunol AgPark.

Signed_______________________________________ Date__________

If above signatory is under the age of 18, this form must be signed by signatory’s parent/guardian.

Authorized Guardian________________________________________ Date__________
Please complete the following table (attach separate page if necessary):

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Variety/Type</th>
<th>Amount/Unit Grown (acres)</th>
<th>Harvest Season</th>
<th>Estimate Production (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>
Exhibit 2(d) Organic Systems Plan

Describe, or attach a description of, your organic business or plans including processing and handling activities, storage operations, and co-processors involved.

☐ Description attached

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Please check all that apply to your organic activities:
ø I am applying for CCOF organic grower certification
ø I/We grow crops
ø I/We grow crops in the ground
ø I/We plant seed, annual or perennial planting stock
ø I/We grow seedlings or greenhouse crops
ø I/We use compost or manure
ø I/We own the crop at harvest
ø I/We store crops

Total acres to be certified at this location: _________________

When did you begin managing this parcel: _________________

List crops grown on this parcel, with the acreage for each crop. Attach a list if necessary.

<table>
<thead>
<tr>
<th>Crop</th>
<th># of Acres</th>
<th>Crop</th>
<th># of Acres</th>
<th>Crop</th>
<th># of Acres</th>
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</thead>
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</tr>
</tbody>
</table>

List the land use for the last 3 years. List all materials used. Please attach a separate page if you need more space.

<table>
<thead>
<tr>
<th>Year</th>
<th>Crops or land use</th>
<th>Brand name of all fertilizers &amp; pest control substances applied</th>
<th>Application date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This year</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Do you produce organic seedlings, transplants or greenhouse crops?  o YES  o NO

If yes, complete the following questions:
1) Are crops grown in soil mix?  o Yes  o No, explain: __________________________
2) Location of growing facility (must be Certified Organic):
________________________________________________________________________
3) Please describe all pest control procedures (in OSP section G5.0)
4) Please list all planting mixes, fertility and disease control materials (in OSP section G5.1)

Fertility Plan

Describe your “rotation” plan. If you use cover crops, describe type and frequency.
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_________________________________
What are the major components of your soil and/or crop fertility plan?
 o Incorporation of crop residue
 o Minded gypsum or limestone
 o Mined minerals or powders
 o Biodynamic preparations
 o Plant materials
 o Foliar fertilizers
 o Manure
 o Side dressing or drip applications
 o Crop rotation
 o Compost
 o Cover crops including green manures
List or describe tillage and cultivation practices in the order performed throughout the crop season:

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Monitoring Plan

How do you monitor the effectiveness of your fertility management plan?

- Soil observation
- Crop observation
- Crop yield comparison
- Other: ________________________________________________________________

How often is monitoring performed?

- daily
- weekly
- monthly
- annually
- annually
- as needed
- other: __________________________#

What type of testing do you perform? (Copies of tests must be available)

- N/A, no testing performed
- Soil tests
- Tissue tests
- Microbiological tests
- Crop quality testing
- Other: ________________________________________________________________

How often is testing performed?

- daily
- weekly
- monthly
- annually
- annually
- as needed
- other: __________________________#

Erosion Control

What practices do you use to prevent or minimize erosion?

- No-till or permanent cover
- Strip cropping
- leveling
- Contour farming
- Terraces
- Conservation (minimum tillage)
- Micro-irrigate
- Windbreaks
- Winter cover or cover crops
- Other: __________________________
**Pest Management**

Complete the following matrix.

<table>
<thead>
<tr>
<th>Check which strategies you use:</th>
<th>Used for which type of pests:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weeds</td>
</tr>
<tr>
<td>Crop rotation</td>
<td></td>
</tr>
<tr>
<td>Cover cropping</td>
<td></td>
</tr>
<tr>
<td>Strip cropping, interplanting, or planting mixed species</td>
<td></td>
</tr>
<tr>
<td>Trap crops</td>
<td></td>
</tr>
<tr>
<td>Crop nutrient management</td>
<td></td>
</tr>
<tr>
<td>Sanitation, cleaning up debris, nesting areas, removal of disease vectors, weed seed sources, etc.</td>
<td></td>
</tr>
<tr>
<td>Growing location</td>
<td></td>
</tr>
<tr>
<td>Timing of planting</td>
<td></td>
</tr>
<tr>
<td>Resistant varieties or rootstock</td>
<td></td>
</tr>
<tr>
<td>Remove pest by hand (hoeing, pruning, picking, vacuum)</td>
<td></td>
</tr>
<tr>
<td>Mechanical cultivation (disc, plow, rototill, etc)</td>
<td></td>
</tr>
<tr>
<td>Mowing or grazing</td>
<td></td>
</tr>
<tr>
<td>Irrigation method or management</td>
<td></td>
</tr>
<tr>
<td>Mulching with biodegradable materials</td>
<td></td>
</tr>
<tr>
<td>Plastic or synthetic mulches or solarization</td>
<td></td>
</tr>
<tr>
<td>Plant beneficial habitat areas</td>
<td></td>
</tr>
<tr>
<td>Construct predator habitat (owl nests, perches, etc)</td>
<td></td>
</tr>
<tr>
<td>Release beneficial organisms</td>
<td></td>
</tr>
<tr>
<td>Construct barriers (fences, platforms, etc)</td>
<td></td>
</tr>
<tr>
<td>Traps</td>
<td></td>
</tr>
<tr>
<td>Flaming</td>
<td></td>
</tr>
<tr>
<td>Other physical/mechanical means (describe below)</td>
<td></td>
</tr>
</tbody>
</table>
Do you use substances for controlling insects or diseases?  
ο No, N/A  
ο Yes, complete below

Under what conditions will you use natural or allowed synthetic materials (insecticides, fungicides, etc.) to control pests?
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_________________________________
List all materials, including fertility and pest management materials used.

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Brand Name</th>
<th>Reason for Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
EXHIBIT 3
Fee Schedule and Farm Tenant Invoice

Licensee____________________________ # of acres________ Year ______

<table>
<thead>
<tr>
<th>LAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>License Fees $1500/acre/year paid in three installments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Payment</th>
<th># of Acres</th>
<th>Amt Due</th>
<th>Due Date</th>
<th>Amt Paid</th>
<th>Date</th>
<th>Check #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage Fees $600/acre/month paid in three installments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Payment</th>
<th># of Acres</th>
<th>Amt Due</th>
<th>Due Date</th>
<th>Amt Paid</th>
<th>Date</th>
<th>Check #</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>LAND SECURITY DEPOSIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$150/acre (refundable) per term of lease paid upon acquiring acreage</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th># of Acres</th>
<th>Amt Due</th>
<th>Due date</th>
<th>Deposit Paid</th>
<th>Date Paid</th>
<th>Check #</th>
<th>Amt Returned</th>
<th>Date Returned</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WATER METER SECURITY DEPOSIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refundable $600/meter/term of lease paid upon acquiring meter</td>
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</table>

<table>
<thead>
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<th># of Meter</th>
<th>Amt Due</th>
<th>Due date</th>
<th>Deposit Paid</th>
<th>Date Paid</th>
<th>Check #</th>
<th>Amt Returned</th>
<th>Date Returned</th>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDITIONAL CHARGES</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Amt Due</td>
<td>Due date</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CURRENT INVOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Balance</td>
</tr>
<tr>
<td>LAND Payment 1</td>
</tr>
<tr>
<td>WATER Payment 1</td>
</tr>
<tr>
<td>Security Deposit total</td>
</tr>
<tr>
<td>Additional Charges</td>
</tr>
<tr>
<td>TOTAL DUE</td>
</tr>
</tbody>
</table>

---

1. This annual rate assumes SAGE will not use more than 12,000 units (100 cubic feet) per year. Any volume of water used over and above this level in any one calendar year will be charged at the W-21 rate and will be calculated per farm operation based on quarterly meter readings. If applicable, this will be calculated, billed, and payable by December 15.

2. Occasionally, with full agreement from farmers, SAGE will pay for improvements, practices, etc. relevant to all farmers at the AgPark. SAGE will bill the farmers for their portion of the fees in this section of the invoice.
Appendix B: Farmer Business Plans

All farmers at the Sunol AgPark are required to submit a business plan for their farming operation based on criteria outlined by AgPark farming and business advisors. The farmer application process is initiated by a one-page form titled “Prospective AgPark Farmer Response Form”. This appendix includes the following documents starting on the next page:

- Business Planning Scope
- Baia Nicchia Business Plan
- Iu-Mien Village Farms Business Plan
- People’s Grocery Business Plan
- Prospective AgPark Farmer Response Form
Business Planning Scope for Sunol AgPark Tenants

Questions to be addressed

1. What is your (organization's) relationship to the Sunol Ag Park?
2. How and why did you get there?
3. What are your goals?
   a. Programmatic
   b. Profit-making
4. How do these relate to your (organization’s) core competencies/skills?
5. Have you identified gaps in your core competencies/skills that must be addressed to be successful?
6. Have you done a feasibility study?
   a. If so, what are the details?
7. Do you have a business plan?
   a. If so, what are the details?
8. Organic certification
   a. Resources/skills
   b. Current status/issues/problems
   c. Needs
9. Marketing Plan
   a. Marketing/sales experience
   b. Secured markets
   c. Potential markets
10. Financial Management & Recordkeeping
    a. Resources/skills
    b. Current sources of capital/funding
    c. Needs/gaps
    d. Opportunities for additional funding/capital
    e. Financial mgmt and recordkeeping processes currently in place
    f. Needs/gaps
11. Production Plan
    a. Production experience
    b. Current status/issues/problems
    c. Needs
12. Soil Fertility
    a. Resources/skills
    b. Current status/issues/problems
    c. Needs
13. Pest Management
    a. Resources/skills
    b. Current status/issues/problems
    c. Needs
14. Disease Management
    a. Resources/skills
    b. Current status/issues/problems
    c. Needs
15. Weed Management
    a. Resources/skills
b. Current status/issues/problems

c. Needs

16. Food Safety
   a. Resources/skills
   b. Current status/issues/problems
   c. Needs

17. License Agreement
   a. Questions/concerns
   b. Compliance

18. Next steps/Action Plan
   a. Prioritized issues to be addressed
   b. Resources/support needed
      i. SAGE’s potential role in filling these needs
      ii. Other resources
   c. actions to be taken
      i. one month
      ii. 3 months
      iii. 6 months
      iv. One year
   d. collaborative planning with SAGE to further mutual goals
Business Model Summary

We are a small organic nursery and farm that started out in 2005 strictly as a tomato seedling nursery, growing a few thousand plants and selling them at farmers' markets. Since that time, our business has expanded and we now produce a variety of seedlings, as well as fresh produce, on seven acres at the Sunol AgPark. Our competitive advantage is our ability to produce unique, organic plant seedlings and high-quality produce for local direct markets in the East Bay. We are unique in that we breed cool-tolerant tomatoes specifically for Pacific Coast gardeners. We also breed tomatoes with unique flavors and shapes for high-end restaurants.

Our core business model is to supply plant seedlings and exceptional fresh produce to local farmers’ markets and collaborating restaurants. Short-term plans also include the sale of tomatoes to high-end markets in the Bay Area, starting in 2008. Longer range plans include an expansion into national online seed sales, where we will market our unique tomato varieties.

Core Competencies

Between us, we bring more than 20 years of combined experience in plant breeding, plant biology, sales and marketing. We also have two minority partners with extensive experience in business and program development. Our tomato nursery business that was launched in 2005 has quickly grown, and in the spring of 2007 we began direct market sales of produce at farmers’ markets and to high-end restaurants. Our rapid entry into these markets has been made possible by the Bay Area’s demand for unique fresh produce and novel tomato varieties, and our extensive experience selecting and breeding locally-adapted tomato varieties.

Goals

Our primary goal is to create an economically viable business for the long term. In 2007 our initial goal of recruiting five restaurants/catering companies with whom we can work closely was achieved. We currently sell to these restaurants, and at two farmers’ markets. Our primary goal
for 2008 is to efficiently serve additional high volume wholesale markets. Specifically, we will be working with Draeger’s and Real Foods stores, and we are currently also engaged in discussions with other high-end grocery business. Expanding into these markets is correlated with our other significant goal, which is to significantly improve growing and harvesting techniques for better field hygiene and productivity.

**Products and Pricing**

We market our products through the following channels:

Farmers’ markets – seedlings and fresh produce
Restaurants – fresh produce
High end grocery stores (new in 2008) – fresh produce
Mail order - seeds

We eliminate intermediaries by selling directly to consumers, and our prices are typically pre-negotiated with customers before planting begins.

Products include:

*Seedlings*
Cool-tolerant tomatoes, Peppers, Basil, Mustards, Lettuces and Herbs

*Fresh Produce:* Tomatoes, Summer Squash, Pumpkins/Winter Squash, Peppers, Chicories, Kales, Garlic, Carrots, and Herbs

*Seeds via mail-order*
Our own cool-tolerant, gourmet tomato varieties

**Market Assessment**

Demand for fresh, organic produce and new tomato varieties are critical for our business. The restaurants we serve also value our personalized service and the access to varieties not available elsewhere.

*Secured:*
Restaurants: Restaurant at Wente Vinyards, Viognier, Cetrella,
Catering: Taste Catering, Wente Catering
Farmers’ Markets: Berkeley, Menlo Park
High-end grocery store sales
Seeds via mail-order

*Potential – to be pursued:*
U-Pick Subscriptions
Value-added tomato products (dried tomatoes, marinated tomatoes)

Competitor Analysis

*Commercial Seed Companies:*

Commercial seed companies typically sell directly to large growers. They are not direct competitors, because the traits they breed for are typically related to storage capabilities, robust disease resistance and fruit durability. These are not the primary traits in demand by our customers (gardeners and small farmers). We breed for exceptional unique flavors and colors. We also breed for cool tolerance and container tolerance.

*Organic Nurseries:*

Our nursery business complements our produce business. Most of the seedlings we sell are the varieties that we plant at our farm. We sell at the prices that competitors charge, but we sell mostly our own varieties.

*Local, Organic Farmers:*

We are able to compete with other farmers, with regard to restaurant and farmers’ market sales, because we offer unique high-quality produce. Other organic farms (typically larger than us) sell at prices that are somewhat lower than ours. However, we have found that there are more than enough customers willing to pay for our combination of unique produce and direct delivery. Our farmers’ market sales are also increasing due to growing recognition of our unique products. Competition between gourmet tomato growers is intense at our farmers’ markets, but our focus on new varieties allows us to compete with established growers, as our varieties complement the heirloom varieties they sell.

Resources Needed: Infrastructure Requirements

In the coming year we will need to acquire a shed and a hoop-house for our farming site at the Sunol AgPark. The hoop-house will also require benches, flooring and other adaptations.

We also need a cover for our tractor, to protect it from the elements. Miscellaneous implements, including a new tool-bar, will also be required for the tractor. We will need to purchase multiple fruit dehydrators, for use in drying produce.

Resources Needed: Financial Projections and Capital Needs

*Estimated Monthly Balance Sheet – October 2007*
| Cash | 1000 | Accounts Payable – Rents, Fees & Water | 1400 |
| Accounts Receivable -- Goods | 5050 | Accounts Payable -- Equipment/Vehicles | 750 |
| Accounts Receivable -- Services | 875 | Accounts Payable -- Services | 200 |
| Inventory | 2000 | Accounts Payable -- Goods | 1775 |
| | | Current Portion of Long-Term Debt | 1200 |
| | | Available for Payroll & Stipends | 3600 |
| Total Current Assets | 8925 | Total Current Liabilities | 8925 |

**Estimated Gross sales -- 2008**

- Tomatoes – High-end wholesale $200,000
- Tomatoes – Restaurants & Catering $60,000
- Tomatoes – Farmers’ Markets $10,000
- Squash $30,000
- Winter Crops and Microgreens $15,000
- Other Produce $5,000
- Tomato seedlings $20,000
- Other seedlings $10,000
- Seeds (Mail Order) $1,500
- Tractor Fee-For-Service $5,000

**Total** $356,500

**Estimated Liabilities -- 2008**

- Farm Rent and Water $18,000
- Farm Supplies & Equipment $6,000
- Farm Services (disking, cover cropping) $5,000
- Infrastructure purchases (hoophouse and others) $6,000
- Contract Labor Services (trellising) $8,000
- Contract Labor Services (tomato harvesting) $20,000
- Market Fees $2,800
- Legal and Tax Obligations $5,000
- Trademark Filing – on “Baia Nicchia” name $3,000
- Farm Insurance $3,500
- Truck maintenance and Fuel $10,000
- Farm equipment payments, operation & maint. $10,000
Nursery Supplies and Seed $6,000
Current Portion of Long-Term Debt $24,000
Office and Packaging supplies $2,500
Meetings, Advertisement and Entertainment $8,000
Intern Stipends, Supplies and Entertainment $6,000
Payroll (two part-time employees – 24h/wk) $42,000
Health Insurance $6,000

Total Liabilities $186,800

Estimated available for Owner Payroll/Dividends $164,700

Opportunities

We have the opportunity, in 2008, to greatly increase gross farm sales. We are gaining brand name recognition, and the demand for our products is steadily increasing. To realize this gain, we will need to hire two part-time employees (3 days a week), and we will need to institute a trellising system for our tomatoes. We also need to secure weekly contract labor for tomato harvesting. Reasonable increases in farm efficiency and sales should be sufficient for long-term financial sustainability.

We have identified a list of high-end grocery stores as potential wholesale buyers of our tomatoes in 2008. We currently have a handshake agreement with Draeger’s Markets that should provide a demand for almost all of our tomatoes slated for high-end wholesale. They are interested in selling our premier varieties in their 4 Bay Area stores, and we will be releasing a new variety exclusively through their restaurant (Viognier) and stores. This represents an expansion of our business with Draeger’s, as we supplied produce to their San Mateo restaurant (Viognier) in 2007. To meet this increased demand for our tomatoes, we are have secured the services of contract labor crews for weekly harvesting in 2008. Supplementary alternatives for harvesting are also being examined.

Long-term opportunities for growth are primarily related to our breeding activities and the sale of new varieties (seeds, seedlings and produce). We are actively breeding both tomatoes and squash. We have expanded our acreage at the Sunol AgPark – to 7 acres – to meet increased demand for our produce in 2008.

Threats

We are at risk from typical threats to farming operations, which include crop loss related to weather and pests/pathogens. Our development of unique varieties insulates us, somewhat, from risks related to competition from other growers.
Overview

Iu-Mien Village Farms is an organic farmer’s collective comprised of five Lao Iu-Mien farmers from Oakland. Iu-Mien Village Farms was founded in April 2006. Iu-Mien Village Farms is dedicated to fostering health and wellness among its owners by growing and selling high-quality organic produce.

Under this Business Plan, Iu-Mien Village Farms will farm a four-acre parcel at the Sunol Agriculture Park in Sunol, California.

Ownership

Iu-Mien Village Farms is a project of the East Bay Asian Youth Center (EBAYC), a private non-profit 501c3 community organization dedicated to inspiring young people to be life-long builders of a just and compassionate multi-cultural society.

Under this Business Plan, EBAYC will test the feasibility of establishing Iu-Mien Village Farms as an independent business entity, owned and operated by its members.

Under this Business Plan, EBAYC will retain the members of Iu-Mien Village Farms as independent contractors to complete all aspects of farm production, pursuant to this Business Plan. For services rendered, the members of Iu-Mien Village Farms will:

1. Have equal shares of a one-acre parcel to farm for their personal use; and
2. Receive equal shares of annual net profit earned from farm sales.

Project Manager

EBAYC will deploy Lew Chien Saelee to serve as the full-time Project Manager of Iu-Mien Village Farms. Lew Chien Saelee is responsible for:

1. Facilitating collective decision-making;
2. Planning and coordinating farm production schedules;
3. Planning and coordinating farm sales and distribution;
4. Producing monthly and year-end financial statements;
5. Compliance with organic farming and SAGE farm management standards.
Three-Year Business Goals (October 1, 2007 to September 30, 2010)

1. From October 1, 2007 through September 30, 2008, Iu-Mien Village Farms will generate $36,000.00 in gross sales revenues.

2. From October 1, 2008 through September 30, 2009, Iu-Mien Village Farms will generate $64,000.00 in gross sales revenues.

3. From October 1, 2009 through September 30, 2010, Iu-Mien Village Farms will generate $72,000.00 in gross sales revenues.

4. By September 30, 2010, EBAYC and Iu-Mien Village Farms will establish a $25,000.00 cash reserve.


Prospective Retail Buyers

1. Monterey Market
2. Berkeley Bowl Produce
3. Produce Center
4. Farmer Joe’s
5. Food Mill
6. Trader Joe’s

Prospective Direct Consumer Sales

1. Farmers’ Market – Old Oakland
2. Farmers’ Market – Fruitvale
3. Farmers’ Market – Grand Lake
4. Franklin Produce Stand
5. Garfield Produce Stand
### First Year SALES Plan (October 1, 2007 to September 30, 2008)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Plant</th>
<th>Harvest</th>
<th>Yield</th>
<th>Price</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Beans</td>
<td>March – June</td>
<td>May – October</td>
<td>18,000 lbs</td>
<td>$2.00 lb</td>
<td>$36,000.00</td>
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<tr>
<td><strong>Total</strong></td>
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<td></td>
<td></td>
<td><strong>$36,000.00</strong></td>
</tr>
</tbody>
</table>

### First Year CROP Plan (October 1, 2007 to September 30, 2008)

- Purple Long Beans
- Strawberries
- Purple Long Beans
- Family Plots

### Second Year SALES Plan (October 1, 2008 to September 30, 2009)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Plant</th>
<th>Harvest</th>
<th>Yield</th>
<th>Price</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strawberries</td>
<td>November</td>
<td>April – June</td>
<td>12,000 lbs</td>
<td>$2.00 lb</td>
<td>$24,000.00</td>
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<tr>
<td>Long Beans</td>
<td>March – June</td>
<td>May – October</td>
<td>20,000 lbs</td>
<td>$2.00 lb</td>
<td>$40,000.00</td>
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<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$64,000.00</strong></td>
</tr>
</tbody>
</table>

### Second Year CROP Plan (October 1, 2008 to September 30, 2009)

- Purple Long Beans
- Strawberries
- Purple Long Beans
- Family Plots

### Third Year SALES Plan (October 1, 2009 to September 30, 2010)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Plant</th>
<th>Harvest</th>
<th>Yield</th>
<th>Price</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strawberries</td>
<td>November</td>
<td>April – June</td>
<td>14,000 lbs</td>
<td>$2.00 lb</td>
<td>$28,000.00</td>
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<td>Long Beans</td>
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<td>May – October</td>
<td>22,000 lbs</td>
<td>$2.00 lb</td>
<td>$44,000.00</td>
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<td><strong>Total</strong></td>
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<td></td>
<td></td>
<td><strong>$72,000.00</strong></td>
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</table>

### Third Year CROP Plan (October 1, 2009 to September 30, 2010)

- Purple Long Beans
- Strawberries
- Purple Long Beans
- Family Plots
Three-Year Budget

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<tr>
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<td>10,642.00</td>
<td>10,965.00</td>
<td>31,927.00</td>
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<td>Water</td>
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<td>3,600.00</td>
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<td>Transportation</td>
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<td>Fertilizer</td>
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Business Model Summary
People’s Grocery is a community-based organization founded in 2002 by three residents who saw that limited access to nutritious and affordable foods, a lack of stable jobs and limited opportunities for youth development in West Oakland were having significant impacts on the quality of life of low-income families. Seeking to address the rise of diet-related chronic diseases and improve the quality of life in the community, People’s Grocery’s mission is to build a local food system that improves the health and economy of the West Oakland community. Our approach is to utilize the valuable resources and traditions in the West Oakland community, and engage youth and families, to improve the conditions of their neighborhoods. People’s Grocery focuses on nutrition education, sustainable agriculture, entrepreneurship and youth development as means for creating change in West Oakland.

People’s Grocery operates three program areas in support of community health, job creation and a sustainable food system. Each program involves community and youth participation.

1. **Urban Agriculture Program**: Develops and operates community gardens and a 4-acre farm to grow food locally, provide hands-on education and create green spaces for environmental stewardship and restoration.

2. **Community Outreach and Education Program**: Develops interventions that educate residents of all ages about healthy eating and nutrition, empowers residents to live healthier lifestyles and engages young people as community advocates and leaders.

3. **Enterprise Development Program**: Creates and promotes social enterprise and business development as a means of providing access to healthy foods, creating jobs for residents and providing entrepreneurial training.

This business plan focuses on three initiatives of the Enterprise Development Program:

- **Food production at the Sunol AgPark;**
- **SOUL Box**: A low-cost Community Supported Agriculture (CSA) program that will provide fresh produce directly to families participating in food stamps (EBT) in the West Oakland area at a subsidized rate.
- **People’s Produce Sales**: People’s Grocery will grow niche crops to sell at wholesale to local restaurants in order to generate revenues to support the SOUL Box.
Core Competencies

1. Educate residents about food systems, sustainable agriculture, cooking, and nutrition.
2. Provide access to locally grown, healthy, culturally appropriate and affordable food.
3. Employ and train youth as leaders in the food system and their community.
4. Build self-reliance through employment, training, and local business development.
5. Build the capacity to produce food locally through sustainable agriculture practices.

Goals

To expand and strengthen People’s Grocery’s and its farming partners’ capacity as agricultural producers at the Sunol Agriculture Park by establishing wholesale and direct market ventures.

The project will support People’s Grocery’s long-term participation in the Sunol Agriculture Park, an 18-acre parcel of prime agricultural land adjacent to the historic Water Temple in the Sunol Valley watershed. The development of primary and secondary markets will enable People’s Grocery to strengthen and sustain its agricultural activities and expand its reach and impact. Additionally, this project will strengthen partnerships with the other farmer-tenants of the Sunol Agriculture Park to share resources and develop distribution channels.

To develop revenue generating mechanisms that can support the project activities and farm operations following the termination of federal funding.

People’s Grocery has experience in developing entrepreneurial projects that generate revenue for the organization, such as a “Mobile Market” that sold healthy foods to residents and generated revenues in support of 50% of its costs. The proposed program will enable People’s Grocery to develop mission-driven ventures of a larger scale that can generate substantial revenues from direct sales. Our goal is to generate a minimum of 15% of the program’s budget through sales to restaurants and food stamp participants so that, at the end of the grant period, the program can continue to operate independently.

- By December 31, 2008, production at the Sunol AgPark...........
- By December 31, 2008, wholesale produce sales will generate $45,000 in revenues in support of operational expenses labor and a subsidy of the SOUL Box CSA as evaluated by financial reports and sales receipts.
- By December 31, 2008, the SOUL Box CSA will generate $15,000 in revenues through the sale of 1500 produce boxes at $10 each in support of operational expenses of the SOUL Box CSA as evaluated by financial reports and sales receipts

Products and Pricing

Market Assessment

Competitor Analysis

Opportunities
Threats

Resources Needed: Infrastructure Requirements

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<td>Wash station</td>
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<td>Greenhouse</td>
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<td>Tool shed</td>
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<td>Hand tools</td>
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<td>Fertilizer inputs</td>
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Resources Needed: Financial Projections and Capital Needs

See below
### Sunol Farm Budget Projection

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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</thead>
<tbody>
<tr>
<td><strong>REVENUES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gross Sales</td>
<td></td>
<td></td>
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<tr>
<td>SOUL Box Low-Cost</td>
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<td>Vehicle Insurance</td>
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<td>Vehicle repair/maintenance</td>
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<td>($75,314)</td>
<td>($56,950)</td>
<td>($27,511)</td>
<td>($16,113)</td>
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Notes

1. Percent of SOUL Box revenues generated by farm increase at 20% annually until reach 100%.
2. Percent of SOUL Box revenues generated by farm increase at 20% annually until reach 100%.
3. Restaurant sales projections grow at 50% a year.
4. 1 FTE position. Starting wage is $16/hour. Grows at 5% annually.
5. .75 FTE position. Starting wage is $13/hour. Grows at 5% annually.
6. .50 FTE position. Starting wage is $13/hour. Grows at 5% annually.
7. Contract position. Reduces by $1000 every 2 years as need reduces.
8. 10% of salaries for first two positions, 5% of salary for third position.
9. 25% annual expense growth.
10. 20% annual expense growth.
11. $125 per acre per month. Two acres starting. Assumes addition of 1 acre every two years.
12. $75 per acre per month. Two acres starting. Assumes addition of 1 acre every two years.
13. 10% annual expense growth.
14. 20% annual expense growth.
15. 25% annual expense growth.
16. 10% of total operating expenses towards administration and shared overhead.
## SOUL Box Budget Projection

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<tr>
<th></th>
<th>Month 1</th>
<th>Year 1</th>
<th>Month 13</th>
<th>Year 2</th>
<th>Month 25</th>
<th>Year 3</th>
<th>Month 37</th>
<th>Year 4</th>
<th>Month 49</th>
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<td></td>
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<td>195 boxes</td>
<td>240 boxes</td>
<td>300 boxes</td>
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<td>Gross Sales</td>
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<td>$27,000</td>
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<td>$33,750</td>
<td>$3,516</td>
<td>$42,188</td>
<td>$4,320</td>
<td>$51,840</td>
<td>$5,400</td>
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<td>$27,000</td>
<td>$2,813</td>
<td>$33,750</td>
<td>$3,516</td>
<td>$42,188</td>
<td>$4,320</td>
<td>$51,840</td>
<td>$5,400</td>
<td>$64,800</td>
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<td>SOUL Box Sponsorship ($20/box)</td>
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<td>$3,125</td>
<td>$37,500</td>
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<td>$46,080</td>
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<td>$57,600</td>
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<td>$2,188</td>
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<td>(Gross Margin)</td>
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<td>41.18%</td>
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<td>41.18%</td>
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<td><strong>EXPENSES</strong></td>
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<td>Total Operating Expenses</td>
<td>$2,031</td>
<td>$31,566</td>
<td>$2,800</td>
<td>$33,594</td>
<td>$2,986</td>
<td>$35,834</td>
<td>$3,192</td>
<td>$38,303</td>
<td>$3,423</td>
<td>$41,070</td>
</tr>
<tr>
<td>Indirect Expenses</td>
<td>$263</td>
<td>$3,157</td>
<td>$280</td>
<td>$3,359</td>
<td>$299</td>
<td>$3,583</td>
<td>$319</td>
<td>$3,830</td>
<td>$342</td>
<td>$4,107</td>
</tr>
<tr>
<td><strong>NET MONTHLY INCOME (LOSS)</strong></td>
<td>(1144)</td>
<td>(13723)</td>
<td>(892)</td>
<td>(10704)</td>
<td>(550)</td>
<td>(6604)</td>
<td>(151)</td>
<td>(1813)</td>
<td>435</td>
<td>5223</td>
</tr>
</tbody>
</table>
Notes

1. $10 COGS per box (41% gross margin).
2. .50 FTE position. Starting wage is $15/hour. Grows at 5% annually.
3. .50 FTE position. Starting wage is $12/hour. Grows at 5% annually.
4. 5% of personnel salaries (no benefits).
   20% annual expense growth.
5. 20% annual expense growth.
6. 50 cents per box
   25% annual expense growth.
7. 10% of total operating expenses towards administration and shared overhead.
8. 10% of total operating expenses towards administration and shared overhead.
PROSPECTIVE FARMER INTEREST in the
SUNOL WATER TEMPLE AGRICULTURAL PARK

RESPONSE FORM FOR PROSPECTIVE FARMERS

Name ____________________________________________________________

Address
__________________________________________________________________________________________________________________

Phone ___________________ Cell Phone __________________ email ____________________

Date _____________________

Farming experience (including crops and farming methods)
__________________________________________________________________________________________________________________

Crops and number of acres interested in farming at AgPark
__________________________________________________________________________________________________________________

Date you would like to start farming at the AgPark:
__________________________________________________________________________________________________________________

Small livestock (chickens, rabbits) interested in raising in AgPark
__________________________________________________________________________________________________________________

Expertise and assets you would bring to the AgPark:
Experience in educating the public about agriculture

Equipment you own and might be interested in sharing as partial trade for rent/services
__________________________________________________________________________________________________________________

Other expertise/assets you would bring:
__________________________________________________________________________________________________________________

Services and cooperative arrangement you would be interested in utilizing:

Shared equipment ___________________ Technical assistance _______________________

Cooperative marketing ___________________ Shared labor _______________________

Other services you would be interested in utilizing:
__________________________________________________________________________________________________________________

Questions about the project?
__________________________________________________________________________________________________________________

Please return form to SAGE. FAX 510-524-7153 email info@sagecenter.org
Mail: SAGE, 1625 Shattuck Avenue, Suite 210, Berkeley, CA 94709
For further information, please email us or call 510-526-1793
Appendix C: Soil Tests

As part of the soil maintenance responsibilities assumed by SAGE, soil tests of the farm land at the Sunol AgPark are taken on regular basis and inputs are distributed as needed. The following three pages present three Soil Analysis Reports performed; one from 2005 and two from 2007.
Graphical Soil Analysis Report

Date of Report: 09/14/07
Lab No: 51235
Sample ID: 1

Soil Fertility Guidelines

Crop: STRAWBERRIES
Rate: lb/acre

Elemental Sulfur
Elemental Sulfur
Phosphorus
Phosphorus
Magnesium
Magnesium
Sulfate
Sulfate
Zinc
Zinc
Iron
Iron
Copper
Copper
Boron
Boron

NOTES:

C LIME REQUIREMENT: Liming may be necessary if buffer index is less than 6.9. Guidelines are based upon common agricultural lime (70-score) per six-inch depth to raise soil pH to about 6.5.

M NITROGEN: Use local conditions and experience with variety to determine rates and timing. Allow for nitrate levels in your water source also (ppm N/ft X 0.61 = lb N/acre-ft water). Monitor tissue-N.

E Limit nitrogen applications after full bloom, otherwise quality may be affected. Consider slow-release fertilizers throughout earlier part of growing season.

T BORON: Aim for soil levels above 0.5 ppm to avoid a deficiency. A tissue analysis at the appropriate time will determine more accurately, plant availability. ADD BORON WITH CAUTION.

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Mike Colmey, CPag
A & L WESTERN LABORATORIES, INC.
Graphical Soil Analysis Report

DATE OF REPORT: 09/14/07

DATE OF SAMPLE: 09/14/07

SAMPLE NO.: 51308

LOT NO.: 51308

SAMPLE ID: 2

PAGE: 2

Percent

Cation Saturation (continued)

<table>
<thead>
<tr>
<th></th>
<th>Potassium K%</th>
<th>Magnesium Mg%</th>
<th>Calcium Ca%</th>
<th>Sodium Na%</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>7.9</td>
<td>20.7</td>
<td>53.4</td>
<td>0.9</td>
</tr>
</tbody>
</table>

NaNO2<sup>3</sup>-P unreliable at this soil pH

NaNO<sub>2</sub> unreliable at this soil pH

Soil Fertility Guidelines

CROP: MIXED VEG

<table>
<thead>
<tr>
<th>Disorder (CD score)</th>
<th>Line (LD score)</th>
<th>Organic Matter</th>
<th>Nitrogen N</th>
<th>Phosphorus P&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;5&lt;/sub&gt;</th>
<th>Potash K&lt;sub&gt;2&lt;/sub&gt;O</th>
<th>Magnesium Mg</th>
<th>Sulphur S</th>
<th>Molybdenum Mo</th>
<th>Iron Fe</th>
<th>Copper Cu</th>
<th>Boron B</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>40</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

C NITROGEN sources include composts and legumes as well as blood meal, cottonseed meal, hoof & horn meal, fish meal, or chicken feather meal. Sodium nitrate is not recommended. Monitor brix levels.

M SULFATE-SULFUR: Low soil levels may cause yellowing and lack of vigor. Maintain above 15 to 20 ppm to guard against deficiencies. Although, sulfates may have leached below sampling depth.

E PHOSPHATE: Availability varies with product. However, poultry-based composts are a good source.

N Otherwise, consider bone meal or soft rock phosphate. Blood & bone meal will also provide nitrogen.

T pH AMENDMENTS: Organic matter (composts/green manure) will have the effect of reducing soil pH in time.

S Naturally mined lime (not slaked) or oystershell products may be used to raise soil pH.

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Mike Burns, CPAG
A & L WESTERN LABORATORIES, INC.
**Graphical Soil Analysis Report**

**DATE OF REPORT:** 07/19/05  
**LAB NO:** 54739  
**SAMPLE ID:** SUNO  
**PAGE:** 1

### Results

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Organic Matter %</th>
<th>Nitrogen N ppm</th>
<th>Phosphorous ppm</th>
<th>Sodium ppm</th>
<th>Calcium ppm</th>
<th>Iron ppm</th>
<th>Copper ppm</th>
<th>Zinc ppm</th>
<th>Manganese ppm</th>
<th>Boron ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO₃-N ppm</td>
<td>Weak Base ppm</td>
<td>Na ppm</td>
<td>Ca ppm</td>
<td>Fe ppm</td>
<td>Cu ppm</td>
<td>Mn ppm</td>
<td>Zn ppm</td>
<td>B ppm</td>
</tr>
<tr>
<td>Results</td>
<td>2.7</td>
<td>7</td>
<td>84</td>
<td>45</td>
<td>254</td>
<td>331</td>
<td>1411</td>
<td>26</td>
<td>13</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Cation Saturation (computed)**

- **Potassium %:** 5.2
- **Magnesium %:** 22.0
- **Calcium %:** 56.8
- **Sodium %:** 0.9

**CEC mg/100g**  
- **Edaphic:** 0.3  
- **Increasing Salinity:** L  
- **CEC mg/100g:** 12.4

**pH**  
- **Buffer pH:** 6.7

**NaHCO₃-P unreliable at this soil pH**

### Soil Fertility Guidelines

**CROP:** GENERAL

<table>
<thead>
<tr>
<th>Dolomite (10 score)</th>
<th>Lime (10 score)</th>
<th>Phosphorus P₂O₅</th>
<th>Potassium K₂O</th>
<th>Magnesium Mg</th>
<th>Sulfur S</th>
<th>Zinc Zn</th>
<th>Manganese Mn</th>
<th>Iron Fe</th>
<th>Copper Cu</th>
<th>Boron B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000</td>
<td>120</td>
<td>40</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

**NOTES:**

- **NITROGEN:** Use local conditions and experience with variety to determine rates and timing. Allow for nitrate levels in your water source also (ppm NO₃ X 0.61 = lb N/ac-ft water). Monitor tissue-N.
- **PHOSPHATE:** Availability varies with product. However, poultry-based composts are a good source.
- **GENERAL guidelines may be improved upon if sampling depth, plant type and stage of growth, method of irrigation or other relevant information can be provided in future. Thank you.**

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Appendix D: Sunol AgPark Setback Plan

Sunol AgPark Setback Area FINAL REPORT

(Note: The recommendations made in this report were approved by SFPUC on 9/26/07)

October 9, 2007

Tim Koopman, SFPUC
Sibella Kraus, SAGE
Peter Rudnick, Farm Manager, SAGE- Sunol AgPark
David Katz, consultant to SAGE

This report outlines the Alameda County RCD (ACRCD) recommendation for the creek setback area and grass buffer/filter strip for the Sunol AgPark farm located adjacent to the south side of the San Francisco Public Utilities Commission (SFPUC) Sunol yard and west of the Arroyo de la Laguna. The recommendations were developed in consultation with local USDA Natural Resources Conservation Service (NRCS) staff and are based on NRCS standards and specifications. Appendices following this report contain supporting documents, including designs, diagrams, references, applicable NRCS standards and specifications and a bibliography.

Described in detail below are the recommended dimensions and characteristics of the creek setback area and the allowable land uses/activities within it, the conditions that apply to the allowable uses, and the dimensions, characteristics and maintenance needs of the buffers that are situated between the cropland and the west boundary fence of the AgPark next to the Arroyo de la Laguna. Appendix A includes maps of the farm that show the extent and dimensions of the recommended setback area, the proposed buffer zones, and the farmed area. Appendix B is a more detailed diagram of the setback area and buffers. The text of this report will refer frequently to these documents, so we recommend consulting them early on.

The AgPark is a project of the non-profit organization Sustainable Agriculture Education (SAGE) which has a 9-year lease with SFPUC for the farm property. The farm is located on SFPUC watershed land and is subject to the guidelines in SFPUC’s Alameda Watershed Management Plan (AWMP). This plan
states that a “300-foot disturbance-free buffer” around all waterbodies and streams is required (AWMP, 2001). This setback was developed from concerns over the effects of grazing on water quality, particularly the pathogen cryptosporidium. The AgPark land will be made available for managed livestock grazing outside of the designated setback area.

The decision was made by SAGE to include NRCS conservation practices in its plan to protect natural resources at the site. ACRCD was contracted by SAGE to determine the appropriate setback and buffer/filter strip dimensions and characteristics for the property based on the current and anticipated farming practices and related activities. Approved by SFPUC on September 26, 2007, the recommendations will be incorporated into the AgPark Management Plan that is scheduled to be completed by SAGE in Fall 2007.

Setting and Background Information
The Sunol AgPark is an 18-acre, primarily organic farm located along the east bank of the Arroyo de la Laguna near its confluence with Alameda Creek in the northwest area of Sunol Valley, near the hamlet of Sunol in Alameda County. The farm is adjacent to the Sunol Water Temple access road, with the Sunol Yard of SFPUC on the northern boundary. The AgPark farmland has been in agricultural production for many years. The deep, loamy Class I soil and nearly level slope qualifies this as prime farmland. This acreage and the immediately surrounding land has produced walnuts, grapes, other row crops, hay, and presently the farm is producing a wide variety of row crops for local East Bay markets. The mix of tall trees that lines the banks of the Arroyo de la Laguna provides a beautiful backdrop to the west side of the farm. Protection of the natural resources in and around the farm, especially the Arroyo de la Laguna riparian corridor, is an important goal of SAGE, SFPUC and ACRCD.

The AgPark farmland is nearly flat, and due to excellent soil structure rainfall readily infiltrates into the deep loam soil. Runoff is generally slight, and occurs primarily when soils are saturated from significant storm activity during winter months. The overall slope and direction of drainage of the farm is to the west, toward the Arroyo. The farm is cover cropped during the winter months which reduces erosion and runoff. Other existing and planned features at the farm include small greenhouses, packing sheds, farm roads and parking areas. The presence of these impervious and/or semi-impervious surfaces increases the amount of surface runoff that could make its way towards the creek. ACRCD proposes a filter strip and grass buffer strip to treat any incoming runoff containing sediment, nutrients, particulate organics, dissolved contaminants or other constituents from the farmland. No pesticides will be used at the farm and most farmers are working towards organic certification.

The filter strip and grass buffer work to treat runoff by slowing the flow of water as it passes through the dense stand of stems of grasses and forbs which increases infiltration, allows plants to take up and utilize nutrients, traps and filters particles from the water and facilitate the breakdown of dissolved contaminates in the soil. The recommended 30 foot width of the filter/buffer meets NRCS standards for removing such contaminants from the approximately 10 acre farm area that is considered the contributing area.
Overview of Creek Setback Area and Buffers

ACRCD recommends the following setback area and associated buffers:
The setback area is located in the northwest portion of the farm, where the Arroyo flows just beyond the AgPark fence. It includes the portion of the AgPark farm land that extends east 60 feet from the AgPark fence line and 800 feet along the west fence from the north fence of the AgPark property. The setback area contains three zones which are described in detail below. In addition to the setback area within the AgPark, the dense vegetation on the east bank of the Arroyo de la Laguna provides water quality protection for the creek and functions as an unmanaged riparian buffer as opposed to the managed filter strip/buffer within the AgPark. The portion of the bank above the high water line serves as a natural extension of the buffers in the setback area.

Existing Riparian Vegetation: There is a wide band of existing riparian vegetation on the east bank of the Arroyo del la Laguna just west of the AgPark fence. The width of the bank varies from 75-120 feet as the creek bends toward the west in the vicinity of the confluence with Alameda Creek downstream of the AgPark. Efforts are underway in the Alameda Creek watershed to restore the native steelhead fish population in Alameda Creek, increasing the importance of water quality protection. The banks of the Arroyo are densely vegetated with groundcover, shrubs, vines and an overstory of trees. This riparian plant community is part of the largest intact stand of Sycamore-Alluvial Woodland in the Alameda Creek Watershed and is an important interface between aquatic and terrestrial communities (AWHCP, 2006). The riparian corridor is situated outside of, but immediately adjacent to the AgPark property, extending west from the AgPark fence, and is undisturbed except for the SFPUC graveled service road that parallels the top of the bank just on the west side of the AgPark west fence.

Zone 1- Planted Filter Strip: The filter strip is a 15 foot wide strip of existing and planted grasses, forbs, and irrigated shrubs and trees that extends east from the west AgPark fence. The primary purpose of the filter strip is to provide filtration of runoff coming from the cropped areas. The continuous mat of dense grass stems traps sediment, increases infiltration and allows nutrient uptake by grasses and other plants. The perennials, shrubs and trees, mostly native to the area, have been selected to provide a rich habitat to attract and support beneficial insects. These plants will be widely spaced within the filter strip to form an open hedgerow that will not block sunlight to the grass and forbs. A detailed plant list and planting diagram is provided in Appendix C. Funding to plant and irrigate the filter strip is being provided by USDA Environmental Quality Incentives Program (EQIP) funds, with match provided by SFPUC.

Zone 2- Grass Buffer: Continuing in an uninterrupted fashion from the filter strip is a 15 foot wide grass buffer. Together, the filter strip and grass buffer provide 30 feet of dense grass that will function to infiltrate runoff, trap sediment, take up and utilize nutrients. The NRCS filter strip practice requires permanent, herbaceous vegetation (grasses, legumes and/or other forbs) to maintain sufficient stem density. The grass buffer provides the same water quality improvement functions as the filter strip, but is being considered separate because it is not being planted or irrigated as the plants in the filter strip are. Like the filter strip, the grass buffer will provide an important insectary
role for the organic farm and can therefore be considered to be a part of the AgPark’s Integrated Pest Management plan. Appendix C details the beneficial uses that the plants will provide.

**Zone 3- Limited Use Area:** For a distance of 30 feet east of and immediately adjacent to the buffer and filter strip is a band of farmland that falls within the setback area. Within this area several land uses/activities that could potentially be a source of nutrient-rich runoff or leachate, such as composting with animal manures, greenhouses and livestock containment pens, are restricted. Allowed and disallowed uses with this 30 foot zone and associated conditions of use to provide environmental protection are outlined below.

**Allowed and Disallowed Uses and Conditions for Farming and Other Activities**

The setback area and buffers have been designed based on allowed, appropriate activities and uses (and conditions of use for each) of the AgPark land. These allowable uses have been drawn from the following which have been proposed at various times in AgPark planning: planting of a filter strip, cultivation of annual & perennial crops, establishment of agricultural buildings (i.e., greenhouses, shed packing) and other infrastructure, livestock facilities, composting, stock-piling of agricultural materials, and other uses. For uses that have been selected to be appropriate, certain conditions may apply that will serve to ensure the uses are environmentally benign or even beneficial.

**Recommended Allowed Uses and activities within the Filter Strip and Buffer- Zones 1 and 2**

1. **Planted filter strip along west fenceline**
   Seeded with grasses and forbs, planted with perennials, native shrubs, and limited numbers of deciduous trees to create a combination grass filter strip and insectary. Drip irrigation provided to perennial plants, shrubs and trees. Bee boxes may be situated throughout the filter strip. **Conditions:** not disced or plowed, greenwaste for mulch, only thoroughly composted and aged compost used for mulch and planting mix, no herbicides for weed control. Bi-annual mowing to maintain stem density and reduce fire hazard. Periodic removal of mowed grass clippings to remove nutrients that are contained in the plant tissue. No parking on filter strip, no construction or materials storage. Maintain plantings with irrigation until established.

2. **Grass buffer- adjacent to and continuous from the filter strip**
   Dense stand of grass and forbs. **Conditions:** bi-annual mowing for weed control and to address fire hazard, not disced or plowed, annual re-seeding with grass, wildflower seed to crowd out weeds as needed and maintain stem density. Use of flamer, solarization to control Bermuda and bindweed. No parking on filter strip, no construction or materials storage.

3. **Bee hives**
   Boxes situated throughout filter strip as needed. **Conditions:** No chemicals used in upkeep.
4. Picnic/education area – picnic tables in shade of trees near back gate in filter strip; groundcover is mowed grass.
   **Conditions:** No parking in Zones 1 and 2.

5. Path - mowed grass path or greenwaste mulch covered path meanders through filter strip for educational walks
   **Conditions:** mow at least twice annually to control weeds

6. Weed control- i.e., use of flamer, sheet mulch, solarization
   **Conditions:** Round-Up (or other more environmentally benign product) on Bermuda grass and bindweed as necessary only to control infestations, drift will be controlled.

**Recommended Allowed Uses and activities within the Limited Use Area- Zone 3**

1. Primarily organic farming of row crops and perennials
   **Conditions:** organic farming method (most farmers), only thoroughly composted and aged compost applied (and immediately incorporated into the soil), organic fertilizers. Farmers are working towards becoming certified organic at varying rates. No use of pesticides that are not allowed by accepted organic practices.

2. Farm crop residue and greenwaste composting
   **Conditions:** no manure inputs

3. Mowed grass or dirt (unimproved) access road
   **Conditions:** minimize extent of road, keep weeds low by mowing or light disking

4. Cover crop – EQIP funded annually.
   Cropped areas seeded to green manure crop (i.e., bell beans) in late fall, plowed under in early spring. May spread and disk in aged manure (at a rate equivalent to no more than approximately 10 cubic yards per acre) as cover crop is plowed in during early spring; soil testing may be undertaken to help determine quantity of manure that is needed.
   **Conditions:** seed immediately after disk in crop residue, late fall

5. Picnic/education area – picnic tables in shade of trees near back gate; groundcover is mowed grass. Limited parking.
   **Conditions:** no parking on wet soils or in filter strip or grass buffer.

6. Path - mowed grass path or greenwaste mulch covered path meanders through filter strip for educational walks
   **Conditions:** mow at least twice annually to control weeds

7. Weed control- i.e., use of flamer, sheet mulch, solarization
   **Conditions:** Round-Up (or other more environmentally benign product) on Bermuda grass and
bindweed as necessary only to control infestations

8. Agricultural materials stockpiling: picking and packing boxes, row covers, greenhouse parts, irrigation supplies, other

*Conditions*: no trash, maintain/empty recycling containers, periodic cleanup and organization to avoid creation of rodent habitat

9. Other infrastructure: small sheds, parking, storage of farm machinery (tractors, vehicles), drying yard for fruit and vegetables

*Conditions*: do not allow vehicles and farm equipment to leak oil or other liquids onto soil surface. Roof runoff shall be managed to ensure that no concentrated flows of water are formed that may cause soil erosion.

Other uses yet to be proposed- need to develop process for review, with conditions to be determined based on potential impacts of the land use activity.

Recommended **DISALLOWED** Uses and activities within the Limited Use Area –Zone 3

1. Compost operation- (with animal manures) due to potential percolation of leachate into soil.

2. Greenhouses- due to infiltration into the soil (greenhouse “floor” is native soil) of nutrient-rich drainage from plant containers

3. Livestock- due to potential infiltration of nutrients into the soil from small farm animals (chickens) livestock pens, or manure in stormwater runoff from pens. Note: the limited numbers of small farm animals (chickens) that may be maintained at the AgPark may be contained in pens located outside the setback area and a grass buffer strip will be located downslope of each pen to filter runoff. Pens will be cleaned as necessary to prevent manure build up. Managed grazing is permitted outside of the proposed setback area on AgPark property.

**Setback Area and Filter Strip/Buffer Determination**

As described above, based on site physical characteristics, local requirements and NRCS Conservation Practice Standards, the ACRCD and NRCS suggest that the AgPark setback area extend 60 feet to the east from the AgPark west fence. This setback area includes the two planted and managed buffers, the EQIP filter strip (Zone 1) and grass buffer (Zone 2). Together they have a flow length (width) of 30 feet. Included is a 30 foot wide Limited Use Area (Zone 3) which has restricted land uses as outlined above, and will serve to protect groundwater (located 20-30 feet below soil surface) that flows parallel to the creek channel (DEIR,1999).

The soil at the site has low erosion potential and most of the runoff is infiltrated into the soil rather than forming concentrated, channelized flows that carry sediment and contaminants to the creek. The addition of the filter strip/grass buffer will further prevent concentrated runoff from entering the
creek due to increased infiltration of potential runoff into the soil.

AgPark Soil Characteristics
Soil Survey Alameda Area (SSAA, 1966)
- Yolo Loam soil (YmA) is found on 0 – 3% slopes on level valley floors
- Soil has good natural drainage
- Runoff potential is very slow to slow
- Water holding capacity is high
- Erosion hazard is slight in cultivated areas

Climate/Hydrology Characteristics
- Storm Events: Once every two years the Alameda area will have storms that can produce 1.2 inches of rain in 24 hours. Once every 100 years storms can produce 2.75 inches of rain in 24 hours. (SSAA, 1966)
- Average annual precipitation ranges from 10 to 20 inches (AWHCP, 2006)
- Sunol Valley shallow groundwater levels are 20-30 feet below the ground surface (DEIR, 1999)
- Streamflow is subsurface during a majority of the dry season (June-October) (AWHCP, 2006)
- Direction of groundwater flow is parallel to the creek (AWHCP, 2006)

Filter Strip Determination:
NRCS Conservation Practice Standard 393- Filter Strip requires:
- A minimum 30 foot wide filter strip for reduction of sediment and dissolved contaminants in runoff
- The ratio of the amount of drainage area to the size of the filter strip shall be less than 60:1 in regions with RUSLE R factor values, based on annual rainfall intensity, of 35-175
  - Alameda County has RUSLE R factors that range from 40-60
  - The AgPark has approximately 10 acres contributing runoff to the filter strip. The filter strip will be 30 feet in width x 800 feet in length (north/south, parallel to fenceline) to infiltrate and treat runoff
  - Determination of ratio:
    - 10 acres (approx. contributing area) = 435,600 sq. ft.
    - 30’ x 800’ (filterstrip dimensions) = 24,000 sq. ft.
    - 435,600 / 24,000 = 18:1 ratio

NRCS states that filter strips as short as 15 feet have been effective for removal of sediment. Very little increase of sediment removal is seen with filters that are larger (NRCS, 2003). A buffer that is 30 feet in width will be more than effective at sediment and nutrient removal that is occurring on the site. Stuart et al (2006) and Tate et al (2006) contain many references to recent literature that cover the effectiveness of filter strips.

Setback Determination
The activities that will be occurring at the AgPark site do not necessitate a setback greater than 135 feet from the centerline for the creek (60 feet setback area plus 75 feet (minimum) from fence to centerline of creek). Organic farming will not be contributing pesticides and the adjacent filter strip and grass buffer will trap and treat any sediment, nutrients or other contaminants carried towards the creek by surface runoff.
Setback Requirements (local):
Alameda County Ordinance requires a 20 feet minimum setback distance from streams. See diagram Appendix D.

Alameda Watershed Management Plan
In the Alameda Watershed Management Plan (AWMP), SFPUC requires a “300-foot disturbance-free buffer” around all water bodies and streams (2001).

Please see Appendix G for additional sources of information concerning setbacks and buffers that relates to the reasoning employed in developing these recommendations.

Maintenance Considerations for Buffers

Filter Strip with Hedgerow, Grass Buffer and Associated Management Practices
The NRCS states the filter strip should contain permanent herbaceous vegetation consisting of grasses, legumes, and/or other forbs adapted to the local climate. Use of native plants increases the potential for habitat improvement and increase in beneficial insect populations (NRCS, 2006).

The Yolo County RCD has developed an effective protocol for establishing hedgerows for habitat improvement. The hedgerow can include trees, shrubs, perennial forbs and grasses that attract beneficial insects, mammals, reptiles and birds. Hedgerows that are planted with native species have a lower maintenance requirement once they are established and suppress weeds, decrease wind and water erosion, and can also serve as a filter to improve water quality.

The grass buffer and filter strip combination will provide a filter strip area of 15 feet of continuous herbaceous vegetation as well as a hedgerow area including shrubs, forbs and herbs for habitat improvement.

Zone 1 (filter strip with hedgerow) and Zone 2 (grass buffer) are contiguous and will together provide 30 feet of dense groundcover. Management considerations are listed below. See Appendix F for more information on NRCS Standards and Specifications.

Filter Strip Operation and Management (NRCS, 2006)
- Permanent filter strip vegetative plantings should be harvested as appropriate to encourage dense growth and continued nutrient/sediment removal.
- It is important to control noxious weeds.
- Inspect the filter strip after storm events, remove deposited sediment accumulation, and reseed disturbed areas where applicable.
- Encourage sheet flow across filter, and if evidence of channelized flows in or upslope of the filter strip is observed, make adjustments to divert water away and/or spread out flows.
- Sediment should be removed before it accumulates to a height higher than 6 inches and begins to divert runoff around the strip; removal by tillage or other equipment may be required followed by reestablishment of vegetation.
- Nutrient uptake and carbon sequestering is more efficient if area of biomass is mowed and removed. A mowing and harvest schedule should be a vital part of the management plan.
• Shallow trenches can be constructed across the flow direction to enhance infiltration

Hedgerow Maintenance (Yolo County RCD, 1999)
• Irrigation is essential, especially during dry periods.
• Weed control is most important for success, even when native grasses are planted.

The filter strip/hedgerow should not be disturbed by equipment and vehicular traffic.
• It is important to ensure equipment is out of the way. Placing a hedgerow too close to a road may be problematic if the equipment damages the plants (Yolo County RCD, 1999).
• Vehicles should not be parked in the filter strip

Tree and Shrub Management (NRCS, 2006)
• At a minimum, an annual inspection will be conducted to determine 'spots' where additional attention is needed, if necessary.
• Replant, as necessary and practical, to maintain a fully productive stand.
• Competing vegetation will be controlled until woody plants are established.
• Irrigation provided to ensure adequate survival.

Recommendations- periodic review and adjustment
The recommendations in this report for appropriate set back and buffers should be periodically assessed as research brings new findings and considerations to light. There are additional studies that we will be following up on, such as the use in filter strips of deep-rooted perennials and winter cereal to take up nitrogen during winter rainy periods (Los Huertos, 1999 cited on p.4 in Stuart et al, 2006). If additional site-specific information becomes available, the recommendations may be adjusted. ACRCD may work with NRCS to bring a water quality specialist out to the AgPark to evaluate the recommendations based on site conditions. Also, there may be new or different land uses that might be proposed which could necessitate review of the buffers. At some point after the buffers become fully functional it might be possible to secure a college student intern who could design and implement a runoff sampling program to test the efficiency of the buffers.

ACRCD appreciates the opportunity to develop these recommendations, and hopes that they will be implemented successfully at the AgPark.

References:
http://www.sanlorenzoexpress.com/fslc/ord13-12-320.htm


Alameda Watershed Draft Habitat Conservation Plan (AWHCP), 2006)

Note: Appendix H. contains a full bibliography for the report.

The following ACRCD and NRCS staff members contributed to this report:
Amy Evans, ACRCD Resource Conservationist- project coordination, research and report writing
Leslie Koenig, ACRCD Project Assistant- research, editing and writing
Terry Huff, NRCS District Conservationist- technical review
Jackie Charbonneau, NRCS Ecologist- technical review
Morrie-Ann Nagata, Asian-Pacific Scholar Intern- planting design and plant research

List of Appendices (The appendix is a separate document- filename “AgPark Setback Appendix”)
Appendix A. Sunol AgFarm airphoto/maps
Appendix B. Diagram of Recommended AgPark Setback Area and Buffers
Appendix C. Planting Plan for Filter Strip and Plant Chart
Appendix D. Alameda County Ordinance- stream setback requirement
Appendix E. High Water Quality Vulnerability Zone Map, (AWMP)
Appendix F.    NRCS Standards and Specifications for practices
Appendix G.    Supporting Documentation- setback and buffer research references
Appendix H.    Report Bibliography
Appendix A

Legend
- Existing Riparian Vegetation
- Zone 1 & 2 Planned Filter Strip and Grass Buffer Boundary
- Zone 3 Limited Use Zone Boundary
- Existing Property Fence/Boundary
- Arroyo de la Laguna Center Line

All approximate values, not to scale

Contributing Area Containing Organic Raw Crops Approximately 10 acres

Buffer Area 30' x 800'

Setback Area 60' x 800'
Appendix A

Ag Park Setback and Buffer

Legend
- Existing Riparian Vegetation
- Zone 1 Planned Filter Strip
- Zone 2 Planned Grass Buffer
- Zone 3 Limited Use Boundary
- Existing Access Road
- Existing Property Fence/Boundary
- Arroyo de la Laguna Center Line

All approximate values, not to scale

The recommended 60’ setback area from the property line includes the managed filter strip and grass buffer as well as the limited use zone.

A-2
Appendix B

Ag Park Setback and Buffer

- **Existing Riparian Vegetation**
- **Riparian Area ranges from 75' to 120' along the bank**
- **Fence**
- **Zone 1 Planned Filter Strip**
- **Zone 2 Planned Grass Buffer**
- **Zone 3 Limited Use Zone**

LEGEND
- Center Line Arroyo de la Laguna
- Existing Riparian Vegetation
- Zone 1 Planned Filter Strip
- Zone 2 Planned Grass Buffer
- Zone 3 Limited Use Zone
- Existing Access Road
- Arroyo de la Laguna

The recommended 60' setback area from the property line includes the managed filter strip and grass buffer as well as the limited use zone.

□ Scale 5 x 5 ft.
### Appendix C - Suggested Plant List

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Plant Type</th>
<th>Space Req.</th>
<th>Pollen/Nectar Source</th>
<th>Sun Req.</th>
<th>Watering Needs</th>
<th>Growth Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yarrow</td>
<td>Achillea millefolium</td>
<td>S to T sm.</td>
<td>12-30'x1'2'</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Annual</td>
</tr>
<tr>
<td>Buckeye</td>
<td>Aesculus californica</td>
<td>S to T sm.</td>
<td>15-20'x30'</td>
<td>x</td>
<td>L</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Blackeyed Narrowleaf</td>
<td>Asclepias fasciculata</td>
<td>F to T</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>High</td>
<td>Perennial</td>
</tr>
<tr>
<td>Bush Anemone</td>
<td>Carpenteria californica</td>
<td>S med.</td>
<td>6'x4'</td>
<td>x</td>
<td>x</td>
<td>Low</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Ceanothus, California Lilac</td>
<td>Ceanothus spp.</td>
<td>S to T sm.</td>
<td>8-12'x7'</td>
<td>x</td>
<td>A to L</td>
<td>High</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Redbud, Western</td>
<td>Cerise occidentalis</td>
<td>S to T sm.</td>
<td>25-30'x20'</td>
<td>x</td>
<td>x</td>
<td>High</td>
<td>Deciduous</td>
</tr>
<tr>
<td>Larkspur</td>
<td>Delphinium sp.</td>
<td>H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Annual</td>
</tr>
<tr>
<td>Buckwheat, Naked</td>
<td>Eupatorium nudum</td>
<td>S med.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Low</td>
<td>Annual</td>
</tr>
<tr>
<td>Woody Sunflower</td>
<td>Erythrostigma stachydesum</td>
<td>S med.</td>
<td>6'x3'x10'x5'</td>
<td>x</td>
<td>A to L</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Wallflower</td>
<td>Erysimum capitatum</td>
<td>F</td>
<td>6-12'x6'</td>
<td>L</td>
<td>x</td>
<td>Med</td>
<td>Annual</td>
</tr>
<tr>
<td>California Poppy</td>
<td>Eschscholzia californica</td>
<td>S to T sm.</td>
<td>20'x12'x10'</td>
<td>x</td>
<td>x</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>Fennel Bush</td>
<td>Foeniculum vulgare</td>
<td>S to T sm.</td>
<td>30'x12'x10'</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Coyote Blue Flax</td>
<td>Linum lewisii</td>
<td>F</td>
<td>2-3'x2'</td>
<td>x</td>
<td>A</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>Honey Locust</td>
<td>Lonicera hughensis</td>
<td>V</td>
<td>x</td>
<td>x</td>
<td>A</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>Sage</td>
<td>Lycium alpinum</td>
<td>S to T sm.</td>
<td>3-5'x3'x3'</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Annual</td>
</tr>
<tr>
<td>Scarlet Monkeyflower</td>
<td>Mimulus cardinalis</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>A</td>
<td>Low</td>
<td>Annual</td>
</tr>
<tr>
<td>Coyote Mint</td>
<td>Mimetes virida</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Penstemon, Foolhill</td>
<td>Penstemon heterophyllus</td>
<td>F to B sm.</td>
<td>6-12'x3'</td>
<td>x</td>
<td>L</td>
<td>High</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Oak Valley</td>
<td>Quercus alatana</td>
<td>T</td>
<td>70-80'x70-80'</td>
<td>x</td>
<td>L</td>
<td>Low</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Coffeeberry</td>
<td>Rhamnus tormentella</td>
<td>S med.</td>
<td>x</td>
<td>x</td>
<td>A to L</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>California Rose</td>
<td>Rosa californica</td>
<td></td>
<td></td>
<td>x</td>
<td>A</td>
<td>Low</td>
<td>Annual</td>
</tr>
<tr>
<td>Sage, Cleveland</td>
<td>Salvia clevelandii</td>
<td>S med.</td>
<td>3-5'x1-2'</td>
<td>x</td>
<td>A</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>Sage, Black</td>
<td>Salvia eriophylla</td>
<td>S med.</td>
<td>3-5'x1-2'</td>
<td>x</td>
<td>A</td>
<td>High</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td>Elderberry</td>
<td>Sambucus mexicana</td>
<td>S to T sm.</td>
<td>30'x10-20'</td>
<td>x</td>
<td>x</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>Hesperis</td>
<td>Stachys ypsilon var. agrestis</td>
<td>F to H</td>
<td>x</td>
<td>x</td>
<td>A</td>
<td>Low</td>
<td>Annual</td>
</tr>
<tr>
<td>Johnny Jump-Up</td>
<td>Viola dorocephala</td>
<td>F</td>
<td>x</td>
<td>x</td>
<td>A</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>Wild Grasses</td>
<td>Vicia villosa</td>
<td>V</td>
<td>20-30'</td>
<td>x</td>
<td>x</td>
<td>High</td>
<td>Annual</td>
</tr>
<tr>
<td>California Poppies</td>
<td>Zauschneria californica</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>Low</td>
<td>Annual</td>
</tr>
<tr>
<td><strong>Filterstrip Grasses</strong></td>
<td><strong>Elymus glaucus</strong></td>
<td>G</td>
<td>L</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td><strong>Blue Wildrye</strong></td>
<td>Elymus glaucus</td>
<td>G</td>
<td>L</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td><strong>Red Fescue</strong></td>
<td>Festuca rubra “Molite”</td>
<td>G</td>
<td>L</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td><strong>Meadow Barley</strong></td>
<td>Hordeum brachyantherum</td>
<td>G</td>
<td>L</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td><strong>Creeping Wildrye</strong></td>
<td>Elymus tritici</td>
<td>G</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
<tr>
<td><strong>Purple Needlegrass</strong></td>
<td><strong>Nassella pulchra</strong></td>
<td>G</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Med</td>
<td>Semi-Annual</td>
</tr>
</tbody>
</table>

**Herbs**

| Cil                  | Anaphalis graveolens     | H           | x          | x                    | x        | Med            | Annual         |
| Terragon             | Anaphalis acuminata L.   | H           | x          | x                    | x        | Med            | Annual         |
| Catmint              | Catmint L.              | H           | x          | x                    | x        | Med            | Annual         |
| Plantago             | Plantago majorum        | H           | x          | x                    | x        | Med            | Annual         |
| Lavender             | Lavandula officinalis    | H           | x          | x                    | x        | Med            | Annual         |
| Lemon balm           | Melissa officinalis      | H           | x          | x                    | x        | Med            | Annual         |
| Crape Myrtle         | Crape Myrtle            | H           | 3'x3'     | x                    | x        | Med            | Annual         |
| Rosemary             | Rosemarinus officinalis  | H           | 3'x3'     | x                    | x        | Med            | Annual         |
| Thyme                | Thymus miltiicolium      | H           | 3'x3'     | x                    | x        | Med            | Annual         |

**Watering Needs**

- High - Less than reg. summer watering, tolerates drying of top few inches of soil. May need water every week to 10 days.
- Med - Deep soaking every 2-4 weeks.
- Low - No water required beyond water that is naturally available.

C-1
Appendix C - Filter Strip/Grass Buffer Plant Layout

Legend
- Tree
- Lg. Shrub/Sm. Tree
- Sm./Med. Shrub
- Filter strip grasses
- Forbs
- Herbs

Plant most native forbs, shrubs and trees in the fall. Consult with plant supplier before planting.

Shrubs and small trees should be planted with enough space for growth.

Perennial forbs and shrubs can be placed between the larger shrubs and trees.

Yolo County Resources Conservation District, Establishing Hedgerows for Pest Control and Wildlife, 1999

The NRCS funded Filter Strip will contain permanent herbaceous vegetation consisting of grasses and forbs adapted to the soil and climate. The area will continue 15 feet without the presence of trees or shrubs to maintain the required spacing between stems of 1 inch.

NRCS Filter Strip Standard 393

12.5’, average space required by small shrubs

32’, average space required by large shrubs and small trees
Appendix D

Alameda County Ordinances

Section 13.12.320: Setback Criteria

Section A — Typical where 100-year storm flow is contained within banks of existing watercourse.

http://www.sanlorenzoexpress.com/fslc/ord13-12-320.htm
Appendix F

NRCS Standards and Specifications
Filter Strip Standard 393
Tree and Shrub and Establishment 614
NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FILTER STRIP
(Ac.)

CODE 393

DEFINITION
A strip or area of herbaceous vegetation situated between cropland, grazingland, or disturbed land (including forestland) and environmentally sensitive areas.

PURPOSE
- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff.
- To reduce dissolved contaminant loadings in runoff.
- To serve as Zone 3 of a Riparian Forest Buffer, Practice Standard 391.
- To restore, create or enhance herbaceous habitat for wildlife and beneficial insects.
- To maintain or enhance watershed functions and values.

CONDITIONS WHERE PRACTICE APPLIES
This practice applies:
(1) in areas situated below cropland, grazing land, or disturbed land (including forest land)
(2) where sediment, particulate matter and/or dissolved contaminants may leave these areas and are entering environmentally sensitive areas;
(3) in areas where permanent vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function.

This practice applies when planned as part of a conservation management system.

CRITERIA
General Criteria Applicable to All Purposes
Filter strips shall be designated as vegetated areas to treat runoff and are not part of the adjacent cropland rotation.
Overland flow entering the filter strip shall be primarily sheet flow. Concentrated flow shall be dispersed.
State listed noxious weeds will not be established in the filter strip and will be controlled if present.
Filter strip establishment shall comply with local, state and federal regulations.

Additional criteria to reduce sediment, particulate organics and sediment adsorbed contaminant loadings in runoff
Filter strip flow length shall be determined based on field slope percent and length, and filter strip slope percent, erosion rate, amount and particle size distribution of sediment delivered to the filter strip, density and height of the filter strip vegetation, and runoff volume associated with erosion producing events. The minimum flow length for this purpose shall be 20 feet.
Filter strip location requirements:
- The filter strip shall be located along the downslope edge of a field or disturbed area. To the extent practical it shall be placed on the approximate contour. Variation in placement on the contour should not exceed a 0.5% longitudinal (perpendicular to the flow length) gradient.

NRCS, CA
August 2006
• The drainage area above the filter strip shall have greater than 1% but less than 10% slopes.

• The ratio of the drainage area to the filter strip area shall be less than 70:1 in regions with RUSLE-R factor values 0-35, 60:1 in regions with RUSLE-R factor values 35-175, and 50:1 in regions with RUSLE-R factor values of more than 175.

• The average annual sheet and rill erosion rate above the filter strip shall be less than 10 tons per acre per year.

The filter strip shall be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes and/or other forbs adapted to the soil, climate, and nutrients, chemicals, and practices used in the current management system. Species selected shall have stiff stems and a high stem density near the ground surface. Stem density shall be such that the stem spacing does not exceed 1 inch.

Additional Criteria to Reduce Dissolved Contaminants in Runoff

The criteria given in “Additional criteria to reduce sediment, particulate organics and sediment adsorbed contaminant loadings in runoff” also apply to this purpose.

Filter strip flow length required to reduce dissolved contaminants in runoff shall be based on management objectives, contaminants of concern, and the volume of runoff from the filter strip’s drainage area compared with the filter strip’s area and infiltration capacity.

The flow length determined for this purpose shall be in addition to the flow length determined for reducing sediment, particulate organics and sediment-adsorbed contaminant loadings in runoff.

The minimum flow length for this purpose shall be 30 feet.

Additional Criteria to Serve as Zone 3 of a Riparian Forest Buffer, Practice Code 391

Except for the location requirements, the criteria given in “Additional criteria to reduce sediment, particulate organics and sediment adsorbed contaminant loadings in runoff” also apply to this purpose.

If concentrated flows entering Zone 3 are greater than the filter strip’s ability to disperse them, other means of dispersal, such as spreading devices, must be incorporated.

Additional Criteria to Reduce Sediment, Particulate Organics and Sediment-adsorbed Contaminant Loadings in Surface Irrigation Tailwater

Filter strip vegetation may be a small grain or other suitable annual with a plant spacing that does not exceed 4 inches.

Filter strips shall be established early enough prior to the irrigation season so that the vegetation can withstand sediment deposition from the first irrigation.

The flow length shall be based on management objectives.

Additional Criteria to Restore, Create or Enhance Herbaceous Habitat for Wildlife and Beneficial Insects

If this purpose is intended in combination with one or more of the previous purposes, then the minimum criteria for the previous purpose(s) must be met.

Additional filter strip flow length devoted to this purpose must be added to the length required for the other purpose(s).

Any addition to the flow length for wildlife or beneficial insects shall be added to the downhill slope of the filter strip.

Vegetation to enhance wildlife may be added to that portion of the filter strip devoted to other purposes to the extent they do not detract from its primary functions.

Plant species selected for this purpose shall be for permanent vegetation adapted to the wildlife or beneficial insect population(s) targeted.

If this is the only purpose, filter strip width and length shall be based on requirements of the targeted wildlife or insects. Density of the vegetative stand established for this purpose shall consider targeted wildlife habitat requirements and encourage plant diversity. Dispersed woody vegetation may be used to

NRCs, CA
August 2006
the extent it does not interfere with herbaceous vegetative growth, or operation and maintenance of the filter strip.

The filter strip shall not be mowed during the nesting season of the target wildlife.

Livestock and vehicular traffic in the filter strip shall be excluded during the nesting season of the target species.

**Additional Criteria to Maintain or Enhance Watershed Functions and Values**

Filter strips shall be strategically located to enhance connectivity of corridors and non-cultivated patches of vegetation within the watershed.

Filter strips shall be strategically located to enhance aesthetics of the watershed.

Plant species selected for this purpose shall be for establishment of permanent vegetation.

**CONSIDERATIONS**

Filter strips should be strategically located to reduce runoff, and increase infiltration and ground water recharge throughout the watershed.

Filter strips for the single purposes of wildlife/beneficial insect habitat or to enhance watershed function should be strategically located to intercept contaminants thereby enhancing air and water quality.

To avoid damage to the filter strip consider using vegetation that is somewhat tolerant to herbicides used in the up-slope crop rotation.

Increasing the width of the filter strip will increase the potential for capturing particulates.

Consider using this practice to enhance the conservation of declining species of wildlife, including those that are threatened or endangered.

Consider using this practice to protect National Register listed or eligible (significant) archaeological and traditional cultural properties from potential damaging contaminants.

Filter strip size should be adjusted to a greater flow length to accommodate harvest and maintenance equipment.

Select grass species that sequester more carbon.

Increasing the width of filter strip will increase the potential for carbon sequestration.

**Cultural Resources**

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer.

[http://www.nrcs.usda.gov/technical/cultural.html](http://www.nrcs.usda.gov/technical/cultural.html) is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

**Endangered Species**

If during the Environmental Assessment NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

NRCS, CA

August 2006
PLANS AND SPECIFICATIONS

Based on this standard, plans and specifications shall be prepared for each specific field site where a filter strip will be installed. A plan includes information about the location, construction sequence, vegetation establishment, and management and maintenance requirements.

Specifications shall include:

a) Length, width, and slope of the filter strip to accomplish the planned purpose (length refers to flow length across the filter strip).

b) Species selection and seeding or sprigging rates to accomplish the planned purpose.

c) Planting dates, care and handling of the seed to ensure that planted materials have an acceptable rate of survival.

d) A statement that only viable, high quality and regionally adapted seed will be used.

e) Site preparation sufficient to establish and grow selected species.

OPERATION AND MAINTENANCE

For the purposes of filtering contaminants, permanent filter strip vegetative plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit and remove nutrients and other contaminants that are contained in the plant tissue.

Control undesired weed species, especially state-listed noxious weeds.

Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed.

Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas and take other measures to prevent concentrated flow through the filter strip.

Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.

To maintain or restore the filter strip’s function, periodically regrade the filter strip area when necessary.

sediment deposition at the filter strip-field interface jeopardizes its function, and then reestablish the filter strip vegetation, if needed. If wildlife habitat is a purpose, destruction of vegetation within the portion of the strip devoted to that purpose should be minimized by regrading only to the extent needed to remove sediment and fill concentrated flow areas.

Grazing shall not be permitted in the filter strip unless a controlled grazing system is being implemented. Grazing will be permitted under a controlled grazing system only when soil moisture conditions support livestock traffic without excessive compaction.

NRCS, CA
August 2006
NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

TREE/SHRUB ESTABLISHMENT

(Ac.)

CODE 612

DEFINITION
Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration.

PURPOSE
To establish woody plants for forest products, wildlife habitat, long-term erosion control and improvement of water quality, treat waste, increase carbon storage in biomass and soils, renewable energy production, energy conservation, and enhance aesthetics.

CONDITIONS WHERE PRACTICE APPLIES
On any area where woody plants can be grown.

CRITERIA
General Criteria Applicable to All Purposes
Species will be adapted to site conditions and suitable for the planned purpose(s).
Planting or seeding rates will be adequate to accomplish the planned purpose.
Planting dates, and care in handling and planting of the seed, cuttings or seedlings will ensure that planted materials have an acceptable rate of survival.
Only viable, high-quality and adapted planting stock or seed will be used.
Site preparation shall be sufficient for establishment and growth of selected species.
Adequate seed or advanced reproduction needs to be present or provided for when using natural regeneration to establish a stand.

Timing and use of planting equipment will be appropriate for the conditions.
The acceptability and timing of coppice regeneration shall be based on species, age, and diameter.
The planting will be protected from unacceptable adverse impacts from pests, wildlife, livestock damage, or fire.
Each site will be evaluated to determine if mulching, supplemental water or other cultural treatments will be needed to assure adequate survival and growth.
Use locally adapted seed, seedlings or cuttings. Priority will be given to plant materials that have been selected and tested in tree/shrub improvement programs. All plant materials will meet a minimum standard, such as the American Nursery and Landscape Association, Forest Service, or state-approved nursery.

Tree and shrub plantings will be designed so that they do not impact the safe operation of electric and gas line transmission corridors.
Comply with applicable federal, state, and local laws and regulations during the installation, operation and maintenance of this practice.

Additional Criteria for Improving or Restoring Natural Diversity
Species selected will be indigenous to the site and will reflect species composition of the desired stands.

Additional Criteria for Increasing Carbon Storage in Biomass and Soils
For optimal carbon sequestration, select plants that have higher rates of sequestration in

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the Electronic Field Office Technical Guide.

NRCS, CA
August 2006
biomass and soils and are adapted to the site to assure strong health and vigor. Plant the appropriate stocking rate for the site. When using trees and shrubs for greenhouse gas reductions, prediction of carbon sequestration rates shall be made using current, approved carbon sequestration modeling technology.

CONSIDERATIONS
Transmission Requirements.
Clients must be asked to review their land rights documents to determine if there are transmission land rights for a specific parcel where the planting is to be accomplished.

a. Electric Transmission Guidelines
If there are no restrictive easements, plantings will not be accomplished within the following distances from the edge of the transmission line:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 kv or less</td>
<td>25 feet</td>
</tr>
<tr>
<td>70 kv or less</td>
<td>25 feet</td>
</tr>
<tr>
<td>115 kv</td>
<td>35 feet</td>
</tr>
<tr>
<td>230 kv</td>
<td>50 feet</td>
</tr>
<tr>
<td>500 kv</td>
<td>60 feet</td>
</tr>
</tbody>
</table>

b. Underground gas line clearance:
If there are no restrictive easements, plantings will not be accomplished within 20 feet of the center line of the transmission line.

When inter or reinforcement planting, trees should be planted sufficiently in advance of overstory removal to ensure full establishment.

Plans for landscape and beautification plantings should consider foliage color, season and color of flowering, and mature plant height. Where multiple species are available to accomplish the planned objective, consideration should be given to selecting species which best meet wildlife needs.

Tree/shrub arrangement and spacing should allow for and anticipate the need for future access lanes for purposes of stand management.

Residual chemical carryover should be evaluated prior to planting.

Species considered locally invasive or noxious should not be used.

Species used to treat waste should have fast growth characteristics, extensive root systems, capable of high nutrient uptake, and may produce wood/fiber products in short rotations.

Prescribed burning may be required for natural regeneration of serotinous cone species and for site preparation for other species.

Planting can be done either by machine or by hand. Machine planting will be limited by small areas, steep topography, winds, rock outcrop and heavy brush or slash accumulation. Hand planting is adaptable to all areas. Any equipment that can create a suitable planting cavity can be used, e.g., shovel, auger, planting bar.

The location for each planted seedling should take advantage of every moisture conserving and heat-protecting factor available, such as: shade provided from stumps, logs, surface rocks, clods, hummocks, etc.

When selecting species, consideration should be given to esthetic values for recreation areas and borders along through fairs or any other public access sites or viewsapes.

Spacing for beautification, recreation and restoration plantings will vary depending on objectives, and site conditions.

Temporary or permanent irrigation may be necessary on some areas and for some species.

When irrigation is planned, have the systems in place prior to planting. To increase survival, irrigate after planting to aid in packing the soil.

NRCS, CA
August 2006
around the seed or roots and assure enough water to begin growth.

Rooing hormones and fertilizers have not significantly improved success compared to the cost of the materials.

Potential mortality, weed competition, and pest populations may require additional seedlings initially or replanting later.

All sites and all plant species may be subject to unacceptable damages due to browsing, grazing, vandalism or other human impacts. Protection may be required to hold damages to an acceptable level. Planning will include preparing estimates of the occurrence of animal populations, which have the potential of causing damage. Sightings of gopher mounds, animal trails, beaver activity, frequency of scat, and evidence of browsing on native plants will yield data that can help determine the need for plant protection. In urban areas use of signs and/or barriers may be required to reduce damage to an acceptable level.

Harsh sites (warmer, drier) may require additional actions to ensure adequate survival. Those actions include the installation of shade cards and/or mulch.

**Seedling Selection:**

Use published seed zone maps. Use materials from the same seed zone in which the planting is to be done.

Tree stock can generally be 1-0, if it is over 8" and vigorous. However, the harsher the site the more important for 2-0, 2-1, 1-2 stock.

On sites infected with root rots or blue stain reforest the infected area (and 100 feet beyond visibly affected trees or stumps) with species that are immune or resistant and adapted to the site. Areas will be clearly marked to aid planting crews.

White pine blister rust: When white pines are planted no more than 80% will be white pine blister rust resistant.

**Additional Criteria For:**

**Pole Plantings/Cuttings:**

When used in highly erodible areas some method of protection should be placed in front of the pole plantings/cuttings. The toe can be very susceptible to erode flows and scour. If rock is used to stabilize the area careful application is required. Improperly placed rock can result in erosion problems on the opposite bank and downstream.

Give careful attention to both the upstream and downstream ends of the treatment area to ensure flows do not get behind the treatment. Try to divert flows away from the endpoints by tying into existing features such as trees, rocks, etc. or consider utilizing brush or other suitable revetments.

**Forest land:**

**Planting Dates:**

Planting should be made as early possible when soil moisture conditions are sufficient. Fall (November) planting is acceptable provided adequate soil moisture is present at planting time. Avoid fall planting in areas subject to frost heaving. Areas with limited access due to substantial amounts of snow will be later than lower elevation plantings.

Sierra Nevada: Suitable planting dates generally range from December to late April.

Coast Range: December through March

South of the Tehachapi Range: December through March.

Siskiyou: February to April

Trees per Acre:

Coast Redwood Region: 300 to 360 trees per acre

Remainder of Northern California:

Option A. Standard Approach. Planting is dense. This, generally, requires a pre-commercial thinning of residual trees 15 to 30 years after planting.

Option A: 436 to 681 trees per acre.

Option B. High Management Approach (for Class 1 and 2, 3 soils only). Number of trees planted is significantly less and requires:

- a. Review the fall following the year of planting. Must be 80% or more survival. If not must be reinforcement planted to bring up to 80% survival the following spring.

NRCS, CA
August 2006
b. Planned treatment to control competing vegetation 12 to 36 months after planting and a follow-up 5 years after the first treatment

c. Anticipate pruning the lower limbs to reduce loss by fire and to improve quality when stems are 3 to 7 inches in diameter.

Option B: Trees to be planted: 260 or more trees per acre.

Or

All Areas: Stocking meeting the California Forest Practice Rules – Resource Conservation Standards for Minimum Stocking.

Southern California (Southern Region):
Site Class I, II, III (Meyer): 222 - 302 trees per acre
This may require a pre-commercial thinning of residual trees 15 to 30 years after planting.
Site Class IV, V, VI, VII (Meyer): 170 - 222 trees per acre

Requires:

a. Review the fall following the year of planting. Must be 80% or more survival. If not must be reinforcement planted to bring up to 80% survival the following spring.

b. Planned treatment to control competing vegetation 12 to 36 months after planting and a follow-up 5 years after the first treatment

c. Anticipate pruning the lower limbs to reduce loss by fire and to improve quality when stems are 3 to 7 inches in diameter.

All plantings to utilize mats or approved mulch material. Shade cards may be needed on South and Southwest facing slopes.

Fuel break Planting: Between 200 and 225 trees per acre.

Reinforcement or Inter Planting: Between 120 and 225 trees per acre.

Other Plantings:

Pinyon: Between 130 and 200 trees per acre.

Other Species: Species selection and spacing information is contained in the respective MLRA Vegetative Guide in the Field Office Technical Guide.

Christmas trees at spacings no closer than 4x4 feet and no further apart than 8x6 feet. Spacing should fit the cultivation, mowing, spraying, or cultural practices required.

Spacing for Windbreak/Shelterbelt plantings are found in Practice #380 Windbreak/Shelterbelt Establishment.

Spacing for wildlife plantings are found in Practice #645 Wildlife Upland Habitat Management.

Direct Seeding:

All direct seeding of conifers and hardwoods will be by spot seeding. Direct seeding of forestland coniferous and deciduous species will require the review and approval of a NRCS forester.

Softwood Seeding:

Seeding Rates:

Rates of Pure Live Seed shall be as shown.

<table>
<thead>
<tr>
<th>Species</th>
<th>Seeds/spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>ponderosa pine</td>
<td>4 to 8</td>
</tr>
<tr>
<td>Jeffrey pine</td>
<td>4 to 8</td>
</tr>
<tr>
<td>True Firs</td>
<td>10 to 15</td>
</tr>
<tr>
<td>Shasta red fir</td>
<td></td>
</tr>
<tr>
<td>white fir</td>
<td></td>
</tr>
<tr>
<td>Coastal Douglas-fir</td>
<td>4 to 8</td>
</tr>
<tr>
<td>Inland Douglas-fir</td>
<td>8 to 10</td>
</tr>
</tbody>
</table>

Timing of Seeding:

Just before or right after the first precipitation of the season.

Protective Measures:

Prior to the initiation of seeding the area to be seeded will be evaluated for the potential of seed predation. If the evaluation indicates predation will significantly impact the success of the seeding, the seeding should be postponed until techniques are utilized to decrease predation.

NRCS, CA
August 2006
Hardwood Seeding:

Blue Oak

Blue oak will not be recommended for seeding if the soils are less than 20 inches deep, has more than 35 percent clay or a hardpan within 20 inches of the surface, has an average annual rainfall of less than 16 inches, is not present, or has not been historically present in the vicinity of the proposed seeding.

Soils may contain any amount of coarse fragments and should have a high base saturation.

California Black Oak

California black oak will not be recommended for seeding where the soils have a restrictive layer within 40 inches of the surface, are not well drained, the clay content exceeds 35 percent, are compacted, or soils originating from serpentine, or where the average annual precipitation is less than 20 inches. They will do well on medium to coarse textured, deep and well-drained soils.

Do not seed where California black oak is not present or has not been historically present in the vicinity of the proposed seeding.

Canyon Live Oak

Canyon live oak may be recommended for seeding on soils derived from sedimentary, metasedimentary, granitic, serpentine, and peridote parent materials. It may be seeded in soils with a depth of 12 inches or greater and the average annual precipitation must exceed 12 inches. Canyon live oak must be present or have been historically present in the vicinity of the proposed seeding.

Oregon White Oak

Oregon white oak may be recommended for seeding on moderately deep soils of varied parent material, including serpentine. It may also be seeded on flood plains in heavy clay soils and where there is standing water or a shallow water table during a lengthy wet season. Do not seed where it is not present or has not been historically present in the vicinity of the proposed seeding.

Valley Oak

Valley oak will not be recommended for seeding if the soil is less than 60 inches deep, has an average annual rainfall of less than 12 inches, valley oak is not present or has not been historically present in the vicinity of the proposed seeding. Additionally, they will not be seeded when the elevation exceeds 5000 feet in the Coast Range and Southern California, and where the elevation exceeds 2000 feet in central California.

Irrigation is not required for the establishment of valley oak. However, if irrigation is utilized the water applied must be sufficient to wet the soil profile to the depth of the water table or twelve feet, whichever is least restrictive.

Seeding Dates

Acorns will be planted in the fall after the first major rains. The soil profile will have moisture to a depth of at least 2 feet. If there are no major rains they will be planted by the end of December.

Seeding Rates

Acorns may be planted individually or in multiples at each planting site. For acorns to be planted individually the minimum percent acorn germination rate must exceed 95 percent.

Plant acorns on their side a minimum of one inch deep and not more than 2 inches deep. If multiple acorns are planted at a single site they must be a minimum of 4 inches apart.

Protective Measures

Control of Competing Vegetation.

Control of competing vegetation will be accomplished within a 3-foot diameter at a minimum. A 5 to 6 foot diameter area of controlling competing vegetation is preferred. Plant competition may be removed by hand, mechanical or chemical means.¹ Mulches (See Practice 484 - Mulching) may be applied to the planting site to control competing vegetation and conserve moisture.

¹ Chemical application recommendations and application rates will be made by a licensed applicator, farm advisor, or others licensed to do so in California.
Predation Control

In areas where ground squirrel and/or gopher activity may impact germination and survival, acorns may be enclosed in wire mesh cylinders or baskets (0.5 to 1.0 inch mesh) buried at least 12 inches in the soil and extending at least 12 inches above the ground.

Where rabbits, deer, elk, cattle etc., are expected to pose a hazard above ground protective devices of chicken wire, rigid polypropylene, either mesh or walled, will be utilized to protect the emerging oak and first year seedling. Individual protective devices at least 4 feet high will be required to provide protection until the seedlings reach a point where the growing point is no longer browsed. Control may be by a number of protective devices including Chicken wire tree protection, rigid polypropylene - mesh tube tree protection, and rigid polypropylene - twin walled extrusion. Colors may range from white (low light conditions) to brown. Where cavity nesting birds or other wildlife entering the tubes may be a problem the tops of the tubes will be covered with a mesh sleeve to prevent entry.

Cultural Resources Considerations

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer.

http://www.nrcs.usda.gov/technical/cultural.html is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

Endangered Species Considerations

If during the Environmental Assessment NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

Plans and specifications will include the following: adapted tree species for the purposes outlined, spacing, planting methods, cultural practices, maintenance requirements, and variations in methods and species between interplanting, underplanting, and planting in open areas. Separate specifications can be prepared for each of these planting methods.

OPERATION AND MAINTENANCE

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance).

If needed, competing vegetation will be controlled until the woody plants are established. Noxious weeds will be controlled.

Replanting will be required when survival is inadequate.

NRCS, CA
August 2006
Supplemental water will be provided as needed.

The trees and shrubs will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation, fire and damage from livestock or wildlife.

Periodic applications of nutrients may be needed to maintain plant vigor. Replanting will be required when survival is inadequate.

Supplemental water will be provided as needed.

The trees and shrubs will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation, fire and damage from livestock or wildlife.

Periodic applications of nutrients may be needed to maintain plant vigor

REFERENCES:


Regenerating Rangeland Oaks in California. 2001

Appendix G

Supporting Documentation

Research around the country is being conducted on how to determine the appropriate buffer size for effective nonpoint source pollution (NPSP) reduction and removal. While the benefits of buffers are well established, how to determine size varies depending on location, local requirements and other parameters.

- Fixed-width setback distances across the US range from 50-200 feet of land depending on the location (i.e. slope, vegetation, stream size) and type of activity (CGER, 2000).
- Size should be determined on a case to case basis (CGER, 2000 and Polyakov et. al., 2005).
- There are several parameters that must be addressed to determine the flow length (width) including: (CGER, 2000 and Fischer, 2001)
  o The purpose of the filter (removal of nonpoint source pollution or developing wildlife habitat)
  o The intensity of the adjacent land use and
  o Characteristics of the site chosen such as slope, soil type, and type of vegetation present.

Many local studies are also being conducted that are determining the efficiency of filter strips and the use of setback/buffer in a variety of situations.

Alameda Watershed Management Plan
In the Alameda Watershed Management Plan (AWMP), SFPUC requires a “300-foot disturbance-free buffer” around all waterbodies and streams, especially those within the “High Water Quality Vulnerability Zones” (AWMP, 2001). Concerns over the effects of grazing on water quality, particularly the pathogen cryptosporidium, led SFPUC to develop reservoir and stream buffers on grazing land to prevent contamination (GRMP, 1997). This 300-foot buffer area adjacent to any waterbody is not available for livestock grazing of any type.

Sonoma County Setback Requirements
Sonoma County Code setback requirements for crops are 25 feet in upland riparian corridors, 50 feet in flatland riparian corridors and 100 feet for the Russian River riparian corridor from the top of bank (SCGP, 2007). Sonoma County uses a setback distance only and does not imply any buffering capacity or maintenance, which greatly increase efficiency of contaminant removal. Sonoma County also has a much higher RUSLE-R factor of 80 to 180, indicating much higher erosion rates and sediment contribution than can be found at the AgPark site.
Escherichia coli Retention by Vegetative Buffers in California’s Sierra Nevada Foothills

This study determined that vegetative buffers as small as 1.1 meters (~3.5 feet) were effective at reducing animal agriculture inputs of E. coli into surface waters (Tate et al, 2006). The buffers were used to reduce contaminated runoff from 2 meter by 3 meter plots planted on slopes of 5, 20, and 35%. The study concluded that grassland buffers are an effective method to reduce E.coli from entering surface water.

UC Cooperative Extension, Central Coast Conservation Practices

A study was conducted to determine the estimated costs and benefits of filter strips for landowners. This study suggested a one half acre filter strip (1300 linear feet with a 16 foot width) be planted downslope of 15 producing acres (Toure et al, 2003). This study did not elucidate the efficiency of the filter strip but demonstrated the possible benefits that landowners could receive by implementing NRCS practice standards.

Elkhorn Slough Watershed Project

The Elkhorn Slough Watershed is a very important ecosystem locally and has been the focus of extensive conservation strategies to protect the natural land. Program permits through the NRCS and local RCD assisted farmers and land managers with resource enhancement conservation projects. In addition, the Elkhorn Slough Foundation has adopted a 100 meter (328 ft) buffer width from the edges of all sensitive habitats. The buffer size was based upon the US Fish and Wildlife Services Final Determination of Critical Habitat for the California Red-Legged Frog which specifies a 50 meter buffer between intensive agriculture and sensitive areas. The use of the conservation practices through the NRCS has prevented 50% of the soil erosion caused by agricultural irrigation and stormwater runoff into the watershed (Elkhorn Slough Foundation, 2002).

Determining the efficiency of NPSP by filter strips has been well studied in current literature. Many techniques have been developed to calculate efficiency with mixed results.

- The NRCS found that 15 feet is an effective width for sediment removal with very little additional benefit with filters that are more than 30 feet wide.
- A literature review by Polyakov et al demonstrated the use of an area-buffer ratio to evaluate efficiency (2005).
  - An area to buffer ratio of 0.02-0.03 with slopes of 2-4% can produce sediment removal efficiencies of 45-85%.
  - Runoff loading can affect trapping efficiency: high flow tends to reduce efficiency regardless of size whereas low flows result in high trapping efficiency.
  - Nutrient removal rates vary depending on nutrient of interest and type of vegetation present.
Appendix H

Bibliography


H-1


Appendix E: Personnel & Staffing 2008

SAGE Board and Staff

Officers
Sibella Kraus, President
Renee L. Robin, Secretary
Chuck Teller, Treasurer

Directors
Janet Smith-Heimer, Board Chair
Chuck Teller
Renee L. Robin

Staff
Sibella Kraus
Alethea Marie Harper, AgPark & Food Systems Manager
Kasper Koczab, Sunol AgPark Coordinator

AgPark Advisory Committee

Kelly Barrington, Sunol Regional Wilderness Supervisor
East Bay Regional Park District (EBRPD)

Laura Brainin-Rodriguez, Nutrition Project Coordinator
San Francisco Department of Public Health

Neil Davies, Board Member
Sunol-Glen School Board

Lucrecia Farfan-Ramirez, County Director
UC Cooperative Extension

Tim Koopmann, Watershed Resource Specialist
San Francisco Public Utilities Commission (SFPU)

Sibella Kraus

Karen Sweet, Executive Officer (alternate - Amy Evans, Resource Conservationist)
Alameda County Resource Conservation District
Appendix F: Master Lease with SFPUC

The Master Lease that follows is for a nine-year term with a commencement date of April 1, 2007 and an expiration date of March 31, 2016. The Master Lease includes a series of Exhibits, A-F. One of these exhibits and a series of sub-exhibits are not included in this copy of the Master Lease. These omissions are a six-page description of the Parcel Deed (Exhibit C) and the sub-exhibits (F1–F3) which describe the farmer plots and farmer registration forms relevant to the 2007 growing season. The Approved Farming License Agreement (Exhibit F) is included in this copy of the Master Lease. However, in 2008, SAGE refined the language, but none of the basic terms, for the Farming License Agreement and its Exhibits. The refined 2008 Farming License Agreement and its Exhibits are included in this Management Plan as Appendix A.
SUNOL AGRICULTURAL PARK FARM POLICY

Updated in October 2014

This Farm Policy sets out guidelines for farming operations at the Sunol Agricultural Park (“Ag Park”). This is the Farm Policy document referred to in Section 4.3 of the license.

A. LICENSE TERM

1. Time on Land. Licenses at the Ag Park are generally one year in length. SAGE in its discretion may allow farmers with demonstrated capacity and need for a longer term to enter in a multi-year license. There is no pre-set limit on how long a farmer may operate at the Ag Park, although all licenses terminate automatically if and when the Lease between SAGE and the SFPUC (the “Lease”) ends.

2. License Renewal Process. Licenses expire at the end of the license term. Renewal is not automatic, but SAGE expects to approve so long as farmers have complied with the license and all SAGE policies. The process for renewal is described below:

<table>
<thead>
<tr>
<th>Time:</th>
<th>Action:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No later than 3 months before end of license term:</td>
<td>If farmer wishes to renew, farmer advises Ag Park Site Coordinator of desire to renew.</td>
</tr>
<tr>
<td>2-3 months before end of license term:</td>
<td>Farmer meets with Ag Park Site Coordinator to discuss application, farmer’s compliance with license terms, and farmer’s feedback about Ag Park operations.</td>
</tr>
<tr>
<td>No later than 30 days before end of license term:</td>
<td>SAGE decides about renewal and sends farmer written notice of the decision. Ag Park Site Coordinator may consult with the Advisory Committee, the Sub-Committees, or any members of such committees in the course of review as SAGE deems appropriate.</td>
</tr>
<tr>
<td>No later than the end of license term:</td>
<td>SAGE and farmer sign new license agreement or farmer leaves property, as the case may be.</td>
</tr>
</tbody>
</table>

3. Discretion. This document describes generally SAGE’s plan for reviewing license renewal requests. SAGE may modify the process as it determines; this document does not create any entitlements or rights. As stated in Section 9.5 of the license, SAGE has sole discretion in deciding whether to renew licenses.

4. Parcel Transfer. Concurrently with its entry into a License or changing of parcels within the AgPark (including Shared Crop Rotation as per D.10), Licensee shall initiate and pay the cost ($75 in 2013) of Parcel Transfer with CCOF. This fee shall be paid to CCOF upon new Licensee requesting Parcel Transfer.

B. LICENSE ACREAGE

1. Additional Acreage. Farmers may advise SAGE of their interest in obtaining more land. Criteria that SAGE may use in evaluating a farmer’s request for additional land include: (i) availability of land; (ii) compliance with the license and SAGE policies; (iii) contributions to the Ag Park project generally; and (iv) demonstrated need. SAGE has full discretion in determining whether to license available land to an existing farmer or farmers or to a new licensee. SAGE may consult with the Advisory Committee, the Sub-Committees, or any members of such committees in the course of review as SAGE deems appropriate. In all cases, existing farmers will not be allowed to license more acreage if
any amounts they owe SAGE are past due.

2. **Maximum Acreage.** There is no pre-set limit on how many acres a farmer may license.

3. **Outside Acreage.** In order to comply with National Organic Program rules, licensee will inform SAGE of location, size and organic certification status of any other land they cultivate.

C. **ACCESS, SECURITY, AND VISITORS**

1. **Hours of Operation.** Hours of operation are sunrise to sunset, 7 days per week.

2. **Access.** SAGE will provide each farmer with a maximum of three non-duplicable keys to the SFPUC 'side-gate' that leads into SFPUC property where the Ag Park is located. Farmers may not make or allow to be made any additional keys. Farmers must keep this gate locked at all times and may not hide a key in the vicinity of the gate. To facilitate access for employees or visitors who do not have a key and who are visiting after hours, when the main gate to the property is locked, farmers must directly unlock this gate themselves or station a person by this gate.

3. **Security.** Farmers are responsible for securing their own equipment and locking up the gate when they or their personnel leave the Ag Park.

4. **Registration.** Farmers are required to register with the Ag Park Site Coordinator the names of the primary contact persons, individuals with key access, and other registered users at the time of start-up or renewal. The registration form is attached to this Farm Policy as Exhibit A. Farmers must advise the Ag Park Site Coordinator and update the form if and when the farmer reassigns a key to a new person.

5. **Parking.** Farmers may bring their vehicle into the Ag Park and park it near their parcel while they are working on site. Farmers should direct educational and other visitors to park in the lot near the Water Temple.

6. **Visitors and events.** Farmers are encouraged to host visitors for tours, training, workshops, and other educational events. In order to comply with reporting and approval requirements of the Lease, farmers are required to submit an event request form to the AgPark Site Coordinator with the advance notice period based on event size; and for events of 70 people or more, SFPUC authorization, which SAGE will obtain, is required. The event request form is attached to this Farm Policy as Exhibit B. Events should not be publicized until they have been approved.

<table>
<thead>
<tr>
<th>Size of Group</th>
<th>Minimum Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 or fewer</td>
<td>2-3 days advance notice</td>
</tr>
<tr>
<td>6 – 19</td>
<td>7 days advance notice</td>
</tr>
<tr>
<td>20–69</td>
<td>At least 18 days advance notice, SAGE will notify SFPUC per lease terms</td>
</tr>
</tbody>
</table>

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1. **From SAGE Lease with SFPUC (page 12). Section 7 (n) Access to Premises**

Tenant shall limit access to the Premises to the following parties: Agents performing work for Tenant, approved sub-tenants or licensees and their agents as authorized in Section 16, along with members of the public accessing the Premises for educational purposes as authorized by Tenant and consistent with the Permitted Uses described in Exhibit D. Except as provided below, public access to the Premises for groups larger than 20 persons but less than 70 persons, for tours, training events, workshops, and educational events, shall be preceded by at least 14 days written notice to the key contacts for City set forth in the Basic Lease Information that includes the date(s) of the event, the numbers of people and vehicles involved, along with other information that may be requested by the SFPUC Natural Resources Division. For purposes of this section only, written notice via electronic mail shall be permitted, notwithstanding Section 24.1 of this Lease. For public access to the Premises involving groups larger than seventy (70) persons, access shall be permitted only if authorized in advance under an access permit issued by the SFPUC Natural Resources Division, the terms and conditions of which shall be established by in the Management Agreement. Tenant shall give City not less than thirty (30) days advance written notice of any request for such a permit, together with such information regarding the proposed access as SFPUC shall reasonably require.
At least 45 days advance notice, SAGE will request SFPUC 30-day approval per lease terms and before event has been publicized

The Site Coordinator will return signed or denied request form to the event host within 4 days of receiving the request. We expect most events to be readily approved. The denial of a request can be made by the Site Coordinator for reasons such as scheduling conflicts, inadequate facilities for projected group size, failure to give advanced notice, scheduled repairs that may cause hazards to visitors, or any reason seen as a potential hazard to visitors or grievance to other tenants.

Farmers are encouraged to inform visitors about the AgPark overall, SAGE will provide materials about the AgPark for farmers to distribute. Farmers must ensure that all visitors have completed a release form as stated in Section 7 of this farm policy.

7. **Releases.** Farmers are required to obtain from all of their volunteers and visitor, before or upon their arrival at the AgPark, a signed release in the form as attached to this Farm Policy as Exhibit C. Farmers are required to give waivers to AgPark Site Coordinator or leave in designated filing cabinet in welcome shed.

8. **Information for Visitors.** Farmers are responsible for informing all individuals they work with or host about Ag Park requirements. Farmers are responsible for the conduct of children and guests and will ensure that they do not damage or interfere with activities on other parcels or otherwise engage in inappropriate conduct.

9. **Pets.** Pets on an operating farm like the Ag Park represent a potential food safety threat. However, farmers may bring pets (dogs) into the Ag Park. Visitors are not permitted to bring pets onto the Ag Park.

9.1 Farmers are responsible for cleaning up after their dogs, which means that dogs are monitored and feces are promptly removed and disposed of.

9.2 All dogs must remain on the parcels of the farmer owners and cannot interfere with activities on or damage common areas and other parcels

9.3 When there are public tours, school groups, events, custom tours and any and all events involving the public at the Ag Park, dogs are either not present or are leashed and contained in an area that is inaccessible to the public. It will be SAGE staff responsibility to notify all farmers about such events and activities.

9.4 Dogs must be vaccinated against Rabies, Parvo and Distemper and documentation of such vaccination must be filed with SAGE.

9.5 Dogs must never harass 'non-pest' bird species (e.g. song birds and migratory birds) or deer that have accidently gotten into the AgPark.

D. **FARM OPERATIONS**

1. **Mentoring.** To enhance farm operations, SAGE encourages farmers to receive mentorship from other farmers with particular experience and knowledge base or from the Ag Park Site Coordinator. The specifics of this mentoring relationship may be outlined in a separate mutual agreement between the farmer and mentor. In addition, one or more specific crop advisors will be hired by SAGE on behalf of the farmers. Farmers contribute to the farm advisor costs through land fees.

2. **Irrigation Use.** Before using the Ag Park irrigation system, farmers must sign the Protocol Form attached to this Farm Policy as Exhibit D to certify that they have read and understand the irrigation procedures and have attended the necessary training sessions. Each farm is responsible for maintenance of its lines from their meters to their fields. SAGE is currently responsible for the sand filter and for the main lines from the sand filter to the meters.
3. **Equipment Use.** Farmers are responsible for their own training and that of volunteers and visitors. Farmers must have received appropriate training before using any equipment at the Ag Park. Volunteers and visitors may not use equipment without training. Farmers are responsible for ensuring that their volunteers and visitors use equipment safely.

4. **Tractors.** Farmers may bring their own tractor into the Ag Park. Farmers need to make sure that the tractor does not leak fuel or oil, and should place a fuel pan under the tractor engine to capture any potential leaks. Farmers should park their equipment within their field, and not in the farm road. Farmers should take extreme precautions when conducting maintenance on their tractors at the Ag Park (such as changing the oil) to ensure that soil contamination does not occur. Farmers will cooperate with the Ag Park Site Coordinator on other precautions as appropriate.

5. **Materials Storage.** Farmers must store all individual pesticides, fertilizers, fuels, and lubricants in sealed and labeled containers with the label identifying the contents of the container, and in compliance with applicable law. Farmers must remove their materials each day or otherwise secure them in locked, leak-proof containers kept on their parcel.

6. **Organic Practices.** Farmers must comply with standards for organic practices as established by a USDA Accredited Certifying Agent to provide certification for organic growers that comply with the National Organic Program (e.g. CCOF, Tilth, QAI, etc.). Such practices currently include not using any prohibited pesticides, fertilizers, and genetically engineered or treated seed. In addition, farmers must report their practices and inputs as per F.2. (Monthly and annual reporting on Organic Farming Input Records)

7. **Food Safety.** Farmers must take precautions to protect food safety by using production and harvest practices that are in accordance with applicable Federal and State laws. Farmers should report to the Site Coordinator any knowledge, reports, or suspicion of food-borne illness, flooding, pathogens, or other contamination at or associated with crops grown at the Ag Park.

8. **Crop Rotation.** Farmers should rotate annuals and perennials when feasible. Perennial crops require extra attention to under-sowing and compost applications. Farmers should practice interplanting and companion planting. After moving perennials, different crops should be grown or a cover crop planted in the interim. Record keeping of crop rotation should be kept using the form attached to this Farm Policy as Exhibit F, which should be submitted to the AgPark Site Coordinator at least annually or as needed for EQIP contracts.

9. **Strawberry Rotation.** Two consecutive years should be the maximum amount of time that strawberries be grown on any particular parcel, followed by a minimum of 3 years of a rotation which includes intensive cultivation of broccoli and other brassica crops. Strawberries should not be followed by any solanaceous crops, as they are proliferators of Verticillium, a soil-borne disease.

10. **Shared Crop Rotation.** Farmers are allowed to rotate their crops and land farmed with each other. If farmers do so, they must notify the Ag Park Site Coordinator before proceeding and cannot use more acres of land than the combined total acreage allotted to each farmer under his or her respective license. All requirements of the license apply to whichever plot of land is utilized. Shared crop rotation approved by the Ag Park Site Coordinator does not create a sub-license. In addition, A.4 Parcel Transfer requirement applies to this provision.

11. **Fertility Management.** Adequate soil fertility and structure are critical for optimal plant health. Organic certification requires farmers to implement practices that build and ensure soil fertility by implementing a Soil Conservation Plan. Farmers should cover crop, apply compost and practice crop rotation as a standard practice to maintain soil tilth and health. Farmers should plan their production schedule and manage their land accordingly. Fertility management should be based on soil analysis and ideally advice of crop advisors. Soil analysis will be conducted annually by SAGE staff. Farmers should communicate with the Site Coordinator if there are specific locations that require special analysis.
a. **Soil Conservation Plan:** Farmer shall plant at least 50% of their parcel with winter cover crops before November 15th each year or apply at least 5 tons/acre of compost approved for use in certified organic production systems. The aim of this policy is to improve soil fertility each year (as measured by soil samples). If no cash crops are to be grown during the winter, 100% of the area should be planted to cover crops, ideally by Nov. 15th, or as soon as possible. Farmer shall consult with SAGE regarding appropriate seed varieties, and is responsible for 100% of the cost to prepare the land, seed the crop, and irrigate the plants until established. SAGE will continue to do its best to identify and procure technical assistance and financial support for these practices, through EQIP and other sources, as feasible.

Farmer can opt out of cover-cropping 50% of their field in winter as long as compost is applied to the entire rented acreage. This option cannot be exercised in consecutive years; cover crops must be planted at least every other year. The amount of compost applied should be comparable to the amount of organic matter of cover cropping (at least 5 tons per acre). Regardless of which option is chosen - cover crop or compost - farmer shall verify their practice by providing Ag Park Site Coordinator with a receipt and pictures to photo-document.

SAGE shall have the discretion to determine whether or not a cover crop was established adequately, and was allowed to reach sufficient height before being mowed and turn in. If SAGE determines that a cover crop was not adequate for whatever reason, it reserves the right to require farmer to apply compost, at farmer’s cost.

If a farmer does not comply with this policy by the deadline noted above – November 15th - SAGE reserves the right to rectify this by either planting a cover crop or applying compost on the farmer’s behalf, and will charge the farmer accordingly for the full cost of doing so.

b. **Soil structure and compaction.** Soil structure and compaction have been a problem at the Ag Park over the years. SAGE may from time to time request farmers to evaluate compaction and hardpan in their fields, and may determine the need for deep ripping. In cases when it is determined this is necessary, SAGE will do its best to provide cost-share to farmers for deep ripping.

12. **Weed Management.** Farmers should make regular field inspections for weed growth and regularly maintain fields, field edges, and roadsides to prevent weed growth. Farmers may control weeds through mulching, mowing, hoeing, and cultivating, Flame weeding is also allowed with extreme caution and with advance notice to SAGE and the SFPUC. Farmers may not use chemical substances to control weeds unless approved for organic use by NOP. SAGE has the right to tell farmers that they are not allowed to plant in certain sections of their fields, where weed infestation threatens to undermine crop viability, until the weeds are fully controlled if not eradicated. To the extent feasible, weed eradication measures undertaken by SAGE will be done in coordination with farmer(s).

13. **Insect Management.** Farmers should understand current organic methods of control. Insect management requires attracting and encouraging beneficial insect populations as a means to balance populations of insect pests. Farmers should be versed in Integrated Pest Management (IPM) monitoring techniques. Farmers should work cooperatively with the Ag Park Site Coordinator to discourage pests. Farmers may not use chemical pesticides that are not approved and regulated by NOP. Farmers are required to produce crops and maintain registrations and record-keeping in accordance with applicable Federal and State laws

14. **Plant Disease Management.** To prevent plant diseases, farmers may use crop rotation; NOP approved organic fungicides, diseased plant removal and disposal, tool sanitation, restriction of foot traffic, cleanliness, black plastic mulch, and drip irrigation or watering at ground level. Farmers must keep records of disease infections and controls.
15. **Protection of Water Courses and Water Quality.** Farmers may not create ponds and may not disturb, fill, bank, or channel any natural watercourse or other body of water. The Ag Park Farmers may not pollute or impede the drainage of surface water.

16. **Trees and Native Plants.** Farmers may not cut, remove, or destroy trees or other native plants, except when pruning for tree health or harvesting fruit from trees on their licensed premises.

17. **Livestock and Other Animals.** Animals shall only be kept once prior written consent from SAGE has been obtained. In order to obtain consent, a detailed management plan shall be submitted for review, and must demonstrate compliance with all relevant laws and regulations, as well as SFPUC Lease and USDA Organic requirements.

18. **Composting and Compost Production.** Compost and debris piles shall be placed at least 100 feet away from creek bank. Compost piles created at Ag Park whose intended use is in farm operations shall follow appropriate regulations and organic certification requirements. Composting and piling of animal viscera, including placement of piles shall only be done with prior written consent of SAGE.

19. **Wildlife Stewardship.** Farmers may not engage, or permit anyone to engage, in hunting, trapping, or fishing on or near the Ag Park. Farmers must help ensure that no deer enter the Ag Park by ensuring that the main gates are closed at all times when no or few farmers are on site. If a deer does enter the Ag Park, farmers must help herd the deer out gently (or get SFPUC help to do so) in order to make sure no harm comes to the deer. However, farmers may hunt and trap problem animals using selective control techniques in order to reduce threats to farming operations. Farmers may not use poison bait, cyanide guns, or other non-selective control methods. Predator control is not allowed.

20. **Burning.** Farmers may not burn any weeds, debris, or other substances on or near the Ag Park. However, farmers may request on their event permits to have controlled fires (such as BBQ’s) provided that they specify all safety measures needed to control such a fire (e.g. having water or a fire-extinguisher at hand).

21. **Firearms.** Farmers may not possess or use firearms on or near the Ag Park.

22. **Alcohol.** Farmers may not consume alcoholic beverages on or near the Ag Park. Events for which an ABC license has been obtained and which have been approved in accordance with Section 6 of this document are an exception.

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**E. FARM FACILITIES AND MAINTENANCE**

1. **Bathrooms.** SAGE provides basic access to bathroom facilities.

2. **First Aid.** SAGE will provide a first aid kit in the Meeting Shed. SAGE will post in the Meeting Shed information about the location of the nearest hospital. All Ag Park volunteers and visitors must be accompanied by an individual who has been trained and certified in basic first aid.

3. **Use of Ramada.** SAGE encourages farmers to use the Ramada. Meetings may be scheduled in advance in the manner specified by the Ag Park Site Coordinator. Scheduled meetings will have priority in the Ramada. Informal meetings may take place in the Ramada as available. After use, farmers should leave the space in clean and orderly condition.

4. **Use of Meeting Shed.** SAGE encourages farmers to use the Meeting Shed. Meetings may be scheduled in advance in the manner specified by the Ag Park Site Coordinator. Scheduled meetings will have priority in the Meeting Shed. Informal meetings may take place in the Meeting Shed as available. After use, farmers must leave the space in clean and orderly condition.
5. **Farm Sheds.** Farm sheds and outside storage areas may be used only for farm-related storage and activities, and may be accessed only between the hours of sunrise and sunset. Sheds may not be occupied overnight. No permanent construction, such as concrete piers, is allowed in the building of farm sheds, and the Ag Park Site Coordinator must pre-approve the design of all farm sheds and the location and scale of all outdoor storage area. Farmers must maintain their farm sheds and their outdoor storage areas in clean and orderly condition.

6. **Trash.** Farmers are responsible for hauling and disposing of their own agricultural and other trash, such as boxes, drip tape, plastic mulch, fertilizer bags, and other items. Farmers should not use the neighboring SFPUC dumpsters for disposing of Ag Park trash.

F. **FARM PLANNING AND REPORTING**

1. **Field Systems Plan and Business Plan.** Upon application for entry into the Ag Park, farmers are required to submit a business plan. Farmers are expected to develop an annual field systems plan. Farmers will submit this plan to the Ag Park Site Coordinator no later than March 1 of each year. SAGE strongly encourages farmers to submit financial results for the year completed as well as financial projections for the coming year (not a full business plan). In addition, SAGE strongly encourages farmers to submit them as early as possible. Early submission allows SAGE to review the plans and provide guidance intended to promote sustainable and successful operations. SAGE may take into account the timeliness and quality of these plans in making decisions about license renewal and requests for additional acreage.

2. **Organic Certification Reporting.** In order to maintain organic certification, licensees are required to submit all Organic Farming Input Records (OFIR) for the year, during the annual inspection with CCOF. In addition, licensees are required to submit OFIRs on a monthly basis to SAGE. Failure to comply with either or both of these requirements may result in the termination of the license.

3. **Year-end Evaluations.** To help improve the quality of support that SAGE provides, farmers are expected to submit year-end evaluations of their Ag Park experience. SAGE will provide a form for these evaluations, along with information about when the evaluations are due.

4. **Reporting.** Farmers are responsible for reporting promptly to the Ag Park Site Coordinator any events required to be reported under the Lease. These events include release of hazardous materials, damage to property in the Ag Park, destruction of native plants, commencement of construction and repairs, and visits to the Ag Park by large groups. In addition, farmers must notify the Ag Park Site Coordinator immediately if any injuries occur on the Ag Park premises.

G. **FARMER PARTICIPATION IN AG PARK MANAGEMENT**

1. **Farmer Input.** Farmers are encouraged to provide their suggestions about Ag Park operations to the Ag Park Site Coordinator.

2. **Day-to-Day Matters.** Farmers should contact the Ag Park Site Coordinator, not SAGE headquarters, with any questions relating to day-to-day operational matters.

3. **Quarterly Meetings and Other Events.** Farmers are required to attend quarterly meetings. These meetings are a key element of Ag Park management and culture. The Ag Park Site Coordinator will announce the date, time, and location of these meetings. Farmers must participate in field days, education programs, and special events. All of these meetings, programs, and events will be organized by SAGE. SAGE may take into account meeting participation in making decisions about license renewal or requests for additional acreage.

H. **DISPUTE RESOLUTION**
1. **Generally.** SAGE aims to resolve problems and complaints in a prompt, orderly, and fair manner, and encourages the use of informal methods to resolve problems as early as possible. To that end, this dispute resolution process establishes a series of steps, beginning with attempts to address problems as close to the source as possible and then involving additional individuals as appropriate. This policy is designed to supplement and not replace other routine and informal methods of responding to problems and complaints. Farmers’ non-compliance with any terms of this Farm Policy and the Farmer License, will result in farmers’ receiving oral warnings, written warnings and fines, which SAGE will usually issue in sequence. However, more egregious non-compliance may immediately result in a fine or a request to leave per section H.3 below.

2. **Disputes Between Farmers.** Disputes between farmers will be resolved as follows:

   **Step:**  
   **Action:**

   **Step 1:** Farmers should seek to resolve the issue themselves through discussion.

   **Step 2:** If the farmers cannot resolve it, then one or both farmers may contact the Ag Park Site Coordinator. The Ag Park Site Coordinator will try to speak with both farmers in order to help them reach a resolution. The Ag Park Site Coordinator in his or her discretion may also consult with the Advisory Committee, Sub-Committees, or any members of such committees.

   **Step 3:** If the farmers do not reach a resolution within 14 days after the first outreach to the Ag Park Site Coordinator, one or both farmers may appeal to the President of SAGE. The appeal must be in writing on the form attached to this Farm Policy as Exhibit E.

   **Step 4:** The President will consider the problem and make a decision. The President will notify the farmers of the decision within 30 days after the filing of the appeal. The President’s decision will be final.

3. **Disputes between Farmer and SAGE.** Disputes between a farmer and SAGE will be resolved as follows:

   **Step:**  
   **Action:**

   **Step 1:** Within 10 days after the problem arises, the farmer will speak directly with the Ag Park Site Coordinator. The Ag Park Site Coordinator will make a decision within 10 days after discussing the problem with the farmer. Generally, this will be the end of the matter.

   **Step 2:** If the farmer is unhappy with the resolution of the problem in Step 1, the farmer may appeal to the Ag Park Advisory Committee. The Advisory Committee will hear the complaint and attempt to resolve it a manner acceptable to both the farmer and SAGE.

   **Step 3:** If the farmer is unhappy with the resolution of the problem under Step 2, the farmer may file a complaint with the President of SAGE. The complaint must be in writing in the form attached to this Farm Policy as Exhibit E. The President will consult with the Advisory Committee, Sub-Committees, committee members, or other persons as he or she may determine. The President will make a decision and notify the farmer of that decision within 14 days after the filing of the written complaint.

   **Step 4:** If the farmer is unhappy with the resolution of the problem under Step 3, the farmer may so notify SAGE in writing. The farmer and SAGE will then decide, within 7 days
after the President notifies the farmer of his or her decision, whether to retain a third party for non-binding mediation, with the cost of the mediator shared equally by the parties, or to proceed to their respective legal remedies.

4. **Limitations.** This process does not cover complaints about action taken by SAGE to enforce its rights under the license and does not create any contractual rights or entitlements or affect SAGE’s rights under the license. This process does not in any way limit or qualify a farmer’s obligation to comply with applicable law, the license, or the Lease, or limit SAGE’s right to involve local law enforcement authorities as may be appropriate.

I. **INFORMATION ABOUT THIS DOCUMENT**

1. **Modifications.** SAGE may modify or amend this Farm Policy from time to time in its sole discretion. SAGE will use its reasonable efforts to provide farmers with notice of the change, but its failure to do so will not relieve farmers from their obligation to comply with the policy previously in effect until they have actually received notice of the change.

2. **Not Create Rights.** Nothing in this Farm Policy creates any contractual rights or entitlements in any farmer, employee of a farmer, volunteer, visitor, or other person.

3. **Relationship to License.** Nothing in this Farm Policy limits, qualifies, or otherwise affects SAGE’s rights or a farmer’s obligations under the license or any other policies issued by SAGE. Should there be any ambiguity or conflict between the license and this Farm Policy document, the license will control.

* * * * * * *
SUNOL AGRICULTURAL PARK
FARM POLICY AGREEMENT

I, _______________________________, have received the 2014 Farm Policy document for the Sunol Agricultural Park in both electronic and hard copy. I have read the document and agree to the policies therein. I understand that it is my responsibility as owner/operator of __________________________, which is independent of Sustainable Agriculture Education, to make aware any employees, contractors, or volunteers this operation may employ, of the policies provided in the Sunol Agricultural Park Farm Policy document.

The Farm Policy is independent of the License Agreement with SAGE and SAGE’s Lease with the San Francisco Public Utilities Commission. By signing, you agree to have reviewed the document and agree to abide by all the procedures and policies specified in the document.

I have read and agree to the Sunol Agricultural Park Farm Policy,

Signature:__________________________________________  Date: _______________________

Printed Name:___________________________________________________________________
EXHIBIT A

SUNOL AG PARK PERSONNEL REGISTRATION FORM

Primary Farmer Contact Information:

- Name ____________________________ Organization ______________________________
- Address _____________________________________________________________________
- Phone __________________ Cell Phone __________________ Email __________________
- SSN # __________________________ Employer Identification # __________________

List all personnel who will have key access to Sunol Ag Park (maximum of three):

- Name ___________________________________________________________________
- Address ___________________________________________________________________
- Phone __________________ Cell Phone __________________ Email __________________
- SSN # __________________________

- Name ___________________________________________________________________
- Address ___________________________________________________________________
- Phone __________________ Cell Phone __________________ Email __________________
- SSN # __________________________

- Name ___________________________________________________________________
- Address ___________________________________________________________________
- Phone __________________ Cell Phone __________________ Email __________________
- SSN # __________________________

List all personnel who will be registered users* at Sunol Ag Park:

- Name ____________________________ Phone ____________________________
- Name ____________________________ Phone ____________________________
- Name ____________________________ Phone ____________________________
- Name ____________________________ Phone ____________________________

* A “registered user” is any person who will regularly work on or otherwise be present on your parcel at the Sunol Ag Park.
EXHIBIT B

SUNOL AG PARK RELEASE FORM

Participant Information

First name: ___________________________ Last name: ___________________________

Date(s) of visit: ___________ If you are a regular visitor, please leave the date field blank.

Purpose of visit: ________________________________________________________________

Name of farming operation: _____________________________________________________________

Name of host organization, if different from above: ________________________________________________________________

Release Form

I agree as follows:

1. Participation. I am a visitor or volunteer at the farming operation identified above, which is located at the Sunol Ag Park. I acknowledge that I am not an employee, contractor, or volunteer for Sustainable Agriculture Education ("SAGE," a nonprofit corporation that licenses the land for farming operations) or the City and County of San Francisco (the "City"). I understand that I shall not be paid for my services by SAGE or the City, and that I shall not be covered by or eligible for any SAGE or City insurance, health care, worker’s compensation, or other benefits.

2. Assumption of Risk. I am aware that in participating I may be exposed to personal injury or death or damage to my property as a result of my activities, the activities of farmers and their employees, volunteers, and visitors, the materials or tools used, or the conditions under which my services are performed. I acknowledge that there may exist hazardous conditions at the worksites. I may be working with tools, supplies, and other materials that can cause injury, and that these materials may also be handled by unskilled volunteers. I understand that my own safety is my own personal responsibility. With knowledge of these risks, I agree to accept any and all risks of personal injury or death or damage to my property.

3. Release of Liability. I agree that I, my successors, assigns, heirs, insurers, agents, guardians, and legal representatives waive and release any rights, actions, or causes of action against SAGE, the City, the host organization or farming operation and their respective officers, directors, employees, volunteers, agents, customers, suppliers of any materials or equipment used, and contractors, and their respective heirs, legal representatives, successors, and assigns (collectively, the "Released Parties") for injury, death, loss of use, or damages arising out of or resulting from the acts or omissions of any person or entity or my activities as a participant. This includes, without limitation, negligence of any of the Released Parties, whether active or passive, sole or comparative.

4. Medical Release. I release and forever discharge the Released Parties from any claim whatsoever arising or that may arise on account of any first aid, treatment, or medical service, including the lack of such or timing of such, rendered in connection with my participation.

5. Media Authorization. I consent to the unrestricted use by SAGE, or any person authorized by SAGE, in any medium, including the internet, of any photographs, recordings, interviews, videotapes, film, or similar visual or auditory recordings of me created in connection with my presence or activities at the Sunol Ag Park.

6. Severability, Survival, and Waiver. If any provision in this Agreement is held invalid or unenforceable, the other provisions shall remain enforceable, and the invalid or unenforceable provision shall be considered modified so that it is valid and enforceable to the maximum extent permitted by law. This agreement shall survive the termination of my participation, employment, contracting, or volunteer activities at the Sunol Ag Park.

I have read, understand, and accept this agreement and have been given adequate time to review it and ask questions. If the signatory is under the age of 18, this form must be signed by signatory’s parent/guardian.

Participant’s Signature __________________________________________________________

Printed Name ___________________________ Date ___________________________
Exhibit C
Sunol AgPark Event Request Form

1. DateSubmitted: ___________ Date of Event: ___________ Event Time: ___________
2. Farm Name: ________________________________________________________________
3. Primary event contact/s: ____________________________________________________
4. Phone: _____________________________ Email: _______________________________
5. Event Purpose: ______________________________________________________________
6. No. of Expected Participants: ________________________________________________
7. If a fee is being charged, what is the fee and to whom is it paid: _____________________
8. What is the total income anticipated: ________________________________
9. Will alcohol be served: ______ If so, please attach a copy of the ABC license and attach a copy of insurance that covers events at which alcohol is served. _________________________________
10. Will there be outdoor fire: ______ What is the fire protection plan: ______________
11. Number of Expected Vehicles: ______________________________________________
12. What is the designated parking area: _________________________________________
13. Will there be a shuttle, if so from where to where: ________________________________
14. Please describe the event by including a schedule and any utilities that will be needed for the event that are not readily available on the farm (electricity, extra potable water, porta potties etc.): ____________________________________________________________________________________________
15. Is event after public water temple hours? Y/N____
   a. If yes, will you need key access for the internal gate and temple parking lot? Y/N____
   b. If yes, will you have someone posted at the front gate to let visitors in? Y/N____
   c. If yes, who will be responsible for site security at end of event? ____________________________

Please submit to site coordinator for approval in person or via mail, email, or fax (510-524-7153).

For SAGE Office Use Only

Approved by: ____________________________ Date: ____________________________
Printed Name: __________________________ Title: __________________________
SFPUC notified by: __________________________ Date: __________________________
Printed Name: __________________________ Title: __________________________
Event waivers on file: __________________________
Post event summary (# of participants, highlights, any incidents):
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
EXHIBIT D

PROTOCOL FOR IRRIGATING AT THE SUNOL AG PARK

OVERALL PRINCIPLES

- The water pressure coming into the irrigation system is very high, and it will break the pipes if care is not taken to operate the system properly.

- To reduce the pressure on the pipes in the field, the water must be turned on ONLY when the gates are open to at least 0.5 acres. Irrigation of the field is NECESSARY to prevent unsafe water pressure in the system.

- Shutting a field off, without turning down the main water valves, can cause a dangerous increase in water pressure. Fields should NEVER be shut off prior to turning off the main water valves (or reducing the pressure in the system by opening up another field).

IRRIGATION PROTOCOL

1. **Open up a field of at least 0.5 acres.** To do this, open up both the main plot valve, and a field valve.
2. **Open both valves on the main system.** (Outside the gate, these valves are above the orange-red segments – see image below) by turning them left for 2-3 rotations. Then slowly open the gate valve (to the right of the red valves and on the ground) until water can be heard entering the system. Do not fully open the gate valve! If you do, the pressure can become dangerously high.
3. **Re-enter the farm and read the water pressure.** The pressure is read at the pressure gauge to the right of the mail plot valves. It can also be read at the meter next to the filter. It takes a few minutes for the system to fill with water, and for the water gauges to register the correct pressure. Be patient and wait for the pressure to level off. The pressure should read below 40 pounds per square inch. (If the pressure rises to greater than 40 pounds per square inch, immediately open additional field gates to lower the system pressure, and quickly return to the main gate valve and close it. At this point, you will need to start over at the beginning).

![Close-up of a pressure gauge.](image)

*(Found to the right of the main plot valve). Pressure is at approximately 4 pounds per square inch, consistent with what one would see just after opening the main system valves, and before the pressure in the system has increased and then leveled off.*

4. **After the pressure remains constant for at least one minute** (under 40 pounds per square inch), return to the gate valve on the main system, and open it another quarter turn. Return to the field and monitor the subsequent rise in pressure. Repeat as necessary until the overall system pressure rises above 30 pounds per square inch. Irrigation should take place between 30 and 50 pounds per square inch, and the pressure gauges should be monitored frequently. Any increases in pressure should be immediately dealt with by opening additional fields, or by closing down the main gate valve.

5. **Irrigate at constant pressure for desired time interval.**

6. **After fields have been sufficiently irrigated,** shut off the three main system valves outside the fence (NEVER shut off fields prior to shutting off the main valves. This will cause dangerous increases in pressure in the system).

7. **After the main valves have been shut,** field and plot valves can be closed.

* * * * * * *

SAGE reserves the right to revoke irrigation privileges at any time for violating this irrigation protocol or using the irrigation system in an unsafe manner. SAGE will generally warn farmers about any potential problems unless the behavior or damage is particularly egregious, in which case immediate revocation might result.
CERTIFICATE OF COMPLETION
SUNOL AG PARK IRRIGATION PROTOCOL TRAINING

I have completed the required training to use the irrigation system and I promise to follow the requirements and instruction set out in this Protocol. I understand that I may lose privileges to use the irrigation system if I do not operate the system in compliance with this Protocol and in a safe, responsible way.

________________________________________________    ______________________
Farmer signature                                         Date

________________________________________________    ______________________
Irrigation System Operator (if different from farmer)    Date

I have provided the above Irrigation Protocol and training to the farmer.

________________________________________________    ______________________
SAGE Ag Park Site Coordinator signature                Date
# EXHIBIT E

## SUNOL AG PARK DISPUTE RESOLUTION FORM

**CONFIDENTIAL**

### Farmer Information

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<tr>
<th>Name:</th>
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<tr>
<td>Farming Operation:</td>
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<tr>
<td>Address:</td>
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<td>Telephone #:</td>
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<td>E-mail:</td>
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### Nature of Grievance

Please describe the nature of the problem, stating all facts, including the time and place of the incident, the names of persons involved, etc.

Names and titles of any SAGE staff members responsible for the decision or action giving rise to the problem:

Outcome sought:

### Resolution Process

Please describe any informal actions taken under this grievance policy to resolve this matter, the outcome of that process, and why you are unhappy with that decision.

If you have already filed a written complaint and are now appealing the decision, please describe the decision and why you are unhappy with that resolution.

### Other

Please attach any other information or evidence that you would like the decision maker to consider when responding to this problem and submit to the Ag Park Site Coordinator.

I attest that the above is true and correct to the best of my knowledge.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date Submitted</th>
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Printed Name
Farming in the Watershed

The Sunol AgPark Activity Guide

Sustainable Agriculture Education (SAGE)
Farming in the Watershed

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Fico: Luciana Messina
Terra Bella Family Farm: Shawn and Beth Seufert and Joe Sunderland

And all of the students who visited the AgPark for field trips!

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Introduction

The Sunol AgPark is a dynamic outdoor environment that offers San Francisco Bay Area students a unique opportunity to learn about sustainable agriculture in the context of a regionally-important watershed. The Sunol AgPark is located on 18 acres of land in the Sunol Valley owned by the San Francisco Public Utilities Commission (SFPUC) and leased by Sustainable Agriculture Education (SAGE). The Sunol AgPark was created from the mutual interest of SAGE and the SFPUC in developing an entity that integrates sustainable agriculture, natural resource stewardship, and public education about the Sunol Valley. The SFPUC is an agency of the City and County of San Francisco that provides water to 2.5 million Bay Area residents, and power and wastewater services to San Francisco. The SFPUC owns 40,000 acres in the Alameda Creek Watershed, for water supply purposes. SAGE is a nonprofit organization based in Berkeley, with a mission to develop urban edge agriculture and engage diverse populations with the sustainable agriculture movement.

Farming in the Watershed is a new curriculum that introduces Sunol AgPark visitors to the concept of stewardship, and provides a framework for on-site experiential education. The curriculum investigates the unique resources of the AgPark site, including the historic Sunol Water Temple, the Arroyo de la Laguna creek, and three working organic farms. The confluence of these and other diverse elements at the AgPark encourage student inquiry into the relationship between farming, food, water, and culture. Farming in the Watershed is organized into the following three units:

Unit 1: Stewarding the Sunol Valley Through Time
This unit explores the relationship between the Sunol Valley’s human inhabitants and the landscape over time. Activities include: drawing the Sunol Water Temple, building a model water system, and investigating the history of AgPark crops.

Unit 2: Stewardship Through Farming and Eating
This unit explores the connections between healthy farms, healthy food, and healthy communities, focusing on the AgPark farms. Activities include interviewing a farmer, observing insect diversity, and helping a farmer.

Unit 3: Stewardship From Urban to Wild Landscapes
This unit explores the relationship between the AgPark and the surrounding environment. Activities include building a model watershed, exploring creek diversity, and taking soil samples.

Each unit contains six lessons which focus on two or three key objectives. Visiting teachers are encouraged to select lessons which best complement their classroom teaching. The lessons are linked to California Academic Standards for grades 4-8 (see Appendix for more information).

Farming in the Watershed was designed to stimulate students’ visions of a healthy, just, and sustainable future by challenging them to explore their roles as stewards—of their own health, their watersheds, and their communities.
BIG IDEA
The Sunol AgPark is an example of a new kind of farm, called an “AgPark”, where multiple tenants farm on public land and contribute to natural resource stewardship and public education efforts. The Sunol AgPark is in a place with a rich history, and is home to multiple organic farms that grow a wide diversity of crops for different markets.

BACKGROUND
Sunol Water Temple facts:
• Built in 1910 by William Bourn II, president of the Spring Valley Water Company, and designed by Willis Polk, a famous architect, to celebrate an important source of water, and the city’s water supply.
• At the time of the temple’s construction, half of the water used in San Francisco came from the East Bay and ran through the temple. Today only 15 percent of San Francisco’s water comes from the East Bay, and it runs through underground pipes rather than the temple.
• Fashioned after the Temple of Vesta at Tivoli outside of Rome, Italy
• The quotes engraved on the temple: Isaiah 41:18: “I will make the wilderness a pool of water and the dry lands springs of water.” and Psalm 46:4: “The streams whereof shall make glad the city.”
• Seriously damaged in the Loma Prieta earthquake of 1989, restored in 2001 with support from the local community. The restoration won the prestigious Preservation Design award from the California Preservation Foundation.

OBJECTIVES
Students will
• Identify 2-4 unique features of the Sunol AgPark.
• Describe ways they can be good stewards.
• Explore the significance of the Water Temple.

MATERIALS
• Relief map (California or SF Bay Area)
• Map of the Sunol AgPark, including farm plots, roads, drinking water, and bathrooms
• Clipboards, pencils, and AgPark scavenger hunt worksheet for each student pair

TIME REQUIRED
45 minutes

GROUP SIZE
Half of the class, students in pairs

ADAPTED FROM
Original
PROCEDURE
When all the students and chaperones have arrived at the temple, gather them together and welcome them to the AgPark. Have AgPark instructors introduce themselves. Divide the large group into smaller groups of 15 and move to agreed-upon areas on opposite sides of the temple.

PART I: Welcome and Overview (5 min)
1. Briefly introduce yourself and your relationship to the Sunol AgPark. Wear a name tag.
2. Outline the day’s plan.
3. Agree on safety and behavior guidelines: stay on the roads, stay with the group, don’t touch any farm equipment or eat crops without permission.
4. Tell students that they’re still in a classroom today, but the earth is the floor and the sky is the ceiling.
5. Demonstrate the signal you’ll use to assemble the group or to get their attention (e.g. whistle, deer’s ears, raised hand, clap and response).
6. Point out the toilets, and give them a chance to go before getting started.
7. Let the rest of the students explore the temple, being careful not to disturb the other group(s).

PART II: Partner pairing and introduction to “stewardship” (10 min)
1. Gather students in a circle. Tell them they’ll be working in pairs, each named after a different farm animal, which you will give them. They are to find their partner by making the sound their animal makes, with their eyes closed, until they find the other person making the same sound.
2. Have students close their eyes while you go around the circle and quietly give them their animals. Ask students to pay close attention to the sounds, smells, and feelings they notice while they wait.
3. Give students a few minutes to find their partners.
4. Give each pair a clipboard, pencil and worksheet, and give teams three minutes
Farming in the Watershed Introduction

PART III: The Water Temple in Context (5-7 minutes)

1. Use a relief map to point out the AgPark location, and its significance within the larger region (e.g. Alameda Creek watershed is an important source of drinking water for the region.)

2. Tell students that the Temple was built in this place because it’s at the confluence of three water sources: Alameda Creek, Arroyo de La Laguna, and the Pleasanton wells.

3. Ask students to share what they know about temples.

4. Ask students to walk around the temple with their partner transcribing the quote at the top, and to take two minutes to brainstorm the meaning of the quote and how the quote relates to farming today. If time allows, ask a couple of groups to share.

PART IV: Scavenger Hunt (20-25 minutes)

1. Remind students to carry their lunches and water, and to stay hydrated. Give students an opportunity to get their lunches from the bus or cars, if needed.

2. Once you enter the AgPark gate, gather the students in a circle.

3. Briefly introduce the AgPark, breaking it down into “agricultural” and “park.”

4. Give a brief overview of the AgPark (18 acres, multiple farms, the types of produce grown).

5. Explain that they are going on a scavenger hunt; they will be like detectives to discover facts about this special place.

6. Lead students on a tour of the farm, allowing them to stop to check things...
off on their worksheets. When you arrive
at the first activity station, have a couple
of teams share one thing they saw that
they weren’t expecting. Collect their
worksheets.

MODIFICATIONS/EXTENSIONS

• If the students are distracted when they
  arrive, use a centering activity. Have
  students create a circle, and imagine being
trees, with hands reaching up to the sky, and
feet sinking down into the earth. Take three
deep breaths, as if they are leaves respiring.

• If students aren’t smiling and feeling
  relaxed, have them make funny faces moving
their mouth all around; stretching their face
as much as they can until you see the smiles
appearing.
**Introduction to the AgPark**

“Stewardship” is our responsibility for taking care of the people and places in our lives, including ourselves.

<table>
<thead>
<tr>
<th>What makes a healthy earth?</th>
<th>What makes a healthy you?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>What is the quote written around the top of the Sunol Water Temple?</th>
</tr>
</thead>
</table>
Farm Scavenger Hunt
Can you find the following things? Check the box next to the object when you find it!

Sights:
- Bird (What kind?)
- Strawberry
- Compost Pile
- Cow (Hint: look up in the hills)
- Irrigation tape
- Tomato plant
- Cat or dog
- Chickens
- Farmers in the field
- Insects (What kind?)
- Shades of green (How many?)
- Something that is over 50 years old (What is it?)
- Water vapor
- (Fill in the blank)_______________________________

Smells:
- Mint
- Rosemary
- Compost
- (Fill in the blank)_______________________________

Sounds:
- Bird chirping
- Engine running
- Chicken clucking
- Leaves rustling
- Bee buzzing
- (Fill in the blank)_______________________________
LESSON 1: Sunol Water Temple Works of Art

BIG IDEA
The Sunol Water Temple is a monument that celebrates the importance of water to our region. The Alameda Creek watershed has been a source of water for nearby communities for over 100 years. The temple is a work of art that reminds us to respect and care for the places that sustain us.

BACKGROUND
The Sunol Water Temple was built in 1910 to honor the importance of water to our region. It was built at this site to mark the confluence of three water sources: the Arroyo de la Laguna (arriving through a pipe), Alameda Creek (arriving through the Sunol filtration galleries), and the artesian well field of Pleasanton (also arriving through a pipe).

The temple was commissioned by William Bourn, the president of the Spring Valley Water Company, which owned much of the Alameda Creek Watershed and sold water to San Francisco. Architect Willis Polk designed the temple, fashioned after the Temple of Vesta at Tivoli which honored the masterful aqueducts of the Roman Empire. The temple design is a circular pavilion of twelve fluted, sixty-foot high columns with a peaked clay tile roof and copper finial of three dolphins, tail to tail. The temple frieze quotes Isaiah 41:18: “I will make the wilderness a pool of water and the dry lands springs of water,” and Psalm 46:4: “The streams whereof shall make glad the city.”

At the time of the temple’s construction, 50 percent of the water used in San Francisco ran through the temple. None of the water flowing through the temple today is used for drinking.

OBJECTIVES
Students will
• Learn the history of the Sunol Water Temple.
• Appreciate the artistic nature of the Sunol Water Temple.
• Create a work of art inspired by the Sunol Water Temple.

MATERIALS
• Paper, pencils, crayons or paint
• A clipboard for each student

TIME REQUIRED
45 minutes

GROUP SIZE
Half of the class (approximately 15 students)

ADAPTED FROM
Original
Seriously damaged in the 1989 Loma Prieta earthquake, the Sunol Water Temple was beautifully restored in 2001 with support from an active community organization, “Save Our Sunol.” The restoration won the prestigious Preservation Design award from the California Preservation Foundation.

**PROCEDURE**

1. Gather students together in a shaded area next to the temple.

2. Prod their prior knowledge of temples and ask them to share any personal connections they have with temples or other monuments.

3. Share some brief background information about the temple with them.

4. Tell students that they will be given materials to sketch/draw the temple or create something in another art form (e.g. an essay or poem) inspired by it.

5. Allow students five minutes to tour the temple and examine it from various points of view (e.g. front, back, top, bottom, lying down, looking backwards between their legs, up close and far away, etc.). Perhaps they would like to focus on a small piece of the Water Temple and enlarge it.

6. Hand out paper, pencils, crayons, or paint, and a clipboard to each student.

7. Allow students twenty minutes to make their renderings.

8. If time permits, call on students to share their art and explain the idea behind their creation.
CLOSING DISCUSSION/EVALUATION

If time allows, ask students to reflect on the following questions:
• Why would people build a “temple” to water?
• How does the Sunol Water Temple relate to our stewardship theme?
• How can you celebrate water in your own way, at home, in school, or in your neighborhood?

MODIFICATIONS/EXTENSIONS
• If you have enough students, see how many people it takes to surround the temple holding hands. Then have everyone remember who they were holding hands with and how outstretched their arms were. Duplicate the circle in the open area next to the temple to estimate the diameter of the temple. An average adult step is two feet in length. Walk across the circle made by the students and that will tell you the temple’s approximate diameter (45 feet).
• For older students: Lead a discussion about the intersection of nature, art and architecture.
• For older students: Discuss the historical importance of the temple. Point out that another theory behind the temple’s construction was that the Spring Valley Water District wanted to have something beautiful to offer as its president wanted to sell the company to the City of San Francisco, and thought the temple would be good for marketing. Ask students to share an example of how businesses use this kind of marketing approach today.
LESSON 2: The First Groups of People in the Sunol Valley

BIG IDEA
The land and its people are dynamic; the only constant is change. The Sunol Valley has been home to many different groups of people through history. The Ohlone people lived in the Valley for about 4,000 years, followed by the Spanish missionaries, Mexican rancheros, and forty-niners seeking gold in California.

BACKGROUND
The human history of the Sunol Valley spans a long continuum of time, from Muwekma-Ohlone Indian pre-historic ancestors starting around 4,000 years ago, to the farming, ranching, and high-tech communities of today. Each group has relied on and related to the land in different ways: Indians hunted and gathered; Spanish Vaqueros grazed livestock; farmers tilled and introduced new crops; engineers dammed the creeks; and miners extracted many materials, such as gravel, which continues today. Each generation’s land use decisions affect what future generations inherit. See the activity for more background.

PROCEDURE
1. Split students into smaller groups of 4-5.
2. Distribute one pad of chart paper and a marker to each group.
3. Have students decide who in their group will be the recorder and who will be the reporter.
4. Instruct the students that you will give them some information on how the Sunol Valley has changed over time as a result of natural and human events. Every so often you will stop, give them a prompt and some time to discuss and record their group’s responses. Sharing will come at the end of the lesson.
LESSON 2: The First Groups of People in the Sunol Valley

5. Optional: as you read about each event, mark it on your laminated timeline.

CULTURAL STORY:
START: This area was inhabited as early as about 4,000 years ago. There is evidence that the ancestors of the “first people” came to the North American continent by walking from Asia over the Aleutian Islands (off the coast of Alaska), through Canada, down the Pacific Northwest to the San Francisco Bay Area. The movement of people is linked to waterways. Creeks were the animal migration corridors, later followed by humans.

About 1,000 years ago, an Ohlone Indian community lived in a village near the Sunol Water Temple site today, near the confluence of the Arroyo de la Laguna and Alameda Creek. The Ohlone group was called the Taunen-Ohlone. The Ohlones had everything they needed to survive: water, shelter, and abundant plants and wildlife for food. Everyone shared in the gathering of food. The Ohlones participated in a lot of ceremonies and rituals. The Chieftain tended to be the best storyteller of the group who could carry on the group’s oral traditions since there was no written language. Shamans could be either male or female, and were important healers (using plants as medicine) and ceremony leaders. The Ohlone gained social status and showed their wealth by giving their possessions away, showing that they could support more people than their immediate family.

STOP: Ask the students to discuss in their groups, “How does our culture show wealth? How is it different than or similar to the culture of the Ohlone?”

Allow 5-7 minutes of discussion and recording.

START: Indians lived in harmony or “in beauty.” If beauty was disrupted, they restored it through ritual. The Indians believed that people and place must remain linked.
LESSON 2: The First Groups of People in the Sunol Valley

The landscape was a certain place where you were born and belonged. It was comforting to know that you would be born, live and die in the same area. As an Ohlone, you were in your place of comfort. For hundreds of years, the Ohlones lived with very little change in their culture.

STOP: Ask the students to discuss in their groups, “Would you want to live and die within a mile of your birth? Why or why not?” Allow 5-7 minutes of discussion and recording.

START: Almost 250 years ago, in 1769, the first Spanish explorers came to this place with only hand drawn maps, far from their European homes. In contrast to the Ohlones, the men knew that in coming here, they would probably never see the place they called “home” again.

The Ohlone Indians welcomed them. In 1792, Juan Bautista De Anza, a Spanish Explorer rode his horse through this area, claimed the territory for Spain, and designated it as a “Rancho.” Spanish Explorers described the area as having grasses higher than the saddles of their horses. The environment was gentle and to them, it was a perfect place for farming, raising cattle and spreading Christianity.

STOP: Ask the students to discuss in their groups, “How does today's landscape look similar to and different from what was just described?” Allow 5-7 minutes of discussion and recording.

START: Before long the eastern extent of Mission San Jose (1797 – 1833) included the Sunol Valley. The Padres and Spanish soldiers gathered the Indians from their villages and took them to the Mission (in present day Fremont) to learn European customs (including how to farm), help build adobe Missions, and learn Christianity. Once the Indians became Christians, they were often held at the mission against their will. Unfortunately, the Indians were exposed to European diseases, to which they had no immunity, and many died in the missions from measles and other diseases.

Mexico gained independence from Spain in 1821, and soon could no longer afford to run the missions. In 1833, the missions were secularized, and most of the Ohlones and other Native Americans left the missions to work on ranchos that were being established in the area. Some of the Ohlones formed villages at three Rancherias.
Today’s descendents of the Ohlone have integrated into modern life. Two families take care of the Ohlone traditions and burial ground at Mission San Jose.

In 1839, Rancho Valle de San Jose was established from the lands of the mission. Antonio Maria Sunol and Maria Bernal Sunol inherited 14,000 acres of the land, including the area known as Sunol today, which was used primarily for cattle ranching.

In 1848, California was ceded to the United States and gold was discovered in the foothills of the Sierra Nevada Mountains; by 1849 the word had spread and people from all over the world descended on California to try to get rich quick. Some of the pioneers turned to farming and ranching to supply the miners with food and supplies. For the most part, the farmers were the ones who gained wealth, as there were no grocery stores or facilities to help the newly arriving immigrants.

In 1849 San Francisco grew from a population of around 800 people to 40,000 people. In 1850 California became the 31st state admitted to the Union. During this time, the Sunol Valley continued to be subject to alluvial flows, with water carrying soil from the hills down to the valley floor. This made for excellent farming, which continues today.

STOP: Ask the students to summarize how land use changed from 4,000 years ago to today. (Use the optional timeline for help or create one on the board for reference.) Allow 5-7 minutes of discussion and recording.

ASK: “What is your group’s vision for the area? How will we and our descendents use this area similarly or differently from previous inhabitants?” Allow 5-7 minutes of discussion and recording.

CLOSING DISCUSSION/EVALUATION
Allow groups to report their recordings either question by question or from their entire report.

MODIFICATIONS/EXTENSIONS
• Ask students to take turns reading the history of the area
• Share legends from the region’s history
• Read a village scene from The Ohlone Way by Malcolm Margolin
• Take a field trip to Coyote Hills Regional Park in Fremont, CA; visit an Ohlone Village Midden Site
LESSON 3: Recent Past, Present, and Future of the Sunol Valley

BIG IDEA
The rich natural resources and pleasant weather of the Sunol Valley have attracted many people over time. Sunol residents have made livelihoods through farming, ranching, gravel mining, recreation, movie production, and building railroads. Today’s residents have created an active community, which gets organized to protect the heritage of the area and look out for its future.

BACKGROUND
The Sunol Valley and Niles Canyon area has attracted human settlement because of its rich and easily accessed natural resources, including soils, freshwater, and gravels. The gravels that house important ground water resources have also been mined to make roadbeds for cars and trains. The fledgling silent movie industry found a home in the quaint town of Sunol and Niles Canyon where movie stars like Charlie Chaplin played out chase scenes with the police. The colorful history of Sunol also includes the railroad that traveled through Niles Canyon. The Alameda Creek watershed helps provide water for 2.5 million people, and recreation for hikers, cyclists, and equestrians. In the 90’s, residents of Sunol started a citizen’s action group called “Save Our Sunol” (SOS) to preserve the town’s history, character, and resources for future generations.

PROCEDURE
Before the students arrive:
1. Make sure the eight story envelopes are assembled inside plain envelopes. Add historic photos to envelopes.
2. Put the clothesline up with the dates clipped to it in chronological order.
3. Post on a chart pad:

Recent History of Sunol Valley and the Alameda Creek Watershed
- San Francisco buys Spring Valley Water Company
- Transcontinental Railroad arrives
- Early Town of Sunol thrives
- Charlie Chaplin’s *The Tramp* is filmed
- Gravel mining is expanded near Sunol Water Temple
- Sunol residents elect Bosco as Mayor
- Sunol-Ohlone Regional Park is created
- SAGE starts the Sunol AgPark

When students arrive:
4. Tell the students that for the next half hour they are going to be “History Detectives.” Their job is to piece together the puzzle of the Sunol Valley’s history.

5. Ask students to find a partner. Hand each team of students a story envelope, with a bag of associated props. The teams work together for 5-10 minutes to read their stories, and plan a charade of their historical event. Instruct students to develop a silent, one-minute charade, without talking or showing the clues from their envelope to the other teams. Teachers or chaperones can be encouraged to quietly read the stories to student groups. Circulate around to help the teams.

6. When students are ready, call them back together. Call on teams to volunteer to perform, one at a time. Once classmates figure out what the historical event is, students can read a few highlights of their story to their classmates. Give the actors their event (with the date) on a slip of paper, with a clip. Ask them to clip their event onto the timeline in the correct chronological order.

7. If the classmates don’t figure out who they are, ask the students to sit down, and they will get another try after everyone else has gotten a chance to perform their charade.
CLOSING DISCUSSION/EVALUATION
After the charades, ask students to debate the integration of tradition with the future:
- Which is more valuable: mining gravel or saving the Tule Elk? (Hint: Be balanced! We like driving automobiles and want roads (gravel), we also want wilderness. Can these two coexist?)
- What did stewardship mean for each group in the Sunol Valley?
- How would you preserve the traditions of Sunol, in light of cultural change, and technological progress, or would you?

MODIFICATIONS/EXTENSIONS
- Play Pictionary or hangman instead of charades, using a white board or chart pad.
- At the end of the charades, student pairs get up and without talking, form a line from the earliest activities to the most recent activities. Once everyone is in line, each pair of students tells the other students what event they represent and the date, to see if they are in the right sequence.
- As an English Language Learner alternative, give teams of students their historical event on a slip of paper. Then read all the stories about the history of Sunol out loud. When the students hear their event mentioned, they get up and act out a charade. They stay in front of the group. Every time a new team hears their event mentioned, they get up and do a charade. Each time a new team comes up, all the groups do their charade. By the end, all the teams are doing their charades in a kind of perpetual motion look, indicating an active history.
San Francisco Buys Spring Valley Water Company - 1930

In 1849, the City of San Francisco was in great need of water for its rapidly growing population. In those days water companies got water from the San Mateo and Santa Cruz springs and creeks and sold water from a wagon by the bucket to San Francisco residents (like an ice cream truck driving around town with water to sell). The Spring Valley Water Company of San Francisco purchased the 40,000-acre Alameda Creek Watershed (here in Sunol) in 1875. The farmland continued to improve as the floods brought fresh soil to the lowlands. However, the town of Sunol periodically flooded.

In 1910, the Sunol Water Temple was built to honor the place where three water sources met: the Alameda Creek, Arroyo de la Laguna, and Pleasanton artesian wells. The Sunol Water Temple was fashioned after the Temple of Vesta at Tivoli outside of Rome, Italy, which was built to honor the masterful aqueducts (irrigation system) of the Roman Empire. William Bourn II, President of the Spring Valley Water Company of San Francisco, and Willis Polk, a famous San Francisco architect, created the artistic architectural marvel called the Sunol Water Temple. It was designed to impress upon people the importance water plays in our culture and honor the masterful plumbing bringing water to the city.

In 1913, upstream from today's Sunol AgPark, construction began on the Calaveras Dam to bring water to San Francisco. The completion of the dam basically stopped the floods that historically brought new soil to the valley floor. Nevertheless, farmers were successful using the land to grow a huge variety of crops from fruits, to nuts and vegetables. The construction of the dam was not as smooth as engineers had hoped; the original dam was finally completed in 1925. The construction brought new revenues to the town of Sunol.

The Spring Valley Water Company and all of its land and infrastructure was purchased by the City of San Francisco in 1930.
The Railroad Comes to Sunol - 1869

In 1869, the first ever Transcontinental Railroad passed through Sunol Valley on its way to the shore of the San Francisco Bay! This happened 16 years after the land had been surveyed for this purpose. President Abraham Lincoln suggested building a railway between the Mississippi River and the Pacific Coast and favored the route through the canyon, signing the Pacific Railroad Act in July 1862.

The railroad changed the nature of Sunol, and how much money its inhabitants made. For the first time, visitors came to the town of Sunol regularly and some made their homes here. Also, supplies came and left town more easily. Farmers were able to send and sell their agricultural products wherever the train stopped. This increased the income of farmers.

City folks came to Sunol to picnic, hike and camp. Businessmen built summer homes for their families and could take the train into the city for the workweek, returning to Sunol for the weekend. It was a happy place to “get away from it all.”

The railroad station closed in 1941, as it could not compete with the automobile. The old railroad tracks in Niles Canyon Road were paved over in 1928 to become Highway 84.

Volunteers of the Pacific Locomotive Associate have rebuilt a portion of the line between Sunol and Niles, so that future generations may enjoy a ride over this important link in America’s railroad history.
Early Town of Sunol Thrives - 1900

When the railroad came to town in 1869, it brought city visitors and more money. Businesses grew along the railroad track faster than weeds! In the late 1800s, Charles Lyon opened “Lyon’s Brewery Depot” near the Western Pacific Railroad Depot in Sunol, where a pint of beer was 5¢ and a pale of beer was 10¢. By 1880, the Brewery Depot was a thriving business, which continued until Congress passed a bill to prohibit the making and sale of alcoholic beer in 1919. They tried to make non-alcoholic beer but it was not popular and they lost their business. The brewery became a café.

From the late 1800s, bands provided music for dancing which was a popular form of entertainment. Some of the dances were held at the Sunol Water Temple! In the late 1800s there were two hotels, two blacksmith shops, two general stores, a butcher shop, a livery and feed store, several saloons, a school, a barber shop, five large hay warehouses and a post office; many more businesses than there are today.

The Trimmingham Brothers General Merchandise Store (1900 to 1933) supplied the work crews during the construction of the Calaveras Dam. The store sold everything from groceries, hardware, shoes, coal, and chicken feed to insurance. They collected meat from their pigeons, eggs from their chickens and fresh food to sell from their peach, apricot, fig and walnut trees.

Some people helped to develop Sunol as a town after they were forced out of San Francisco by the 1906 earthquake and fire. The Hughes family built their house and several others beginning in 1907. By 1908, Sunol had a population of 800 people. The town had poor water systems and no fire station. Most of the land was still agricultural. By the 1920s Mrs. Murphy, who owned “Andrews’ Place,” devoted a small space in her store to become the town’s first telephone switchboard operator, connecting all the calls to the town’s residents. The little town of Sunol suffered during the Great Depression of the 1930s and again during World War II from 1940-1945.
Charlie Chaplin’s *The Tramp* is Filmed in Niles - 1915

California’s first filmmaking center was not Hollywood! It was the Essanay Studios in nearby Niles (now part of the city of Fremont). Before talking movies, DVDs and color movies, movies were in black and white and had no sound. Louie Le Prince made the first silent movie in France in 1888. Not long after that, silent movies were being made here in the Sunol Valley.

In the movie theaters musicians played live organ or piano music to create atmosphere like suspense or romance depending on what was on the screen. People would “boo” and “hiss” for the bad guy and cheer for the good guy (just like they did for the live melodrama theater plays that they watched before movies were invented). The audience was very interactive with silent movies. Actors were very expressive with their bodies and faces because there was no talking. Many of the movies had periodic story lines that would flash on the screen. The audience would read them aloud. It cost about 10¢ to go to the movies. Everybody loved them.

There were several westerns filmed here, starring Gilbert M. “Bronco Billy” Anderson. Ben Turpin and Wallace Berry, famous silent movie stars also worked here. The Tom Mix and Hopalong Cassidy movies were made in Niles Canyon. The company was moved to Hollywood in 1916, but some of the cottages built by the studio on Second Street are still here and being lived in.

Near today’s Sunol AgPark, Charley Chaplin worked for a local movie studio called Essanay, based in Niles, where several silent movies including *The Tramp* were filmed. Rumor has it that silent film star Mary Pickford filmed two movies at the Little Brown Church (built in 1885 and white until the 1950s) in Sunol. Talking movies replaced silent films in the late 1920s.

Several independent films and one made-for-television movie starring Craig T. Nelson and Kirk Douglas were filmed on Main Street in Sunol more recently.
Gravel Mining is Expanded near Sunol Water Temple - 2006

Gravel mining in the Alameda Creek Watershed may have started as early as 1858 (when hydraulic mining started in the Sierra Nevada to extract gold), but probably started in the mid to late-1860s with the building of the railroad. Gravel was used as a bed for the railroad tracks to lie on.

Currently, Lehigh Hanson Inc, an international mining company, mines gravel across from the Sunol AgPark in the Sunol Valley. These gravels, which once housed groundwater, are now used for road building and other construction. You can see the gravel mining operation if you drive east on Highway 84 toward Sunol Regional Wilderness.

In 1995, the gravel mining company lobbied the Alameda County Board of Supervisors for permission to expand their operation from the southeast side of Highway 680 to land owned by San Francisco adjacent to the Sunol Water Temple. Residents and environmental groups combined forces to oppose the conversion of 242 acres of land historically used for agriculture to gravel mining. While their attempts to stop the quarry failed, they won some concessions, which limit the environmental impacts of the operation, and provide some financial benefits to the nearby community. In 2006, the San Francisco city officials approved the mining operation expansion.
Sunol Residents Elect Bosco as Mayor - 1983

In 1983, a local rancher got permission from the Alameda County Board of Supervisors to build a large residential development of 83 luxury homes on 440 acres of the Pleasanton Ridge. The residents of Sunol said, “No way.” They launched the “Save the Ridge” campaign and got over 50,000 signatures within 30 days to have a county referendum. The County Board then rescinded (removed) their permission and Pleasanton Ridge was saved from development. The land was then acquired by the East Bay Regional Park District for the public to enjoy as open space.

In 1983, Bosco, an 85-pound black Labrador dog, born November 1979, was elected town mayor. He served until his death in July 1994. He appeared on TV and in several magazines. He was beloved by the people of Sunol. A life-sized replica of Bosco is in a Sunol restaurant named “Bosco’s Bones and Brew.”

In 1995 Sunolians started “Save Our Sunol” (SOS). This local grassroots group waged a battle against Alameda County Board of Supervisors who approved a request from the gravel quarry mining company to expand their operations near the Sunol Water Temple. Their attempts to stop the quarry were unsuccessful; the gravel mining expansion began in earnest in 2006. SOS also successfully lobbied the City of San Francisco to restore the Sunol Water Temple, after it was damaged in the 1989 Loma Prieta Earthquake. The temple was restored in 2001.

Sunol’s town members know how to create community! They are active in many organizations, including:

- The Great Sunol Bed Races and Chili Cook-off
- Pacific Locomotive Association, which restore and run the railroad trains from Sunol to Niles
- Sunol Business Guild, which beautifies downtown Sunol
- Friends of the Park, which makes improvements to the downtown park
- Sunol Repertory Theatre, which raises money for Sunol Glen Elementary School
Sunol-Ohlone Regional Park is Created – 1962

There are many agencies involved in managing the land around Sunol. One of them is the East Bay Regional Park District (EBRPD), which was created in the height of the Great Depression in 1934. A concerned group of citizens in Berkeley and Oakland led a ballot measure to create the first regional park agency in the country, to preserve surplus lands for recreation and wilderness. The voters said, “yes” to taxing their property $1 per year to buy surplus watershed land to create open space for recreation, relaxation, and education. Taking inflation into account, homeowners aren’t taxed much more than that today.

The property which became the Sunol-Ohlone Regional Wilderness was purchased in 1962 from William Geary. Because of that purchase, the park is open to public visitation. Nearly 7,000 acres of historic ranch land remains largely unchanged today, as cattle grazing continues, alongside recreation and education activities.

Today, the EBRPD is the largest urban park district in America with over 100,000 acres in Alameda and Contra Costa Counties saved for hiking, picnicking, family camping, group camping, horse rides, backpacking, boating, fishing, swimming, other recreation and education.
SAGE Starts Sunol AgPark - 2006

In 2006, Sustainable Agriculture Education (SAGE) and the San Francisco Public Utility Commission (SFPUC), encouraged by Mayor Gavin Newsom, entered into an agreement to provide opportunities for local farmers to raise food for surrounding communities. SAGE signed a nine-year lease for the land, recruited farmers, and began hosting field trips to teach students about sustainable agriculture, watershed stewardship, and the history of Sunol.

The Sunol AgPark is an urban-edge farm, because it is at the edge of the urban (city) Bay Area. At the Sunol AgPark, farmers grow a diversity of crops for local markets. They are part of the regional food system. A food system is the network of relationships required to get food to your plate. These relationships include agriculture, or the production of food; processing, packaging, and preservation of food; distribution or transport of food to markets and customers; and consumption, or the cooking and eating of food.

By growing food close to where people live, the AgPark farmers are able to shorten the distance between where food is grown and where it is eaten. By selling directly to customers, farmers are able to get a larger share of the food dollar, which is important for them to be able to make a good living. The farmers in Sunol grow a diversity of organic crops, including tomatoes, peppers, strawberries, salad greens, squash, pumpkins, cucumbers, and figs. They sell their produce to a diversity of markets, including the Pleasanton and Menlo Park farmers markets, Monterey Market, and local restaurants. Two of the farmers also have Community Supported Agriculture (CSA) programs, where families can become a member of the farm, and get a weekly box of fresh produce.

The Sunol AgPark is a new model of an Agricultural Park, where farmers can grow healthy food, and people can come learn about where their food comes from.
### Suggested Costumes and Props

#### San Francisco Buys Spring Valley Water Company - 1930
- Wooden bucket (for selling/carrying water)
- Bowler hats, period appropriate men's suits, ties, spectacles
- Overalls, miner's hats, leather gloves, picks and shovels
- Architectural drawings or historic pictures of the Water Temple, pencil, clipboard

#### The Railroad Comes to Sunol - 1869
- Railroad hats, red or blue bandanas, train whistle (and bleach to clean whistle after use)
- Hammer or sledge
- Stove-pipe hat (Abraham Lincoln style)

#### Early Town of Sunol Thrives -- 1900
- Shopkeepers’ aprons
- Beer mugs
- Hammers & nails
- Pieces of two-by-fours
- Old-fashioned telephone

#### Charlie Chaplin’s *The Tramp* is Filmed in Niles -- 1915
- Bowler hat, black suit, cane, glasses with nose and eyebrows
- Cardboard signs to hold up, reading: “Boo” and “Hisss"
- Historic police uniform, police baton, historically appropriate dress

#### Gravel Mining is Expanded near Sunol Water Temple -- 2006
- Gravel mining display from Hanson
- Work hats, work clothes, work gloves
- Picks, shovels

#### Sunol Residents Elect Bosco as Mayor -- 1983
- Dog bone and bowl
- Clipboards, and signature pages
- Paintbrushes and paints to restore Temple

#### Sunol-Ohlone Regional Park is Created – 1962
- Clip board, pencil, paper for signature gathering
- Knapsack, hiking stick, bandana
- Picnic basket, small picnic blanket
- EBRPD uniform shirt or jacket

#### SAGE Starts Sunol AgPark -- 2006
- Straw hats, bandanas, gloves
- Hoe, shovel
- Pack of seeds, plates & forks
LESSON 4: Nurturing a Sense of Place

BIG IDEA
Research indicates that spending time outdoors can improve our health and ability to learn, and can increase our happiness. By paying close attention to our environment, we can learn about the unique characteristics of each place we visit and develop a healthy appreciation for places we live.

BACKGROUND
Modern humans, particularly those in wealthy, developed nations, have become increasingly insulated from the natural rhythms of the Earth. We have buildings engineered to maintain a constant temperature, light bulbs to extend our days, food from all over the world preserved in various ways, and technological devices that have the potential to insulate us from one another (computers, televisions, MP3 players, etc.). While most of these technological developments emerged to improve our lives, research is beginning to demonstrate that our modern lifestyle has some downsides as well.

Some of the negative impacts of our modern lifestyle include air pollution, water pollution, climate change, and habitat loss that result from industrial processes used to manufacture our goods. Our lifestyle also negatively impacts our physical health, due to less exercise, and higher obesity, diabetes, and asthma rates. Our mental health also suffers: among students who spend less time outdoors, research shows higher stress and anxiety rates, less creative thinking and problem solving, and more difficulty learning. For these reasons, it is important to spend time outdoors and get to know and enjoy the places we live.

In order to ensure the good health of our environment, we must know, value, and care
about the places we live. One of the best ways to get to know a place is to use all of your senses to experience it directly. The Sunol AgPark is a unique place to explore, because of the diversity of plants, animals, people, and cultures within its boundaries. The AgPark is adjacent to a stream, the Arroyo de La Laguna, and is bordered by diverse types of riparian (river-related) vegetation, including sycamore trees, elderberry shrubs, and mugwort plants on the stream banks. A rich diversity of crops is grown at the AgPark, and a number of weed species are also present. Many animals, including insects, spiders, birds, rodents, and domesticated animals live at the AgPark. There are also different farming groups at the AgPark, with different ethnic backgrounds and farming practices. All of this diversity makes for a rich sensory experience.

PROCEDURE
1. Briefly introduce the big idea of this lesson: by paying attention to where we are, we can get to know, understand, and take care of the places we live.

2. Ask the students if they can share a personal example of how they developed a respect for someone/thing once they got to know him/it better or how they practice respect (for their home, their street, their school, etc.) every day.

3. Hand out the clipboards, paper, and pencils to each student. Students will use these after the Guided Imagery to explore and record what they find on the farm.

PART 1: Guided Imagery
1. Ask the group to be perfectly quiet while you conduct the following observation experiment. Hand the bag of orange slices out for each student to take one.

Instruct the group to hold onto their orange slice with two hands at all times and try not to drop it.

2. Begin guided imagery after each student has a wedge. Say: “Sit as comfortably as you can. Put all the things that you are carrying on the ground. Take a deep breath and relax.”
3. Hold up a whole orange to the group. Say: “I like to use an orange because it reminds me of the sun – the yellow/orange globe – that drives the water cycle on earth. Let’s metaphorically experience this miracle together.”

4. Demonstrating as you proceed, say: “Follow what I do.” Hold an orange wedge by the rind with both hands, “Everyone hold the orange wedge up to the sky and look at the sparkles reflecting back to you – that’s the water being held momentarily in this orange. We call it orange juice at this point in the water’s journey. The sparkle helps to remind us what goes into making our food. The water and the sun combine with nutrients to make our food. The sparkles are precious jewels in our world. Make the jewels move by rotating the orange in the light. Almost every living thing on earth is at least 65% water!”

5. “Hold the orange up to your nose and take a deep breath. Smell the fragrances given to that water by its temporary interaction with the sugars in the orange.”

6. “Place your thumbs at the wedge corners of the orange slice. Put the orange up to your ear and slowly, and slightly pull the peel back so that you can hear the connection between the rind and the fruit being released. Be sure that part of the rind is left attached to the orange.”

7. “Now smell the orange fruit; then smell the fruit’s connection to the rind … two very different smells from the same fruit.”

8. “Now using your right incisor tooth (pointy tooth next to your front tooth), take a small bite of the orange from the cut edge so that the juice squirts into your mouth and bounces on your tongue and down your throat.”

9. “Hold your orange up to the light and look at the liquid of life that we all share.”

10. “Now, using your left incisor tooth, take another small bite of the fruit so that the juice squirts into your mouth and bounces on your tongue and down your throat.”
11. “Hold the orange up to your nose again and take a deep breath to smell the fragrances of the fruit.”

12. “This orange, like all fruits, is a fancy seed package created by nature to reproduce and create more fruit. Now, slowly and reverently, without talking, eat your orange so that you can continue the journey of the water that has been in the fruit.”

13. Collect the rinds to compost.

PART II: Sound Map
Instruct students that you are now going to send them on a solo journey down the path, 15 seconds apart. They are to stay on the paths between the farms and find a place within a defined area in which they are to sit down and draw a ‘Sound Map.’ Demonstrate, by drawing concentric circles on a blank piece of paper. Explain that the position of the student is in the middle of the target and they are to draw lines out to all the sounds that they hear and end the line with an ‘x’ showing where the sound is located. If the sound is in front of them, they will draw the line toward the top of the page, if the sound is behind them, they will draw the line toward the bottom of the target, etc. If the sound is close to them, the line will be very short. If the sound is far away from them the line will be longer, and so on. Remind students that this is a solo activity that they will have five minutes to do it. They are to sit alone at least 15 feet from anyone, not talking, and not touching. Ask students to stand in a line and send them off 15 seconds apart. Give students five minutes for the task and then call them back together. Ask students to share what they heard and to show their Sound Maps.

Did they like the sounds they heard or not?
PART III: Are You Connected?
Get students into pairs or small teams. Hand out the “Are You Connected?” forms. Ask students to take 5 minutes to fill them out to the best of their ability. After 5 minutes, call students back together and ask students to share their findings.

CLOSING DISCUSSION/EVALUATION
Ask students
• How can you learn more about a place or a person? Hint: spend time together, ask questions, observe, and listen. Everyone has a history, try to learn as many histories as you can.
• What does it mean to a person, family, or community to live in the same place for a long time?
• What can you do to get to know and help take care of your neighborhood or school?

MODIFICATIONS/EXTENSIONS
• Instead of sending students on a solo walk, ask them to create their individual sound maps sitting in a circle.
Are You Connected?

What do you know about nature and your food supply? Fill in as many boxes as you can in the chart below to find out if you are “connected” to the place where you live, your bioregion.

<table>
<thead>
<tr>
<th>Season</th>
<th>What weather do you expect?</th>
<th>What do farmers need to do?</th>
<th>What food is harvested close to your home?</th>
<th>What can you celebrate?</th>
</tr>
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<tbody>
<tr>
<td>Winter</td>
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LESSON 5: Plumbing, Can’t Live With It, Can’t Live Without It!

BIG IDEA
The San Francisco Bay Area has a climate that is dry in the summer and wet in the winter. In order to provide water for drinking, farming, and other uses year-round, people have built extensive water systems to store, treat and deliver water. The Sunol Valley is a critical part of the San Francisco Bay Area’s water system.

BACKGROUND
The Alameda Creek watershed, where the Sunol AgPark is located, has been changed over time by natural forces and human activities. Natural forces like erosion have created water drainage routes from the mountains down to the San Francisco Bay, while deposition has filled in the lowlands. Humans have made extensive changes to the watershed by installing large-scale plumbing systems (dams, tunnels, pumps, pipes, wells) to deliver water and provide waste water treatment for homes, farms, and businesses while leaving some in-stream flows or “wild water” for plants and wildlife (especially aquatic animals like fish and frogs) that depend on creeks and streams.

Before the City and County of San Francisco grew to its current size, water was delivered by selling buckets of water from the creeks of Santa Cruz and San Mateo counties door-to-door and by using the limited ground waters of San Francisco. As the population grew, that system was no longer adequate. The Spring Valley Water Company, which sold water to San Francisco, purchased the 40,000-acre Alameda Creek Watershed in 1875. In 1913, construction began on the Calaveras Dam on Alameda Creek, upstream from the Sunol AgPark. The completion of the dam in 1925 stabilized the creek flows and essentially...
stopped the waters that historically flooded the Sunol Valley, including the AgPark site and the town of Sunol. Later, the dam was built even taller to hold more water, and is going through a seismic retrofit today.

Dams need constant maintenance and upgrading. Water running into the dams brings sediment that eventually fills up the reservoir. In that case, sometimes another dam is build to hold the debris. As dams age and undergo routine maintenance, they often need to be retrofitted and strengthened as the forces of nature weaken them over time. Since California is on “shaky ground,” earthquake retrofitting is a constant challenge for dam engineers. Today, Alameda Creek has several dams on it for water storage and use.

However, California’s largest reservoir is the large Sierra Nevada snowpack, which accumulates each winter in the tall mountain range 200 miles east of the Bay Area. The San Francisco Public Utilities Commission (SFPUC), which owns the water rights of the Alameda Creek Watershed, has made one of California’s most significant infrastructure improvements by drawing on water from the Tuolumne River, in Yosemite National Park. The Hetch Hetchy Water System, named after Hetch Hetchy Valley, where the main water reservoir is, transports water 167 miles (mostly by gravity), incorporating local regional waters as well, to customers in the Bay Area. The SFPUC provides water to 2.5 million Bay Area residents, through its partnership with other water districts like the East Bay Municipal Utility District (EBMUD).
PROCEDURE
1. Take students to a large cross-section of pipe used in the Alameda Creek Watershed plumbing delivery system. Stand in it, look at it, feel it, and ask the students to describe it and visualize it carrying water all the way to people’s homes, farms, and businesses. As you walk to the activity area, ask the students to count and observe the irrigation system and its components along the way. Ask inquiry questions that help them to focus on what they are looking at: valves, pressure meters, pipes – what kind of materials and color, T joints, elbow joints, clamps, etc.

2. Show students the map of the Hetch Hetchy Water System bringing water to the Bay Area from the Sierra Nevada. Use a California relief map to discuss the system’s route. Ask students, “Why did the engineers take the route they did to bring water to the Bay Area?” (Hint: to use gravity to move the water.) Trace the route on both maps.

3. Show students the map of the Alameda Creek Watershed with its plumbing system bringing water from the highlands of the local hills to the lowlands. Count the number of dams and visualize the water coming from the highlands to the lowlands. Ask students, “What do both these plumbing systems have in common?” (Hint: water runs downhill with the help of gravity. It is easier and cheaper to let water flow downhill than to use expensive pumps and energy to get the water to go uphill.)

4. Divide students up into two teams. Tell them, “Today, you are going to get 20 minutes to build your own miniature plumbing system using PVC [or other irrigation] pipes. Your systems must be able to water “x” plant or area. Your team must be able to disassemble the parts at the end of the experiment.” Students can use:
   - Short lengths of PVC [or other irrigation] pipe
   - Elbow joints and other irrigation joiners
Lesson 5: Plumbing, Can’t Live With It, Can’t Live Without It!

- Connector for a PVC [or other irrigation] pipe to hose bib
- Lubricant like cooking oil to put inside joiners [so they can disassemble the PVC pipes at the end]
- Pressure meter that can be placed into PVC [or other irrigation] line
- Shut off valve that can be placed into PVC [or other irrigation] line

5. Students should work in teams. Consider assigning job titles to each team member (e.g. engineer, construction foreman, safety tester, etc.), and tell them they need to cooperate. At the end of 20 minutes, have the teams take turns testing their systems. They should connect their system to the water source and turn on the water. Have students read the PSI meter and be able to use the on and off valve system. Students then discuss what they did to achieve their goal.

6. After the test, students should disassemble their systems and put the pieces away.

**Closing Discussion/Evaluation**

Ask: “What did you learn today? What did you think was the most important lesson from today?”

Follow up with questions based on their answers to gauge what the students did and didn’t grasp. For example: “Why do we need plumbing? How are plumbing systems related to your food? Where does the water in your neighborhood come from? Why does a farmer need to understand irrigation methods in California? Is the entire water system completely in pipes?”
MODIFICATIONS/EXTENSIONS

- As a closing activity, lead students in “You hold California in your hands” activity. Emphasize that without the plumbing systems that early engineers built, locally available water would not be enough to support the number of people who live here. The water agencies like the San Francisco Public Utilities Commission have helped to create a livable Bay Area environment for all of us.

- Using a California shaded relief map, have students draw where they would place a plumbing system to bring water from the High Sierra to the Bay Area. Then use the Hetch Hetchy Water System map to compare the students’ systems to the existing systems. Discuss any differences or similarities.

- Research the history of the O'Shaughnessy Dam, in Hetch Hetchy Valley. How is John Muir connected to San Francisco’s water history? How has this history affected the region?

- Research the development of the East Bay water systems in Alameda Creek. How do these systems affect the region today?

- Research the SFPUC’s plans for 2030.

- Research where EBMUB, or your local water agency, gets its water, and the impact of those water systems.
LESSON 6: Where in the World Did Our Crops Come From?

BIG IDEA
People have been living in the Sunol Valley for nearly 4,000 years, and agriculture has been practiced here for at least 150 years. The crops that are grown at the Sunol AgPark today, like the people who live in the region, come from all different places and have rich cultural histories.

BACKGROUND
A wide variety of people have farmed in the Sunol Valley, bringing with them traditions and crops from all over the globe. Today, the Sunol AgPark farmers carry on many old traditions by growing heirloom varieties of crops, while also growing and developing new crops and new traditions. Most of the crops that are grown in Sunol originated in another part of the world and were brought to California because of their nutritional, economic, or cultural value. These crops continue to thrive today if they are well adapted to the local climate, and desired by customers in the marketplace.

The following are a few species that were historically grown in the Sunol Valley.

• Persimmons are historically important to the Sunol Valley and reflect Asian American history in Southern Alameda County. Japanese farmers brought persimmons to America 100 years ago.

• Chives have been grown in the Sunol Valley since the 1800s. The leaves are used in salads and soups to give a mild onion flavor. This herb is a member of the allium family along with garlic, leeks and onions.

• Olive trees grow well in California. Olives are a native of Syria and Asia Minor.

OBJECTIVES
Students will
• Explore the diversity of AgPark crops
• Learn the origin of ten different crops
• Learn the parts of a flower
• Do a comparative tasting of fresh and store-bought produce

MATERIALS
• One magnifying glass per pair
• Line drawing of a flower
• Laminated crop card for each student
• Crop identification worksheet
• Clipboards and pencils
• World map
• Farm-fresh food and store bought food (fresh, canned, dried or frozen)
• Utensils for sampling food
• Buckets for harvest, washing, & clean up

TIME REQUIRED
50 minutes

GROUP SIZE
Half of the class, students in pairs

ADAPTED FROM
Original
Stewarding the Sunol Valley through Time

LESSON 6: Where in the World Did Our Crops Come From?

Olives are actually a fruit. By definition a fruit is anything that develops from a flower and normally contains a seed. So when you are eating olive oil you are really drinking fruit juice! Olives are one-fifth to three-fifths oil. Stone-age farmers began to grow olives for their oil needs thousands of years ago. It was used in offerings to the gods, cooking, medicine, to burn in bronze lamps, and as a skin cleanser. Spanish conquerors brought olives to America. California is the largest American producer of olives with over 50,000 tons per year. Many trees live for several centuries. Olive branches are the symbol of peace and plenty.

PROCEDURE

1. Get permission from farmers in advance for students to explore, harvest and taste crops.

2. Instruct students to find a partner. Explain that they will get 2-3 crop cards that match real crops on the farm. Their job is to find their crops and make observations on the plants.

3. Describe the parts of a flower to students, using the line drawing, and pass around a few examples of flowers with magnifying glasses. You can pull the flower apart very gently to show all the parts of the flower. Describe how flower similarity often means that the plants are related, or in the same plant family. Ask the students, “Has anyone ever said to you, you look just like your dad, your mom, or your cousin? Well plants that look the same, or share similar characteristics, are often in the same family too.”

4. Show students the boundaries of where they can explore. Distribute crop cards, worksheets and clipboards to each team, and give them 20 minutes to find their crops.

5. Call students back together. Ask students to take turns reporting back to the group on what crops they found, and pointing out on the world map where their crops come from.
6. Lead students in a comparative tasting, depending on what is in season. If there are any edible weed species (mustards, radishes, etc.), you can have students taste the leaves or flowers. If you have permission to harvest crops, demonstrate to students how to harvest, before sending them to harvest in small groups. You can compare fresh produce from the field (e.g. strawberries, tomatoes) to store-bought produce. Have students vote which taste they prefer and discuss why. It is also informative to read any labels to see what kind of processing the food went through, or where the food came from.

CLOSING DISCUSSION/EVALUATION

• You may have heard of a watershed. What do you think a “foodshed” is? What have you learned about where some of your favorite crops originated?

• How might you help preserve some of the rich cultural traditions contained in our crops? How might you help bring healthy food to people?

• How does the story of our food coming to California inspire you to become part of history?

MODIFICATIONS/EXTENSIONS

• If there are not enough crop cards for each student, due to what is in season on the farm, hand out duplicate cards, and ask students to find their partner by matching their cards.

• Have students research the history of agriculture in their hometown.

• Students can study the current food economy of California, or the Bay Area, including crops grown for local consumption and for export, and the crops that are imported from other places.
Crop Worksheet

Name_________________________ Today’s Date_________________

1) Name of crop number one:_________________________
   
   a) How big is the plant?
   
   b) Describe how its leaves feel to the touch.
   
   c) Does this plant have any flowers or fruit? If so, describe them.
   
   d) Are there any insects on it? If so, what they are doing?
   
   e) Where is this plant from originally?
   
   f) What is one interesting fact that you learned from the crop card?

2) Name of crop number two:_________________________
   
   a) How big is the plant?
   
   b) Describe how its leaves feel to the touch.
   
   c) Does this plant have any flowers or fruit? If so, describe them.
   
   d) Are there any insects on it? If so, what they are doing?
   
   e) Where is this plant from originally?
   
   f) What is one interesting fact that you learned from the crop card?
UNIT 1

CROP CARDS PAGE ONE, FRONT

Stewarding the Sunol Valley through Time

LESSON 6: Where in the World Did Our Crops Come From?

Crop Cards Page One, Front

Photo: Derek Ramsey, Chanticleer Garden, 2008

Photo: Sanjay Acharya

Photo: Rasbak

Photo: Rasbak

Photo: Sanjay Acharya
Crop Cards Page One, Back

**Asparagus**
- A member of the lily family.
- Native to the eastern Mediterranean and Asia Minor.
- Grown by the ancient Egyptians and Romans.
- Plants must be two years old before they are ready for harvest.
- Harvested in the early spring by snapping off the spears and leaving the root system intact.
- Each crown can produce a half pound of spears each year.
- Asparagus can grow 6 inches in one day and can live for 15 years.

**Artichoke**
- A perennial in the thistle group of the sunflower family.
- A Native of North Africa.
- Originally cultivated in Southern Europe.
- The part we eat is the plant’s flower bud.
- Spanish settlers brought artichokes to California in the 1600’s.
- Artichokes did not become widely grown or eaten in California until the 1920’s.

**Chard**
- A type of beet that grows leafy greens instead of a big root.
- In the goosefoot family, like spinach.
- Often called Swiss chard because it is popular in Switzerland.
- Consumed since the time of the ancient Greeks (unlike large-rooted beets that weren’t developed until the late 1500s.)
- All parts of the chard plant contain oxalic acid, which tastes astringent on the tongue.

**Beans**
- Domesticated independently in Central America and the Andes in South America.
- The Indians of the Southwestern United States built hundreds of miles of irrigation systems and grew what they called “The Three Sisters”: corn, beans, and squash.
- The corn stalks provided support for the viney beans plants; the beans provided nitrogen to the corn; and the big, prickly squash leaves kept water in the soil from evaporating, and prevented pests.
LESSON 6: Where in the World Did Our Crops Come From?

Crop Cards Page Two, Front
### Figs
- One of the oldest cultivated fruits.
- The fig that we eat originated in the region between Turkey and India.
- Greek sailors took figs to Spain 3,500 years ago.
- Spanish explorers brought figs to America.
- The first figs grown in California were planted in San Diego at the Spanish Mission. Figs travelled north with the Missions, and became known as Mission figs.
- The figs at the AgPark are grown in a traditional Italian way, in pots.

### Fava beans
- Also called broad beans
- In a different genus from the common green bean.
- Grown as a cover crop instead of using chemical fertilizer.
- Fava beans and other legumes have little bumps on their roots that make more nitrogen than the plant uses. Nitrogen is an essential nutrient for other types of plants, and if it is not replaced, the soil will wear out and will not be able to grow as much food.

### Kale
- One of the first leafy plants cultivated in the Mediterranean.
- By 500 B.C., continued preference for larger leaves led to the development of the vegetable we call kale.
- The most widely eaten green vegetable in Europe until the Middle Ages, when cabbage became more popular.
- Red Russian kale was introduced into America via Siberia by Russian traders in the 19th century.

### Garlic
- One of the most versatile flavoring agents.
- Originated in Asia.
- A member of the allium family, which also contains onions, leeks, scallions, and chives.
- Garlic bulbs grow under the soil and its leaves may at first glance look like grass. The leaves, flowers, and heads of garlic are also edible.
- Garlic is known for its health giving properties.
LESSON 6: Where in the World Did Our Crops Come From?

Crop Cards Page Three, Front
## Crop Cards Page Three, Back

### Mint
- Native to the Mediterranean and western Asia.
- Used by humans for nearly 10,000 years.
- There are many species of mints; all mints have the volatile oil menthol, which is cooling and fresh feeling.
- Early settlers brought mint to America primarily for medicinal uses.
- Mint plants are considered invasive because they can spread very quickly over large areas.

### Lettuce
- A member of the daisy family.
- Its name comes from the Latin word for “milk.”
- Grown in ancient Egypt.
- Provides vitamins, minerals, dietary fiber and phytochemicals that our bodies need for optimum performance and health.
- Grown in the Sunol Valley since the mid-1900s.
- Darker and more bitter-tasting types of lettuce have more nutrients than iceberg lettuce.

### Rosemary
- A fragrant bush of the mint family.
- Its name comes from the Latin words for “dew of the sea,” because in its original habitat, the Mediterranean coast, it got all the water it needed from ocean breezes.
- Rosemary’s waxy, pointed leaves show that its native environment is dry and hot.
- Its pretty blue flowers are a favorite of bees and can be planted at a farm to enhance bee habitat.

### Mustard
- Wild mustard is common in California, and was originally brought to California by Spanish explorers.
- Mustard can be hot like wasabi or mild like white mustard.
- Members of the mustard family (cabbage, broccoli, cauliflower & turnip) have flowers with four petals.
- Mustard, the condiment, is made from mustard seeds that are finely ground.
LESSON 6: Where in The World Did Our Crops Come From?

Crop Cards Page Four, Front
### Crop Cards Page Four, Back

#### Strawberry
- The only fruit that wears its seeds on the outside.
- Most common strawberries are a hybrid of two species native to the Americas.
- A member of the rose family, as shown by its five-petalled white flowers.
- Organic farmers use black or green plastic to keep competing weeds off strawberry mounds. The plastic also heats the soil, which helps to control bacteria that might kill the roots of the plants.

#### Sage
- Native to the Mediterranean region.
- Ancient Romans thought sage had significant healing properties. For this reason, its name comes from the Latin word for “to save.”
- At one time, the French grew sage for tea. The Chinese came to like French sage tea, and would trade four pounds of Chinese tea for one pound of sage tea.
- Recent studies show it may help control Alzheimer's disease.

#### Tomatoes
- Originally from Peru.
- Transported to Mexico and grown by the Aztecs.
- Europeans were afraid to eat tomatoes because the leaves are poisonous.
- In the Nightshade family, like potatoes, paprika, eggplant, and petunias.
- The Spanish introduced tomatoes to the Caribbean, Asia, & Europe.
- Farmer Fred at the Sunol AgPark is breeding new award-winning tomatoes right here.

#### Tarragon
- A fragrant herb which originated in Siberia and Mongolia.
- Also known as Dragon’s Wort.
- It is likely that the Mongols brought tarragon to Europe in the 13th century.
- Today, tarragon is used in cooking throughout the world, and is a particular favorite of French cuisine.
- Used to flavor a popular Eastern European soft drink called Tarhun.
LESSON 6: Where in The World Did Our Crops Come From?

Crop Cards Page Five, Front
Crop Cards Page Five, Back

**Corn**
- Also known as maize, and technically a grass.
- Domesticated from a grain called teosinte in Mesoamerica in prehistoric times.
- The number one crop grown in the United States.
- Sweet corn, is picked early and eaten as a vegetable; field corn, is dried and eaten as a grain.
- Corn on the cob is popular in North America, but is almost unheard of in Europe.

**Walnuts**
- The oldest tree food known to humans, dating back 9,000 years.
- The English walnuts that we eat today are native to the Middle East.
- The bitter California black walnut is a Native American species.
- Indians used walnuts to make dice for games and as a dye.
- The English walnut was first cultivated in California missions in the late 1700s.
- Walnuts have been raised in the Sunol Valley since the 1800s.

**Cilantro**
- In the US, the leaves are called cilantro and the seeds are called coriander.
- Native to southern Europe, North Africa and southwestern Asia.
- Grown by humans since 2000 BC.
- Coriander seeds were found in King Tut’s tomb in Egypt.
- Brought to North America in 1670 by British settlers.
- Scientists recently found that chemicals in cilantro leaves have antibacterial properties.
LESSON 7: Farmers as Stewards of the Land

BIG IDEA
Farmers are responsible for taking care of, or stewarding, many of our land, water, and air resources. The decisions farmers make have a large effect on the health of our environment. The Sunol AgPark farmers are practicing small-scale organic agriculture to provide our region with a diversity of foods while protecting the surrounding ecosystem.

BACKGROUND
In 1900, almost forty percent of the US population lived on farms. By 2010, that number was down to two percent. Although everybody eats, only one percent of the US population considers farming their occupation. That means that 99 percent of the population depends on farmers to grow their food. Forty percent of US farmers are over 55 years old, which has led to concern over who will grow our food in the future.

While the total number of US farms has decreased over the last century, the total amount of food grown has increased, primarily through the use of large-scale mechanization, new crop varieties, irrigation, and synthetic pesticides and fertilizers. While this increased productivity has helped to feed our growing population, this type of intensified, high-input agriculture has caused many negative environmental, social, and economic effects, including fertilizer runoff and pollution, pesticide contamination of aquatic ecosystems and negative human health effects, loss of cultural knowledge and crop diversity, destabilized rural communities, and fewer farming jobs.

Sustainable agriculture is a way of practicing agriculture that is environmentally sustainable, socially just, culturally appropriate, and

OBJECTIVES
Students will
• Work in a team to interview an AgPark farmer
• Work in a team to convert interview notes into presentation form
• Work in a team to present a summary of their interviews to the larger group

MATERIALS
• Pencils and note pads or clipboards and paper
• Copies of the Farmer Interview Worksheet
• Digital recording equipment (if available)

TIME REQUIRED
45 minutes

GROUP SIZE
Half of the class, students in teams (as many teams as there are available farmers)

ADAPTED FROM
Original
economically sound. The farmers at the Sunol AgPark practice sustainable and organic agriculture. Organic farmers do not use synthetic fertilizers or pesticides. The AgPark farmers each grow different crops, sell to various markets, and serve diverse communities. While this diversity helps make the community of farmers at the AgPark strong, all farmers have certain things in common, including growing food for a living. Farmers are ‘doers;’ there are many things they must do to grow and sell their crops. They must manage multiple factors, including how to prepare the soil, which crops to grow, when to plant, irrigate, and harvest, how to prevent pests and weeds from building up, how to organize the labor needed to get the work done, and where, and at what price, to sell their crops in order to make a sustainable living.

PROCEDURE
Confirm with farmers the plan for the interview, time allotted, and group size. Encourage farmers to give students some additional background information, and help them along if the interview seems too basic.

1. Tell students that they are going to be TV newscasters (journalists). They will work in teams and everyone will be involved in interviewing an AgPark farmer.

2. Create teams of student interviewers, with the number of teams depending on how many farmers are available. Assign students the names of the farmers they will interview.

3. Start by having students describe their vision/picture of a farmer to the class.

4. Distribute the Farmer Interview handouts among students.

5. Read the handout aloud and ask if there are any questions they don’t understand.

6. Give students a few minutes to add one of their own questions. Encourage them to ask questions that they think would be interesting to their peers. Coach students to learn from their farmer, “What creates a healthy farm?”
7. Encourage them to take additional notes from the interview on the back of the handout.

8. Before the students disperse, agree on a signal that indicates when the students are to finish their interviews and return to you.

9. After about 15 minutes, bring the students back as a class.

10. Give the groups 5 minutes to prepare their presentation.

11. Allow each group 5 minutes to present.

CLOSING DISCUSSION/EVALUATION
The presentation serves as the evaluation of how well the students met the stated objectives.

MODIFICATIONS/EXTENSIONS
• Depending on grade level/abilities, have students create all of the questions on their own by brainstorming in teams.
• Have students sketch a portrait of the farmer as the interview is being conducted.
• Instruct younger grade levels to only ask certain questions from the handout.
• If recording equipment was available, have students use their footage back in the classroom to create stories about their visit.
• Have students interview a family member to learn about any farming in their family history.
LESSON 7: Farmers as Stewards of the Land

Farmer Interview Worksheet

My name__________________________ My farmer’s name__________________________

Reporters in my group________________________________________________________

1) Why did you become a farmer?

2) What is your favorite part of farming?

3) What’s the most difficult thing about being a farmer?

4) What is a healthy farm?

5) How do you keep your farm healthy?

6) What kind of characteristics and skills do you need to be a farmer?

7) _____________________________________________?
LESSON 8: You Are What You Eat

BIG IDEA
Humans, plants, and animals all need similar things to thrive: sun, water, nutritious food, and protection from the elements. When you choose a balanced diet of fruit, vegetables, grains, protein and water, you improve and sustain your health and bodily systems. By eating foods that are grown organically, sustainably, and close to where you live, you limit your exposure to unhealthy chemicals, maximize the food’s freshness and deliciousness, minimize your carbon footprint and environmental impact, and support a greener economy. What’s good for you is good for the Earth.

BACKGROUND
Eating lots of fruits and vegetables is crucial to maintaining good health. People whose diets contain high amounts of fruits and vegetables are less likely to develop many diseases, such as strokes and other cardiovascular diseases, and certain cancers. The health benefits of eating fruits and veggies come from their rich stores of complex carbohydrates, dietary fiber, vitamins, minerals and other nutrients, as well as from the absence of fats, processed sugar, and sodium found in other, less healthy foods.

Not only are organically grown foods free of pesticides and artificial fertilizers, they may contain higher levels of vitamins and minerals than their conventional counterparts. Thus, eating organic is better for humans and better for the Earth in many different ways.

It’s easy for kids to incorporate more fruits and vegetables into their diets: suggest that kids put strawberries or bananas on their morning cereal or waffles; ask for veggies like mushrooms, scallions, or bell pepper in their scrambled eggs; eat an apple or orange as a

OBJECTIVES
Students will
• Re-examine their understanding of what makes a food “healthy.”
• Read and follow a recipe to prepare a healthy dish.
• Connect their health with that of the Earth.

MATERIALS
• Five different snack foods
• Recipe (from Kids Cook Farm-Fresh Food, or elsewhere)
• Instruction cards for each team
• Ingredients needed for the recipe
• Cooking supplies: Bowls, utensils, measuring cups and spoons, dishes, etc.
• Clean up supplies: sponges, dish soap, dish tubs, towels

TIME REQUIRED
1 hour

GROUP SIZE
Half of the class

ADAPTED FROM
Original
snack; and have carrot sticks or celery with peanut butter and raisins in their lunch.

To encourage kids to try new foods, it is often helpful to involve them in the preparation process. Research shows that learning about, growing, and cooking produce in school can have a positive impact on children’s diets.

PROCEDURE
1. Hold up two different food items, such as an apple and a bag of chips. Ask which one is healthier, and why. Continually replace the chips with healthier items (e.g., apple-flavored fruit snacks, apple juice, dried apple chips) until you are comparing a non-organic with an organic apple. Describe the differences in how they were grown. Ask: why is one healthier than the other?

2. Describe the presence of pesticides, fertilizers, and additives in foods. Have them follow where those additives go (Hint: into the plant/animal, into the earth, and into the eater).

3. Ask: “What does ‘You are what you eat’ mean to you?” Leave time for students to discuss or write a response.

4. For older students, ask “How does food get to our plate?” (Hint: trace the route food takes from farm field to plate and include the steps of harvesting, packing, transporting, storing, selling, preparing, and eating.)

5. Ask “What are some benefits of eating food grown closer to home?” (Hint: fresher produce, support for local farmers, reduction in environmental impacts of transporting food, and a more secure regional food system.)

ACTIVITY
6. Describe the dish that students will be preparing, pointing out each of the ingredients assembled on the demonstration table or to be harvested from the farm.
LESSON 8: You Are What You Eat

7. Review safety precautions with students, and demonstrate the cooking techniques the students will be using.

8. Break students up into groups of 2-4 to perform tasks called for by the recipe. Ideally, each group will have an adult chaperone to supervise and assist.

9. Distribute instruction cards to each group.

10. Release students into teams to wash their hands, and begin their jobs at their preparation stations.

11. When the recipe is prepared and prep dishes are clean, have students serve themselves and enjoy their dish. When they are done, have students clean their own dish and utensil, and ask for volunteers to clean the serving bowls and utensils.

CLOSING DISCUSSION/EVALUATION
Preparation of the assigned dish will demonstrate if the student has met the lesson’s objectives. In closing, ask the students to reflect on how eating healthy food benefits our bodies and our planet.

MODIFICATIONS/EXTENSIONS
- Give students seedlings to take home with care instructions.
- Send home a copy of the recipe from class.
- Conduct a nature walk to pick edible weeds such as wild radishes, field mustard, blue elderberry, or wild grape.
LESSON 9: Working on an Urban Edge Farm

BIG IDEA
Each growing season, farmers must prepare the soil, plant seeds, control weeds and pests, and harvest and sell their produce. Each step in this cycle requires choices and these choices affect the health of local ecosystems and communities. Healthy farms are the foundation for healthy communities.

BACKGROUND
Farmers are important members of our community, since they grow the food that we all need to survive. By choosing farming practices that support human and ecosystem health, organic farmers can enhance the health of surrounding communities. In a healthy community everyone has access to nutritious, affordable, and delicious foods, and everyone working in the food system is safe and treated fairly.

Farming is a difficult business to be in, due to the vagaries of weather, pest populations, and global markets. Because of this, farmers benefit when their local communities help share the risks inherent in farming by participating in a Community Supported Agriculture (CSA) program. In a traditional CSA, community members pay the farmer at the beginning of the growing season, and then receive shares of whatever fruits and vegetables are ripe each week throughout the season. This helps the farmer focus on growing the best produce she or he can.

At the Sunol AgPark, farmers interact with the surrounding communities in many different ways: some have CSAs; some sell their produce at farmers’ markets and farm stands or to local restaurants and grocery stores; some even let people come pick produce themselves.

OBJECTIVES
Students will
- Follow oral instructions to learn how to do a farm task
- Interact with a farmer
- Gain work experience on an organic farm
- Learn about the benefits of having an urban edge farm near their community

MATERIALS
- Gloves for students (optional)
- Farming tools like shovels, hoes, trowels, buckets

TIME REQUIRED
1 hour

GROUP SIZE
Half of the class, students in teams

ADAPTED FROM
Original
The mission of the Sunol AgPark is to provide farmland for small farmers so that they can grow healthy food to feed nearby communities. Since the AgPark is so close to cities such as Oakland, Berkeley, and San Francisco, city-dwellers can come visit the farms, talk to the farmers, and see how their food is grown. For more background information, see the SAGE web site: www.sagecenter.org.

PROCEDURE
Talk to the farmer beforehand to confirm the timing and size of the group they’ll be working with. Find out what activities the farmer has planned for the students. Remind the farmer to review safety protocols when working with tools.

1. Tell the students that today they will be helping a farmer grow healthy food for people in the surrounding area. Ask the students if they have ever helped a farmer before, or helped grow food?
2. Tell the students that it is important to listen carefully to the farmers’ instructions, to protect themselves and the farmers’ crops. Remind the students to ask questions if they don’t understand what they are supposed to do.
3. Separate the group into teams, and introduce the teams to the farmer they’ll be working with.
4. Give teams 40 minutes to help their farmer with the chosen task of the day.
CLOSING DISCUSSION/EVALUATION

Ask students to answer the following questions, either orally or in writing:

1. What are some of the advantages of having farms like the Sunol AgPark close to where we live?

2. What are some of the health, economic, and environmental benefits of buying and eating food that was grown close to home?

3. What surprised you about helping a farmer? What did you learn that you didn’t know before?

MODIFICATIONS/EXTENSIONS

• In May, have the students be part of a ladybug release.

• As a math lesson, do the following:
  1. Teach the students about weeds and how to pull them properly. Then have them see how many weeds they can pull in a designated space, or in a limited amount of time.
  2. Count the weeds to see which team was most productive.
  3. Measure the root and then the shoot (stem) to determine what the average root-to-shoot ratio is for each type of plant. Have students discuss the purpose of roots and shoots and the plant’s survival strategies.
  4. Compare root-to-shoot ratios of different plants by graphing them.

• Have students write about their experience helping a farmer upon returning to the classroom.
LESSON 10: Organic Food Production and the Economy of Food

BIG IDEA
Farming is a complex and challenging profession. Farmers need to use business and math skills in order to decide what to grow, where to sell it, and how much to charge customers, in order to make a living. Organic produce often costs more than conventional produce because it is more labor-intensive to produce.

BACKGROUND
Most farmers choose their profession because they love some part of it – plants, fresh air, independence, artistry, or tractors. There are many advantages to being a farmer. However, farming is also a complex and difficult business. Farmers have to use many skills to grow crops that other people will buy, and to sell enough to make a decent living.

Before food reaches the grocery store, farmers’ market, cafeteria, or restaurant, a farmer has taken many steps to produce and deliver it. Each of these steps takes time and resources, so the price that the farmer receives for their crops must cover all of these earlier steps.

The following sequence lists steps that farmers take to grow and market their products.

1. Develop a business plan: identify which crops to grow and who to sell them to at what price.
2. Find a place with good soil, sun, and water resources to farm.
3. Secure land (buy, lease, or sharecrop).
4. Secure water (install plumbing, get a water contract, etc.)
5. Protect the farm from predators and pests – install a fence if needed.
6. Secure equipment and tools needed to prepare beds, weed, harvest, etc.

OBJECTIVES
Students will
- Learn about the steps involved in getting a crop to market.
- Learn that farming is a business, and that successful farmers use a lot of math.
- Calculate a crop’s yield for market.

MATERIALS
- White board or chart pad and pens
- Strawberry worksheet for each team
- Clipboard for each team
- Pencils for each team
- A few calculators for adult chaperones
- Strawberries for tasting
- Utensils for food preparation
- Bucket
- Paper towels

TIME REQUIRED
50 minutes

GROUP SIZE
Half of the class, students in teams of 2-3

ADAPTED FROM
Original
LESSON 10: Organic Food Production and the Economy of Food

7. Secure seeds or seedlings.
8. Prepare the ground for planting (leveling, tilling, weeding, watering, etc.).
9. Plant seeds or seedlings at the right time of year.
10. Develop relationships with potential buyers (sign up for a farmers’ market, start a farm stand, contact grocery stores, wholesale buyers, restaurants, CSA customers).
11. Tend the plants until maturity (irrigate, fertilize, weed).
12. Buy packaging for produce (boxes, baskets, rubber bands, bags, etc.).
13. Harvest produce.
14. Clean and pack produce.
15. Transport food to market, insure and maintain vehicle.
16. Buy scales, batteries and calculator to determine cost to purchasers.
17. And begin again.

There are many benefits to diversified, small-scale organic farming systems, compared to large-scale mechanized farms, including increased employment opportunities, increased productivity per acre, and ecosystem and community food security benefits. However, small scale diversified systems are labor-intensive, and the extra human labor involved to grow and market food on a small scale, especially with organic production methods, increases the prices farmers need to charge to make a profit each year.

PROCEDURE
1. Before proceeding get permission to use a farmer’s crop for the lesson.
2. Lead a brainstorming discussion. Prompt student thinking with the following questions: “Pick any business or job -- how do you make money? What are the costs of production and marketing?” Write the students’ answers on the white board or chart pad to stimulate thinking about business models, and how business owners make a living.
3. Tell students that farming is a business like any other, except farmers often work with extra variables, like the weather, and other environmental factors, like
insect populations and soil nutrients. Ask students to brainstorm some of the steps involved in getting a crop to market.

4. Tell students that they are going to be farmers for the day, and calculate how many strawberries (or other crop) they will have to sell from one field.

5. Divide students into teams of 2 or 3, and distribute clipboards, worksheets, and pencils to each team. Ask students to designate one recorder and one or two counters.

6. Remind students not step on any of the plants, irrigation lines, or beds that the farmer has built. Emphasize that crops are the farmers’ livelihood, and students need to respect them.

7. Instruct each team to count off 10 plants that are next to each other to study. Once they have their study area, they are to work in teams to complete the worksheet. Have adult chaperones circulate between teams to help the students with any questions or math challenges. You can offer students a calculator to help with their long multiplication, if need be.

8. When the students have completed their worksheets, call them back to the gathering area.

9. If permitted by farmer, allow students to taste the strawberries (or other crops) they have been studying.
CLOSING DISCUSSION/EVALUATION

1. Have the study teams share their findings on the total amount of money the farmer can make by taking their crop to market (#9 on the worksheet). If the teams differ in their findings discuss the differences, check for calculation errors, and correct any mistakes.

2. Have students share their answers for #10 on the worksheet – whether they think a farmer can make enough money to make a living by selling the current crop in the market.

3. If not, ask students how they think a farmer might increase their income? What business strategies might they use to make more money?

4. Have students calculate what percentage of the plants in their row they used to estimate the total yield (e.g. 10 plants divided by total # of plants in their row).

5. Ask students if they think that was a big enough sample to make an accurate yield estimate. Was there much variation between rows? How might this affect a farmer’s choices?

6. Ask students to discuss the economics of food production. What did they learn? What surprised them?

MODIFICATIONS/EXTENSIONS

- For older students, use the list of “Getting Crops to Market Steps” (from Background), and University of California, Davis cost studies website to estimate production costs for AgPark crops. http://coststudies.ucdavis.edu/current.php

- Develop a cost calculation worksheet for AgPark crops.
Strawberry Study

Find 10 strawberry plants that are next to each other. Be careful not to hurt any of the plants while you study them. These crops are a farmer’s income! Collect the following information:

1. For each of the ten study plants, count the number of flowers per plant:
   
   1. _______ 2. _______ 3. _______ 4. _______ 5. _______
   
   6. _______ 7. _______ 8. _______ 9. _______ 10. _______

2. Calculate the average number of flowers for the study plants.

3. Using the average number of flowers, if half the flowers successfully produce a fruit, how many fruits will you get per plant, on average?

4. Count the number of plants in the whole row you are studying.

5. Using the average number of fruits per plant (answer from #3), calculate the number of fruits the farmer can harvest from this one row.
6. If each basket of strawberries has 20 berries in it, how many baskets will this one row yield?

7. If the farmer sells their berries for $4/basket, how much money can they make selling all of the berries in this row?

8. How many rows of this crop does the farmer have in this field?

9. How much money can the farmer make by selling all of the berries in this field?

10. Do you think that is enough money to make a living?
LEsson 11: Insects R Us!

Big Idea
Insects are an important part of a farm ecosystem, or “agroecosystem.” Some insects pollinate crops, which helps crops produce fruit or seeds. Other insects are considered by farmers to be pests because they eat or damage crops. And yet other insects help control pest populations by predation. Ecological farmers use a whole-farm approach to manage pest populations, and encourage beneficial insects on the farm.

Background
Plants and animals have a long, intertwined evolutionary history. As animals evolved on Earth, plants evolved in step, to increase their likelihood of survival. Animals can either help plants reproduce, by spreading their pollen or seeds, or they can limit their chance of reproduction, by eating them. Agricultural pests, including insects, weeds, diseases, and nematodes, destroy or damage 30 per cent of crops each year. This rate of crop loss has held steady since the 1940s despite the introduction of new pesticides and herbicides. Ecological pest management is an approach to controlling pest populations and encouraging beneficial insects on farms that limits the negative impacts on human health, farmers’ wallets, and the ecosystem.

There are many strategies that farmers use to manage pests on the farm, including increasing biodiversity, providing year-round food sources for beneficial insects, timing cultivation, mowing, and other activities with pest life cycles, and planting pest-resistant varieties. To manage pest populations, it is important to monitor insect populations on the farm.

Objectives
Students will
- Capture, inspect and identify one or more insects on the farm
- Consider the role that particular species play on the farm

Materials
- Line drawing of typical flower
- Line drawing of honey bee
- Insect nets
- Bug boxes (magnifying lens on a box)
- Mini Field Guides to Common AgPark Pests
- Mini Field Guides to Common AgPark Beneficial Insects
- Complete field guide to common farm insects

Time Required
45 minutes

Group Size
Half of the class, students in teams of 2-3

Adapted From
Original
Many crops rely on pollinators to produce fruit or seeds (including sunflowers, apples, melons, tomatoes and strawberries). European honeybees (Apis mellifera) are an important pollinator for many common crops. Ancient Egyptians were first to domesticate honeybees. The Pilgrims who came to America brought the European honeybee with them. In recent years, honeybee colonies have been declining, and scientists are trying to understand why. Other pollinators include native bees, butterflies, moths, hummingbirds, bats, flies, wasps and beetles.

**PROCEDURE**

1. Use a flower line drawing to show the parts of a typical flower. Briefly explain the parts, their function, and how they are useful to insects.

2. Use a line drawing of a bee to show the legs, pollen baskets, and body parts, and show the students how the bee collects pollen and gathers nectar.

3. Tell the students that they will be monitoring the insects and animals on the farm today.

4. Demonstrate how to use an insect net: look for an insect and then, with a sweeping motion, catch the insect and move it to the back end of the net. Clasp the net above the insect. Slide the bug box into the net, and gently place the box over the insect. Quickly and carefully put the lid on, careful not to hurt the insect, and shelter the insect from the sun. Be very careful to keep the animal alive so that it can be released after closer examination.

5. Hand out the Mini Field Guides to Common AgPark Pests and Common AgPark Beneficial Insects and give instructions on how to fold the guides.

(See instructions in Lesson 9.) Have students create (by folding) the two Mini Field Guides.

6. Ask students to find a partner, and give each pair an insect net, two bug boxes, and a species checklist. Tell students the boundaries within which they can explore, and repeat any behavior guidelines (e.g. to stay on farm roads and
paths). Tell the pairs that they can bring one insect back to the circle to share with the others.

7. Release the students to see how many animal species they can find on the farm. They can catch animals in their bug boxes that they want to study more carefully. If they can't identify an animal, they can bring it to you or look it up in the Field Guide. After twenty minutes, call students back together.

8. Have students identify their specimens with the mini or full Field Guides. Ask them to identify the number of legs, evidence of pollen collection, body parts, antennae, and other interesting features.

9. Carefully release the animals.

CLOSING DISCUSSION/EVALUATION
Prompt the students to do the following:
• Describe what a bee (or other insect) looks like and what it does to benefit humans.
• Imagine yourself as a bee. How would you explain to people that you do an important job for them, bringing them the fruits, nuts and honey that they love?
• Imagine yourself as a farmer. What would you do to encourage healthy insect populations on your farm?

MODIFICATIONS/EXTENSIONS
• Research “Integrated Pest Management” and how it is used to manage certain pests.
• Research honeybees and Colony Collapse Disorder
LESSON 12: Growing Soil for Food

BIG IDEA
Good, rich soil is essential for healthy farms, healthy foods, and healthy communities. Just like a good sandwich with lots of layers, soil also has a profile. At the top of soil is duff or humus, next is topsoil, followed by subsoil and lastly by parent material. Good farm soil is a combination of sand, silt, and clay, which is called “loam.” The sand creates micro-pores (tiny spaces) where roots of plants can find water; silt and clay help to hold water so it doesn’t drain too fast from the soil. Healthy soil is the foundation for healthy plants, and healthy people.

BACKGROUND
All foods can be traced back to soil. What is soil? Think of an apple as the earth. Both the apple and the earth have coverings. The peel is a covering for the apple. Soil is a layered covering for much of the land on earth. These layers are thick in some places and thin in others. From the top down, the earth has plants and/or duff (dead plant material), topsoil, subsoil and bedrock or parent material (which often influences the kind of soil above it). Soil is made of weathered rock, dead plants and animals, air, water, and bacteria.

There are many different kinds of soils on the earth. Soil comes in many different colors, and particle sizes. Large particles are called sand, and medium-sized particles are called silt, and the smallest particles are clay. Most soils have a mixture of the three sizes of particles. Decaying plant, bacteria, fungi, and animals contribute organic matter to the soil. This organic matter is decomposed over time, and its nutrients help nurture new plants and animals.

OBJECTIVES
Students will
- Learn about soil formation and soil conservation through discussion and experimentation
- Trace their lunch foods back to the soil from which they grew.

MATERIALS
- Student lunches
- Two rocks per team. Try to get sedimentary, metamorphic and igneous rocks for comparison.
- Large piece of paper (can be newspaper), for each team
- Paint trays, for each team
- Watering cans
- Shovel or trowel for each team
- Bug boxes (Optional)

TIME REQUIRED
50 minutes

GROUP SIZE
Half of the class, students in teams of 2-3

ADAPTED FROM
Original
Plants help make soil by breaking apart rocks as their stems and roots grow. Some plants exude acidic compounds from their roots that break the rocks down, releasing minerals plants need to grow. Water helps make soil, too, by getting into cracks in rocks, and forcing rocks apart during freezing. Fast moving water in rivers moves rocks around causing erosion and decomposition. Water can also chemically wear rocks down.

**PROCEDURE**

1. Put students in teams of 2 or 3. Distribute two rocks and a big piece of white paper to each team. Have the students rub two rocks together over the paper. What falls from the rocks? Look at the rocks that you rubbed together. What do you see on the rocks? Repeat this several times to see if the results change. Have students look at each other's work and compare their findings. Hint: look for particle size, color, and quantity. Different types of rock will yield different results. Once the students have created sand from their rocks, ask them if the farmers could use this to grow their crops. How does it feel? Does it have what is needed to raise food? What else is needed? Have students feel the farm soil in comparison. What's different? If there is time, compare farm soil to the soil next to the creek. What is different and what is the same from each soil sample?

2. Many small animals live in the soil. In many cases, they help to keep the soil healthy. Instruct students to take 5 minutes to find some soil organisms and observe their behavior (e.g. earthworms, beetles, spiders, mites, etc.). They should see if they can follow the animals to their home, find out what the animals are doing, and where they are going. For example, if students find an ant, they should follow it, observe it, and record their observations. Ants can dig tunnels, live in a colony and help things to decompose. Look for worms, beetles, caterpillars, pill bugs, millipedes, etc. All these animals help to make new soil.
Note: If you can get to a compost pile, there will be a rich population of animals there. Use bug boxes to collect the animals and share with students. If these animals were not doing their work, we would have so much dead stuff on the earth’s surface that we wouldn’t even be able to touch the soil.

3. How can a farmer protect the soil?
   Remember that topsoil is a thin layer on the earth where almost all of our food grows. Without soil, we would be very hungry. Farmers have to keep their soil from blowing and washing away, while keeping it rich enough to grow food. Soil nutrients can be depleted if the same crop is grown year after year on the same ground, with the harvest being carried away. Farmers rotate the crops they grow, and use compost and other nutrients to replenish the nutrients in the soil. Lead a discussion to see what the kids know about saving soil.

**ACTIVITY 1: Erosion Experiment**

1. Have student teams dig a soil sample with grass cover out of the ground. Place the sample at the high end of the paint tray.
2. Have student teams dig a sample of soil without grass on it out of the ground. Place the second sample next to the first.
3. Sprinkle water on both samples.
4. Observe the water running off of each sample. Ask students, “In which case does the water carry more soil? In which case does more water stay in the soil? Can you draw a conclusion about which sample is better at conserving soil? Why?” If you were a farmer and you had to think of ways to conserve your soil, what would you do?
5. Clean up the experiment, and have students return their samples to where they got them.
ACTIVITY 2: Lunch Bag Nature Hike

1. Almost all food comes from plants, which grow in soil. Ask students to think about how each of their lunch items can be traced back to soil.

2. As the students sit down to lunch, ask each student to take one thing out of their lunch bag and trace back the origin of the food that they are holding, i.e., a hard boiled egg:
   - Came from a chicken which probably lives on a farm – where?
   - What did the chicken eat? Corn (a grass that we rely on very much in America), earthworms, grass, bugs, even mice that may have gotten into the chicken coop.
   - How did it get to you? Talk about transportation systems – including students’ trip to the store.
   - Even plastic wrap or bags go back to ancient forests and bogs, which grew in soil, and then were buried and transformed into oil over millions of years. And trees, processed into paper, came from soil where the tree grew.

3. Playfully continue with each student showing something from his or her lunch bag and tracing everything back to its origin with the class adding what they know so that the students get a strong feeling that they would not have a lunch without the soil that it took to grow their food.

CLOSING DISCUSSION/EVALUATION

- What are some of the things that you learned about soil?
- Why are plants called a cover for the soil?
- Describe how weather conditions (e.g., strong winds and heavy rainstorms) affect a farm field.
- Why must people take care of, or steward, the Earth’s soils?

MODIFICATIONS/EXTENSIONS

- Fill a glass jar with water, cover with a lid, and put the jar in a pan inside a freezer. After a day, look at the jar. What happened? How is liquid water different from frozen water? This demonstrates what freezing can do to rocks.
- Carry lunch leftovers to the compost pile, and search for decomposers. Emphasize that one animal’s waste is another’s food!
LESSON 13: Get To Know Your Watershed

BIG IDEA
We all live in a watershed, and rely on healthy watersheds for our drinking water. Our daily choices affect the health of our local, regional, and state watersheds, both upstream and downstream. Water is a limited precious resource, especially in an arid, highly populated state like California. Since many animal and plant species rely on fresh water, in order for ecosystems and human communities to survive and thrive, water must be used efficiently and watersheds must be protected from degradation and pollution.

BACKGROUND
A watershed is defined as the area of land which drains into the same place, often a river or creek system. John Wesley Powell, explorer and scientist, described a watershed as: “that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community.”

California watersheds have been drastically altered and modified over time by dams and water diversions in order to meet fresh water needs for residential, agricultural, and business uses, and to provide flood control. The Alameda Creek Watershed is the largest drainage in the southern San Francisco Bay Area, draining approximately 650 square miles of the East Bay interior hills, before flowing through Niles Canyon, and then entering a twelve-mile-long flood control channel extending from Niles Canyon to the San Francisco Bay. Average annual rainfall in the watershed varies from 24 inches on Mt. Hamilton to 15 inches near Union City.

OBJECTIVES
Students will
• Work in a group to create a watershed model.
• Identify their community’s watershed on a map.
• Discuss how individual choices impact a watershed’s health.

MATERIALS
• East Bay Watershed Maps from Oakland Museum
• Map of Alameda Creek Watershed
• Relief maps of the San Francisco Bay Area and California
• Watershed models -- See Appendix
• Local maps (if students’ neighborhoods are not shown on East Bay maps)

TIME REQUIRED
1 hour

GROUP SIZE
Half of the class, students in teams

ADAPTED FROM
“River Cutters” Lawrence Hall of Science, University of California, Berkeley
LESSON 13: Get to Know your Watershed

The Alameda Creek watershed is used for grazing, housing, recreation, and agriculture, in addition to supporting fisheries and diverse wildlife. The Alameda Creek watershed contains three major reservoirs (San Antonio, Del Valle, and Calaveras) that can store a combined total of 225,000 acre-feet of water. About three million residents of the Bay Area rely on the Alameda Creek Watershed for some of their drinking water. Alameda Creek Watershed residents also rely on imported water from the SFPUC’s Hetch Hetchy water system and from the San Francisco Bay-Delta, which transports water from the Bay-Delta via the South Bay Aquaduct.

PROCEDURE
Make sure that watershed models are set up before students arrive, with the sand sloped up on one side of the container and excess water removed. Check with the teacher to see if students know how to read maps, and modify your presentation accordingly. Students may need an introduction to map-reading (using the legend, scale, etc.).

1. Lead a discussion of what a watershed is. Ask students to break down the parts of the word “watershed” to help them understand the process of water draining (“shed” as a verb), and the ability of the land to absorb and store water (“shed” as a noun). A watershed is both the land and the body of water which captures the water draining off of the land.

2. Ask students to break up into groups of two to five to brainstorm what the qualities of a healthy watershed are (e.g., clean water that is free of unsafe chemicals or pollutants, clean water that is good for drinking, swimming, and that provides high quality habitat for fish and other aquatic species).

ACTIVITY 1: What’s your watershed address?

1. Ask students: “Which watershed do you live in?”

2. Distribute East Bay Watershed Maps or road maps which include the students’ home town to each group and ask students to find their neighborhoods and local watershed.
LESSON 13: Get to Know your Watershed

3. Ask students: “Which watershed does your tap water come from?”

4. Use California and San Francisco Bay relief maps to show students the following watersheds:
   - San Francisco Bay-Delta and the South Bay Aquaduct which brings water to the East Bay.
   - Tuolumne River watershed in Yosemite National Park and the Hetch Hetchy water system, which runs through the Sunol Valley, and is managed by the SFPUC, to serve 2.5 million water customers in the San Francisco Bay Area.
   - Mokelumne River watershed in the Sierra Nevada, which is managed by EBMUD, to serve 1.3 million water customers in the East Bay.

5. Ask students: “Which watershed are we in now?”

6. Use relief and shaded maps to show students the Alameda Creek Watershed, which drains from Mt. Diablo in Contra Costa County and Mt. Hamilton in Santa Clara County. It is 650 square miles or 416,000 acres in size (imagine 416,000 football fields all put together).

ACTIVITY 2: How do watersheds work?
1. Ask students: “Now that you know more about the watersheds you live in and rely on for your water, how do watersheds work?”
2. Direct each group to a model watershed and instruct the students to build a small village on the land.
3. Instruct students to “turn on the flood” to see what happens to their village.
4. Ask students: “What would happen if they removed or added trees to their watershed?”
5. Ask students: “What would happen if farmers applied a lot of fertilizers or pesticides to their farms before a big storm?”
LESSON 13: Get to Know your Watershed

CLOSING DISCUSSION/EVALUATION
Ask the students to discuss how the different elements in a watershed – people, plants, farms, towns – impact the health of the land and the water. Ask students to write down two ways that they can be good stewards of their watersheds, and when they are done, to share one answer with the whole group.

MODIFICATIONS/EXTENSIONS
• Back in the classroom, students can research more about their local watersheds, what the primary threats are to the watershed’s health, and what their local community is doing to protect and enhance their watershed’s health.
LESSON 14: Sustaining Our Soil to Sustain Ourselves

BIG IDEA
Over 99.7% of the food humans eat is grown in soil, which makes soil the foundation of a healthy food system. Soil is a precious resource that must be protected in order for our farms and communities to thrive. Soil is created by slow geologic processes over long periods of time. Improving our agricultural practices to protect our soil is an important component of long-term sustainability.

BACKGROUND
Soil takes thousands of years to develop from parent rock, at an average rate of three inches per 1,000 years, although the exact rate varies by parent material and weathering conditions. Soil is created from parent rock by physical weathering (when rock is broken into smaller pieces by frost action, temperature changes, abrasion, and gravity) and chemical weathering (which leads to changes in the rock’s mineral composition as a result of chemical action of water, oxygen, and carbon dioxide). Plants and animals also create soil, by transporting minerals to the soil surface, and secreting organic acids.

Each shovelful of good top soil holds more living organisms than all the humans on Earth. Many types of organisms live in the soil (e.g., bacteria, fungi, algae, earthworms, beetles, moles) and improve the movement of air and water through the soil profile. Bacteria play an important role in converting soil nutrients into forms that plants can use. As organisms die and decompose, humus is formed from their remains. Humus fertilizes the soil and improves the soil’s structure.

Erosion is a natural process of wearing away the earth’s surface by water, wind, ice, etc. When human activity causes erosion rates
to exceed soil formation rates, air and water pollution result. Excessive erosion also removes nutrients from the soil and limits soil productivity. Around the world, soil is being eroded 10 to 40 times faster than it is being replenished.

Farmers can limit soil erosion by using the following practices:
- planting cover crops
- reducing tillage
- planting windrows and grass filter strips
- leaving plant residues on the surface of the soil
- returning organic matter to the soil through compost applications

Other people can help to create new soil and replenish soil nutrients by composting their food scraps and plant material from their yards and gardens.

PROCEDURE
1. In pairs or as a group, ask students to share what they already know about soil. For example:
   - In what ways is soil important to our lives?
   - Is soil the same in every location? Is the AgPark soil the same as Oakland soil? Lake Tahoe soil? Hawaii soil? Mexico soil? Why or why not?
   - How might soil type affect what kinds of plants grow in it?
   - Do you think soil is alive or dead? Does soil “grow?” Does it “disappear?” How might soil change over time?
2. Ask students to look around the farm and the Sunol Valley. Ask them “Where do you think the soil we are standing on came from? Was it formed right here or has it traveled? How did it get here? (Hint: soil came from upstream.)
ACTIVITY 1: Rock On
1. Ask students to be as quiet as rocks.
2. Give each student a piece of rock candy. When everyone has one, instruct them to put it in their mouth and suck on it (but not to bite it).
3. After a few seconds, ask them to take it out and look at it carefully. Ask students to describe what is happening to their candy.
4. After several students have shared their responses, ask them what the scientific term is for the breaking down, cracking, changing colors, etc. that they observed (Hint: erosion).
5. Explain that “erosion,” is a natural process of breaking down the earth’s crust. Describe the mechanical, chemical, and biological processes of erosion.
6. For older students: Ask students how geography might influence climate and erosion. Remind them of the geography of California (use a map) and that the Bay Area is much moister than Nevada, for example, because Nevada is in a rain shadow. Rain contributes to erosion, by physical, chemical, and biological processes, helping form deep soil.

ACTIVITY 2: What’s in the Soil?
1. Show students soil samples from different sites, and describe how soil is composed of inorganic particles of three different sizes (sand, silt and clay) and that loam, which is good for growing plants, is a mixture of all three particle sizes. The sand particles help the soil stay loose for roots to penetrate and the clay helps hold water, which plants need to grow.
2. Shake up a jar half full of AgPark soil and half full of water. Set it aside to let it settle. Students will get to see the particles settle out. The sand will be on the bottom with the silt, and clay particles will be layered on top.
3. Tell students that they will become soil scientists, and investigate what kind of soil we have at the AgPark. Divide students into pairs, and instruct each team to take a small soil sample (about a cup) from the edge of the farm field with a trowel and place their sample in a tray.
4. Ask students to investigate their soil using all their senses and write down their observations. Ask students to describe the color, texture, and smell of the soil and to note any animals they see. Then ask students to use a hand lens to look for smaller organisms in the soil and to draw pictures of any organisms they see.
5. Next ask students to form a small ball of moistened soil in their hands and to make a soil snake by pushing the soil through their thumb and forefinger. Ask students to observe how long their snake gets before it breaks. Snakes less than 1” indicate sandy soil, snakes 1-2” indicate medium texture or silty soil, and
Snakes greater than 2” indicate clayey soil. Ask students what this tells them about the AgPark soil. Is it good for growing crops?

6. Ask students to return their soil to the farm field and clean up their stations.

**CLOSING DISCUSSION/EVALUATION**

Ask students to reflect on what farmers and other people can do to protect soil resources. Ask them to write down two things they learned about soil today. Then ask them to share what they learned with a neighbor. Each team should identify a representative and the representative will report back to the group one thing that their team learned.

**MODIFICATIONS/EXTENSIONS**

- Ask teachers to bring a soil sample from their school so that students can do a comparative soil test.
- Have students scatter wildflower seeds or seedballs in the filter strip after they’ve completed the activities.
- Have students investigate the soil profile in the creek bed to identify depositional layers: topsoil, subsoil, and parent material. Students can draw a soil profile.
- Learn more about erosion: Project WET, “The Sum of the Parts,” on page 267, can be done in the classroom.
- Read the book *Dirt, The Ecstatic Skin of the Earth*, by William Bryant Logan and/or watch the documentary, *Dirt! The Movie* (2009.)
LESSON 15: Biodiversity at the Farm Edge

BIG IDEA
Biodiversity is the variety of life forms on Earth, and includes genetic diversity within species, species diversity, and ecosystem diversity. All of the crops and domesticated livestock that humans rely on for food originated from Earth’s natural biodiversity. Biodiversity in farming landscapes helps provide ecosystem services that are essential to food production, including pollination and pest control. Agriculture can contribute to the conservation of biodiversity, or can drive biodiversity loss. Sustainable agriculture both benefits from and promotes biodiversity.

BACKGROUND
Our farms exist within ecosystems, and the health of our food system depends, in large part, on the health of our ecosystems. The rich biodiversity found on Earth has provided humanity with a wide diversity of foods, and continues to benefit our food systems and communities in many ways. In order to ensure a healthy food system for generations to come, humans need to protect the biodiversity upon which our farms and communities depend.

Agriculture began around 10,000 years ago in different parts of the world, including Mesopotamia, New Guinea, China, Mesoamerica, and the Andes, when people started selecting plants that were good to eat. Diverse agricultural systems evolved in these places in response to different climates, plant and animal species, and human cultures. Over the past millennia, and especially within the past 500 years, people and crops have migrated around the planet, so that today, almost all of the food we eat in California originated in a different place on Earth.

OBJECTIVES
Students will:
• Explore the biodiversity of the AgPark and in the adjacent riparian habitat.
• Learn to identify eight different plants by leaf structure.
• Discuss the importance of protecting biodiversity on farms.

MATERIALS
• Copies of the leaf key
• Bowls of water (one per table)
• Crayons (with the paper taken off)
• Copy paper (recycled)
• Clipboards
• Wildflower seeds or native plants (optional)

TIME REQUIRED
45 minutes

GROUP SIZE
Half of the class

ADAPTED FROM
Original
In the past hundred years, biodiversity loss has been increasing as a result of numerous factors including climate change and habitat loss. Biodiversity on and around farms contributes to important ecological processes upon which food production depends, including: soil nutrient cycling; erosion control; water filtration; pest control; and pollination. Since farms and ranches make up such a large percentage of our land use, biodiversity on farms is also essential to biodiversity conservation overall.

The Sunol AgPark benefits from being adjacent to the Arroyo de la Laguna creek and its riparian, or river bank, corridor. The banks of the Arroyo are densely vegetated with a diversity of groundcover, shrub, and tree species. This riparian plant community is part of the largest intact stand of Sycamore-Alluvial Woodland in the Alameda Creek Watershed and is an important interface between aquatic and terrestrial communities. Large tracts of open space occupy the hilly terrain to the south and west of the AgPark; these open space lands support a variety of ecological communities including non-native grasslands, scrub, and oak woodlands.

PROCEDURE

1. Tell students that they are going to explore biodiversity on and around the farm today. Ask students if they know what “biodiversity” is. If not, help them to figure out its meaning by breaking it down into “bio-” (life) and “diversity” (variety).

2. Distribute a copy of the leaf key to each student.

3. Demonstrate how to fold the leaf key into a mini-field guide, one step at a time:
   - Fold the paper in half length-wise (like a burrito); crease it really well.
   - Open, then fold it in half width-wise (like an omelet.)
   - Fold the paper in half again width-wise (like a fruit roll up.)
• Open it up, then re-fold the long fold, and moisten the middle two sections using a few drops of water.

• Carefully tear the middle two sections of the long fold, careful not to tear the outer two sections

• Re-fold the long section and hold the two ends together (images facing out.)

• Push the two outer sections together to form a four-pointed star.

• Fold the star into a pocket sized mini field guide to trees of the Alameda Creek Watershed.

4. Distribute a crayon and clipboard to each student.

5. Ask students to take a look around them and notice the diversity of plants and animals they can see (on the farms, outside the fence, and toward the horizon in all directions).

6. Tell students that they are going to explore the riparian corridor (the area adjacent to the creek) and observe its biodiversity. Instruct students to count the number of species they see, and to write down the names of the species they see that are in their leaf key. Students can make leaf rubbings of the species they would like to remember, or ones they cannot identify.

7. Show students how to make a leaf rubbing. Usually the underside of the leaf has better veins to show up with a crayon rubbing. Tell students that in order to protect the area, they should keep the leaf attached to the tree when taking a rubbing, or use a fallen leaf.

8. Lead students to the riparian corridor and tell them how far they can go. Send them to explore in pairs. Give them ten minutes to search for species and make their leaf rubbings.

9. Call students back. Give them ten minutes to explore the AgPark farms and filter strip (again telling them how far they can go), and to count the number of plant species they can see, writing down the names of any species they recognize and taking careful leaf rubbings. Call
students back to share their findings and artwork. Ask students to compare how many different types of plants they saw in the riparian community versus on the farm.

10. If time/materials allow, distribute wildflower seeds or seedlings and demonstrate how to plant them on the filter strip. Explain the value of having these plants at the farm edge (i.e., to support pollinators and wildlife, and catch any farm runoff before it reaches the Arroyo de la Laguna Creek.)

CLOSING DISCUSSION/EVALUATION
Ask students to reflect on why biodiversity may be important to a species, a farmer, an ecosystem, and the planet.

Ask students to write down one thing they can do to protect biodiversity at home, at school, or in their communities

MODIFICATIONS/EXTENSIONS
• Do the discussion before the activities for older students.
LESSON 16: Geography and You

BIG IDEA
Geographical features, such as hills and mountains, protect the Sunol Valley from severe weather, by forcing wind currents up into the atmosphere, above the valley floor. The hills which form the eastern edge of the Sunol Valley, and the Sierra Nevada mountain range, 160 miles beyond them, capture precipitation, or atmospheric moisture, that evaporated from the Pacific Ocean. This precipitation is used to irrigate crops. These geographical features inform farmers’ decisions as to when, where, and what to plant and how protect their farms from the elements.

BACKGROUND
Geography is the science of Earth’s natural features, including landscape contour, and the interactions between climate, elevation, soil, vegetation, human and animal populations, land use, industry and other factors.

The driver of life on Earth is the sun. The sun heats the Earth at different rates, depending on latitude and season, causing varying temperatures around the globe. The shape of the land also influences the temperature and moisture (or “climate”) of an area. The sun causes water in the ocean to evaporate into the atmosphere; wind carries moist air up in elevation. Since cold air does not hold as much water as warm air, as moisture rises into cooler temperatures, it precipitates out of the atmosphere as rain, snow, or another form.

Earth systems often self-regulate, or remain stable over time in the face of disturbances. Wind (horizontal air motion relative to the surface of the earth) begins in a high-pressure area and moves to a low-pressure area (in the northern hemisphere, winds generally move clockwise) in order to approach a uniform...

OBJECTIVES
Students will
• Learn how geography affects climate, which in turn affects plants and animals
• Learn how California’s geography makes it an important farm state
• Study characteristics of native plants at the AgPark and hypothesize about the relationship between the characteristics and the local climate

MATERIALS
• Topo map of Sunol Valley
• Relief maps of SF Bay Area & CA
• Maps of SF Bay Area, CA, US, & World
• Aerial photos of CA, Hetch Hetchy Water System, & Alameda Creek Watershed
• Leaf study worksheets & leaf samples
• Compass, clipboards, paper, & pencils

TIME REQUIRED
50 minutes

GROUP SIZE
Half of the class, students in teams of 2-3

ADAPTED FROM
Original
pressure gradient across the Earth. This effect is particularly felt on California’s coast, where fog is often seen creeping from the ocean over the hills to the San Francisco Bay, as a result of moist ocean air moving to warmer inland zones.

PROCEDURE

1. Ask students: Why is California the number one farm state in the nation? Hint: Because of the unique geography of California.

2. Lead the students in an activity to demonstrate this:
   - Say “You hold California in your hands. Put your hands together in a cup in front of you.
   - “Your fingers are like the Sierra Nevada: where your fingers meet represents all the rivers on the west side of the Sierra Nevada coming down into the Great Valley of California.
   - “The heals of your hands are like the Coast Range;
   - “Your left thumb is the Siskiyou Mountains at the border with Oregon on the north and the right thumb represents the Tehachapi Mountains to the south.
   - “The deep lines in the palms of your hands (just below your fingers) are the San Joaquin and Sacramento River systems flowing through California’s great Central Valley.
   - “Where your hands meet is the San Francisco Bay Delta, the largest delta on the West Coast and an important area for hundreds of bird, fish, and other wildlife species.
   - “The SF Bay is where your wrists meet, which empties into the Pacific Ocean between your arms.
   - “The Pacific Ocean modifies the climate of California. This is California’s original water source, and it makes California the number one farm state in the nation because of the irrigation water it provides. Without the water
captured by the Sierra Nevada, California would be a desert.

- “The westerly winds (you can blow at your hands to simulate) bring the evaporated water in from the Pacific Ocean; most of it is trapped by the Sierra Nevada Mountain range, making the state of Nevada a desert. The little bit of rain that does make it over the Sierra Nevada often travels out to the Gulf of Mexico in Texas.”

- “(As an added bonus, your body is basically located at the Hawaiian Islands. So you can take a vacation in your mind at any time!)

- “Point out on your right hand the approximate location of Sunol AgPark (near the SF Bay, just between the heel of your thumb and the great valley). ‘We are here!’”

3. Ask students to find where they are on the maps, so that students can see the geography of California and the Sunol Valley. Show them where Niles Canyon is (west) and how the wind blows through Niles Canyon into the Sunol Valley. Have them hold California in their hands again and orient in the actual direction of the mountains.

4. Look at the maps to find the best representation of the Sunol Valley. Orient the maps in the proper direction and look at the hills of the valley to see how the maps represent reality. Solicit observations from the students and help them understand how the maps correspond to the real world.

5. Ask students to tell you what direction the wind is coming from. (They can lick their finger and stick it up in the air. The wind will cool the finger from the direction that the wind comes. Also, they can throw dried leaves into the air to see which direction they are carried.) You can make it into a game by having all the kids in a circle; count to ten and everyone points at one time. Bring out the compass and check the direction.
6. Double check the wind direction by looking at the clouds to see which direction they are moving. They are being pushed by the wind. Does the movement of the clouds agree with your findings? Why would it be important for farmers to understand weather at their farm? How does wind direction impact planning on a farm?

7. Tell students they are going to observe native plants, and study their characteristics to try to understand how they have adapted to California’s climate. Distribute the leaf study worksheets to students teams, and direct them to find four different plant species to study. They are to observe leaf characteristics of their study plants, and observe how they are similar and different from other species.

8. Ask how long have these kinds of plants lived in this valley? How do these characteristics help them to survive?

9. If time allows, have students explore a few of the crops growing at the farm, and record their observations of the leaf characteristics of the farm crops. How are they similar to and different from each other, and from the native plants?

CLOSING DISCUSSION/EVALUATION

- What evidence did you find today of how the native plant populations have adapted to the local climate?
- How does understanding climate and geography help farmers?

MODIFICATIONS/EXTENSIONS

- Use a cloud chart to identify the type of clouds and what they indicate about the weather.
- Make a relief map of your favorite park or valley
- Have students place a wind stick (meter stick with a 10” piece of surveyor’s tape at one end) in the field. The wind will blow the surveyor’s tape in the opposite direction from the wind. Students can map the wind by walking around the farm with the wind stick and recording wind direction at different locations on the farm. Observe whether the wind is steady or swirling. Look at the vegetation to see if this is a regular phenomenon or only occasional (Hint: If habitual, plants will be leaning away from the wind.)
- Students can research the peak heights and distances of mountain ranges, and study the varieties of produce that are grown in different regions of California, and how that relates to geographic features.
Native Plant Exploration

My name______________________Today’s date____________________

Plant #1
Draw the leaf here:

Describe the leaf’s characteristics (waxy, smooth, soft, small, spiky, etc.):________

________________________________________
________________________________________
________________________________________
________________________________________
________________________________________

Plant #2
Draw the leaf here:

Describe the leaf’s characteristics:_____

________________________________________
________________________________________
________________________________________
________________________________________

What does it have in common with Plant #1?____________________________________

________________________________________
Plant #3
Draw the leaf here:

Describe the leaf’s characteristics:

What is one difference between Plant #3 and Plant #2?

Plant #4
Draw the leaf here:

Describe the leaf’s characteristics:

What is one thing Plant #4 has in common with Plant #3?

Why do you think these plants evolved their different characteristics?

How do you think these features help them to survive?
LESSON 17: Can Agriculture and Nature Work Together?

BIG IDEA
Organic farmers use ecological principles to inform their farming practices. By paying attention to the dynamic agricultural ecosystems in their fields, organic farmers strive to work with nature to grow healthy food while minimizing negative environmental impacts. Crop diversification is one practice farmers use to build healthy soil, protect their crops from drought, pests, and disease, and minimize their financial risk.

BACKGROUND
Farms that have a diversity of crops species and varieties mimic natural systems and are more resilient to disease and other disturbances. In monoculture farming systems, where a single type of crop is planted, crops are more susceptible to damage from pest populations than in more diverse cropping systems. If one blight, or pest, begins in a large monoculture type farm, it can destroy the entire crop. The notorious Irish Potato Famine is one such example. In the 1800s, poor Irish farmers had recently been pushed off of preferable farming lands by the rising English demand for beef. Since potatoes grow well in marginal, or low-quality, soils and provide high caloric content, they became the staple food of the Irish lower class. In 1845, blight attacked the potatoes and most farmers lost their entire crop, leaving very little for the Irish people to eat for eight years after. As a result, one million people died and another million left Ireland for the new world.

The danger of a pest wiping out a whole farm’s crop isn’t the only reason organic farmers plant many different kinds of crops, however. Another benefit of growing a variety of foods on the same farm are the effects that polyculture, or growing more than one thing,
LESSON 17: Can Agriculture and Nature Work Together?

has on the soil. In a monoculture cropping system, since only one type of plant is grown, the nutrients in the soil become depleted and pest populations in the soil build up, making inputs such as artificial fertilizer and pesticides necessary. Erosion of the soil also becomes a problem if only one kind of plant is ever grown. On an organic farm where many types of crops are rotated, or grown at different times in the same spot, the soil retains its nutrients over time, pest and weed populations stay manageable, and the soil structure is improved, making erosion less of a problem. This is because different types of plants have different types of nutritional needs, attract different types of pests and weeds, and have different root lengths. For example, corn draws nitrogen out of the soil as it grows, whereas pea plants add nitrogen to the soil through bacteria that live on their roots. Planting corn one season, and peas the next will keep the soil from losing nitrogen. Corn also attracts pests such as corn borers if grown in the same field year after year. The reproductive cycle of these corn-loving pests can be broken by alternating between corn and crops that the pests don’t like, such as peas, tomatoes, and broccoli. Finally, since corn has shallow roots, it is important to grow other crops with deeper roots in the same soil to keep the soil aerated. Soils that are well aerated, and that aren’t left fallow, or empty, in the winter, as often happens in monoculture systems, are able to retain more moisture, thus preventing runoff and erosion, and resisting drought.

Since polyculture prevents diseases and pest infestation of crops, enriches soils, and reduces the risk of losing an entire year’s worth of produce, it makes good economic sense to grow more than one type of crop on a single farm. Rather than putting all their eggs in one basket, so to speak, organic farmers like to spread out their financial risk at the beginning of the growing season by investing their time and money in a diverse collection of crops. Since small farmers tend to sell directly to consumers through CSAs and farmers’ markets, having a variety of
vegetables and fruits to offer to customers throughout the season also ensures that farmers will have a steady income.

**PROCEDURE**

1. Get permission from farmers to investigate their farm crops before proceeding.

2. Ask students, “Why do we have laws?” (Hint: Imagine if there were no stoplights at busy intersections, no lane stripes, no crosswalks, etc. on the streets where cars go. The result would be very hazardous on our health.) Once students have contributed their ideas, say, “In nature there are also laws that govern the healthy systems of our planet.” Ask students, “Can you name any laws of nature?” (Hint: students may need some prompts here like the seasons, night and day, water cycle, decomposition, etc.) Discuss how diversity is found naturally in nature drawing on different environments, such as deserts and forests, as examples.

3. Ask students to define diversity. How does diversity apply to human communities? To natural environments? To agricultural systems?

4. On the farm, investigate each farm for diversity:
   - Establish a time and a signal for bringing students back together before they set out on their investigation. Students get about 25 minutes for this exercise.
   - Send students in teams of 2 or 3 to record what is in each farmer’s field. Students sketch a picture of the farm crops where they are assigned. The sketch needs to include three major points: 1) total number of rows in each farm, 2) the variety of plants on the farm, (Students can record this by drawing a picture of representative leaves from each different kind of plant or by taking a careful leaf rubbing from each type of crop) and 3) the evidence of animals (including insects) in the field (hint: holes in the leaves,
LESSON 17: Can Agriculture and Nature Work Together?

• Cocoons, unnaturally curled leaves by insects, leaf or stem galls, etc. Students can use their bug boxes to get a closer look at the insects.

5. Call students back together to share their information. Ask students, “How does the farmer’s crops reflect nature’s diversity?” (Hint: If students have trouble with this question, show them a picture of different natural environments.)

6. Then ask, “How are the Sunol AgPark farms different from large-scale industrial farms?” (Hint: If students have trouble with this question, show them a picture of a “factory farm” where there is nothing but acres and acres of one kind of crop like wheat or corn.)

7. Then: “What would be the risks of planting only one crop on a massive scale?” (Hint: If farms grow only one crop and a pest comes through, they can lose everything. If farmers diversify their crops and a pest comes through, they won’t lose everything since pests tend to be species specific, affecting one type of crop.)

CLOSING DISCUSSION/EVALUATION

• Ask students to share their observations about the different farmers they visited. What did they notice?

• If you were a farmer, how would you let nature inform your practices?” (Hint: use compost on the fields to recycle the nutrients once captured in the living plants and now captured in dead plants, allow the seasons — day length, rainfall — to determine when is a good time to plant seeds and to harvest crops, etc.)

• Since California has a drought summer, what must the farmers do for their plants? (Hint: irrigate or provide water for plants)

• How can you work with nature to take care of your own neighborhoods, schoolyards, and communities?

• How can you help create a more diversified landscape and world?

MODIFICATIONS/EXTENSIONS

• On the school grounds, make a shadow stick and follow it all year. It can tell you directions (N, S, E, & W), give information about the seasons, day length, etc.

• Make a school garden and compost pile for dead plants and leftover foods

• Plant some seeds in the hedgerow or in a farmer’s field if it is the right season.
LESSON 18: Watersheds – Not Just a Drop in the Bucket!

BIG IDEA
Every watershed begins with the incomparable water molecule! A watershed is the area of land that drains into a common water body, usually a lake or river. Sunol Valley is in the Alameda Creek Watershed. Alameda Creek drains 700 square miles, from Mt. Diablo in the north to Mt. Hamilton in the south. The watershed sustains a rich assemblage of wildlife species, and provides water for agriculture and ranching, recreation, and drinking. Over three million people rely on the Alameda Creek Watershed for their water. Maintaining high water quality and sufficient fresh water supply for competing demands is a mounting challenge.

BACKGROUND
All living things depend on water to survive. Humans and many other plant and animal species depend on fresh water, which comes from rain and snow, and travels by gravity to rivers, lakes, groundwater, and human-made reservoirs. Of the Earth’s water, 97.5% is salt water and 2.5% is fresh water, most of which is trapped in ice or snow, which leaves less than 1% of all water for human, plant and animal use. As Earth’s human population grows, demand for clean drinking water increases. Insufficient wastewater treatment and pollution of watersheds negatively impacts water quality, causing health and environmental problems for people and species. Water managers, such as the San Francisco Public Utilities Commission, work to ensure a safe and reliable fresh drinking water supply, while protecting the environment which provides our drinking water, and protecting the species with which we share our watersheds.

OBJECTIVES
Students will:
• describe a watershed
• refer to Alameda Creek watershed boundary features
• calculate the volume of water it takes to produce common items
• calculate their daily water use

MATERIALS
• Twelve 18” wooden stakes
• Mallet
• Colorful yarn
• Irrigation flags
• Four measuring tapes
• Clipboards & pencils
• Student worksheets & Instructor worksheet
• One calculator per team

TIME REQUIRED
50 minutes

GROUP SIZE
Half of the class, students in two teams

ADAPTED FROM
Original
Humans have altered watersheds to bring water from where it occurs naturally, to the places where humans live and work. Human societies typically developed around fresh water bodies. Today, engineering has made it possible for people to live hundreds of miles from their drinking water source.

Agriculture uses approximately 70 per cent of the world’s fresh water, and is an important part of the global and local water picture. On average, approximately eight gallons of water are needed to grow a tomato, 616 gallons of water are needed to produce a hamburger, and 1,800 gallons are used to make a pair of jeans. Each American uses about 100 gallons of water each day (drinking about a gallon) and about 1,700 gallons indirectly through eating, working, and other activities.

An extensive network of dams, pumps, and pipes have helped make California the fifth largest economy in the world, with irrigated agriculture being the state’s number one income generator. Human-constructed water systems, land development, unsustainable agriculture, and other activities have led to the degradation of aquatic habitats and imperiled many fish and amphibian species that depend on freshwater systems. An important sustainability challenge in this century is how to provide for both human and ecosystem fresh water needs.

**PROCEDURE**

Pre-lesson set up: Make two sample cubic feet placed at least three feet apart, using 18” stakes, pounded 6” into the ground. Place the sample cubic feet in an open area, where the students can work out in two directions from the starting area, and where the ground is soft enough to place the flags. Pound the four stakes 12” apart to make a cubic foot. Wrap the cubic foot in colorful yarn to visually display the volume occupied by one cubic foot.

1. Ask students to observe the Sunol Valley watershed by pointing out its boundaries at the crests of the hills. Draw attention to the vegetation differences. Ask students if they know how water affects
LESSON 18: Watersheds- Not Just a Drop in the Bucket

the watershed (Hint: erosion, etc.). Ask if they know what changes humans have made to the watershed (Hint: dams, plumbing, bulldozing, mining, etc). Once you are satisfied that the students see what makes up a watershed, move on.

2. On the farm, find some water on leaves (or in a puddle, etc.) and gently pick it up with your thumb and forefinger. Slowly move your forefinger away from your thumb. Demonstrate how the water clings to your fingers. Have students duplicate what you did. Explain how this “hanging together” is called cohesion. In nature it can be seen as surface tension which allows water striders (insects) to walk on water.

3. Ask if anyone knows the chemical formula of water; do they know that “H2O” means two hydrogen atoms and one oxygen atom bonded together to make one molecule?

(Molecules are a collection of atoms [simple = same kind of atom, compound = more than one kind of atom]. The water molecule looks very much like a Mickey Mouse hat on someone’s head, with the hydrogen molecules at the same angle as the ears on the Mickey Mouse hat. Hydrogen atoms from one water molecule are attracted to the oxygen atoms of another water molecule.) Water molecules are so good at cohesion (community building) that they can make long “ropes” of water that can dissolve almost anything and carry it along. This cohesion comes from the attraction capabilities of the hydrogen atoms on the water molecules, allowing it to move in the water cycle and from freshwater reservoirs through pipes to our faucets and farms.

For this exercise the students calculate the number of cubic feet (volume) of water it takes to produce a particular item from the list below, then use measuring tapes to place the correct number of irrigation flags into the ground 12” apart to show the results of their calculations.

4. Split the students up into two teams and direct them to their respective starting locations (the two sample cubic feet staked out). Teams will work in opposite directions. Their job will be to calculate (using calculators) the number of cubic feet of water it takes to make a particular item. Explain that they will display their answers by measuring every 12 inches and placing the appropriate number of irrigation flags in the ground to make a cubic foot. Instruct students to round their answers; e.g., 13.3 cu ft = 13 cu ft. The team who correctly finishes the task first wins a point.

5. Distribute worksheets to each student group, so that each student pair has a copy.

6. Read aloud the calculation questions to the students, with the students following along.
Do the first calculation with the students, and demonstrate by placing the correct number of irrigation flags. To expedite the lesson, students can leave the irrigation flags out for the next calculations; adding to irrigation flags or taking them away.

7. Run through the calculations, asking one student per team to keep track of their team’s score.

Thought piece: One acre-foot provides enough household water to two families of four for a year. How do you think household use compare to “embedded” water use, or water that is used to make the things we consume? Why is it important to know cubic feet conversions? (Hint: because it gives a sense of the volume of water that we use, and helps and that’s the way the water managers measure water supply in reservoirs, and also demand by customers.)

8. Ask students to reflect for a moment. Where was the water that you used this morning yesterday? The faucet is only the “current” location or stop on the water’s journey. What could you do to use less water in your daily routine? In their teams, have students draw or write their thoughts on how a water molecule travels from the largest water reservoir in California (Sierra snow pack), to their faucet, and back again. Remind students that water molecules had to stick together through clouds, watersheds, rivers, reservoirs, hundreds of miles of pipes, and treatment plants to get to them. Their faucet (with the aid of gravity and pumps) helped pull on the “rope” of water, creating a tiny force that reacts all the way up the line. Ask students to reflect on their own use of water and how they have seen water used. How can they or others protect the quality of our water supply?

CLOSING DISCUSSION/EVALUATION

- Describe the boundaries of the Sunol Valley (Alameda Creek) watershed.
- How does the water we use affect the Alameda Creek or Tuolumne River Watershed?
- How can you use water more sustainably?

MODIFICATIONS/EXTENSIONS

- If done in the classroom, students can illustrate their calculations by shading in ¼” graph paper (each ¼” square represents a cubic foot).
- Make a model of a water molecule. Hand out toothpicks (one per student) and gumdrops (1 red and 2 yellow). Have students look at a Mickey Mouse hat. The water molecule looks very much like a Mickey Mouse hat on someone’s head, with the hydrogen molecules at the same angle as the ears on the Mickey Mouse hat. Break the toothpick into two pieces. Stick yellow gum drops on each end of the two toothpicks, then put the two empty ends into a red gumdrop at the angle of the Mickey Mouse ears. Ask student teams to see if they can put the water
molecule models together so that there is no space around them. Hint: They can’t. Water molecules are called “polar” molecules, because they are positively charged at the hydrogen ends and negatively charged toward the oxygen atom. Because opposite charges attract, hydrogen within one water molecule will orient toward the oxygen in another. This is why we don’t find pure water in nature. Water is always carrying a “buddy” with it in solution! Have students point to where something could be carried by their water molecule. This cohesion ability allows for water to be absorbed by roots and moved through plant stems and leaves and out the leaves to keep the leaves from being sunburned, as well as releasing the water back into the atmosphere...just like a rope. Students can eat their molecules after they are used for demonstration. Collect the toothpicks for the garbage. You can also use clay, and ask students to roll clay into small grape sized balls (red oxygen atoms are larger than yellow hydrogen atoms).

- Recombine gumdrops into other molecules (2 yellow gumdrops [hydrogen atoms] = one hydrogen molecule; 2 yellow gumdrops and 2 red gumdrops = hydrogen peroxide molecule; 2 red gumdrops = one oxygen molecule). These are different chemical formulas for a molecule. Scientists use these formulas to indicate a certain number of atoms which make different molecules, which are the building blocks of our world. Slowly moving molecules make up solid objects, faster moving molecules make up liquids and quickly moving molecules make up gas or vapor. Water is unique in that it is naturally abundant in all states: solid, liquid and vapor.

• Build solar water still:
  1. At the beginning of the day dig a glass bowl in the ground
  2. Place a large amount of grass stems and leaves inside the bowl
  3. Put a glass in the middle of the bowl
  4. Put some plastic wrap over the top of the bowl at ground level
  5. Put rocks or soil all the way around the top of the plastic wrap over the bowl so that there is no place for anything to escape from the bowl (but leave some slack in the plastic wrap)
  6. Place a small light colored rock in the center of the plastic wrap over the glass in the bowl so that the plastic wrap goes into a slight cone or “v” over the glass
  7. At the end of the day check the glass to see if any water came out of the grass, condensed on the plastic and rolled into the cup
  8. You just made a model of a mini water cycle showing how water evaporates out of vegetation, condenses in clouds and comes back to earth; also the bowl acts as a mini watershed with the plastic wrap on top to trap moisture and circulate it.
How much Water is in My Lunch?

My name ___________________________ Today’s date ___________________________

| 1 gallon = .134 cubic feet                  |
| 1 cubic foot = 7.5 gallons                  |
| 1 acre foot = 43,560 cubic feet             |

1. You decide to have a hamburger for lunch. It takes 616 gallons of water to make one hamburger patty. How much water in cubic feet did it take to make your hamburger patty?

2. It takes 20 gallons of water to make a hamburger bun. How much water in cubic feet did it take to make your hamburger bun?

3. You ask for cheese on your hamburger. A slice of cheese takes about 56 gallons of water to make. How much water in cubic feet did it take to make your slice of cheese?

4. You have a tomato on your burger for lunch. It takes 8 gallons to raise a tomato. How much water in cubic feet did it take to grow your tomato?
5. You drink a soda with your lunch. It takes 10 gallons to make one 16-ounce soda. How much water in cubic feet did it take to make your glass of soda?

6. For dessert, you have a cookie with your lunch. The cookie took 55 gallons to make. How much water in cubic feet did it take to make your cookie?

7. Add up the total amount of water in cubic feet that you used just at lunch

8. If everyone in your class used the same amount of water at lunch as you did, how much total water was used?

9. What percentage of an acre-foot of water did you and your classmates use at lunch?
Notes to Instructors

- Instructors should meet the school groups in the Sunol Water Temple parking lot. Try to be there early so that you are waiting for kids, not the kids waiting for you.
- There’s a difference between teaching kids and reaching kids. Students want to know that you care about them before they care about what you have to teach.
- Take care of students’ body functions right away … water and de-water. Students will be instructed by their teachers before they leave school that they are to bring their own water bottles and they will also have their lunches with them. Ask the teacher to keep the lunches until lunchtime, leaving the kids hands free for your activities.
- Talk to the teacher introduce yourself to the teacher and all the chaperones and ask about what you should be prepared for … kids who work well together, kids with special needs, ELL, cliques, troubled kids, etc.
- Hopefully the students will have nametags on … do your best to call the students by name! If there is time while students trade off using the rest room, you can get to know the other students who are waiting with you; play a “name game” or “ice breaker” as you wait for all student to assemble. (It’s good for students to use hand sanitizer after restroom visits, as chemical toilets don’t have sinks & hand soap.)
- Briefly introduce yourself to students and tell what your interest is in the Sunol AgPark (why you are here). Wear a nametag (first or “nick name” is enough) to increase rapport with the kids. Be friendly, have eye contact and interest in the students and their experiences.
- Big welcome to this unique place in history. (Ask questions to engage kids)
- What makes the Sunol AgPark so special? (Overview – urban edge, organic, sustainable agriculture, etc.)
- Say “We’re all part of the bigger, global picture - We are all one.”
- “Today, you will leave a piece of yourself here as a living partner of the Sunol AgPark.”
- Remind students that they are still in school today. Only today, their classroom has a ceiling that is the sky; walls are made of living trees; and a floor of real earth.
- Ask: “What do you expect to find out here today?” If they mention their fears, reassure them that there is little to worry about … (Maslow’s hierarchy of needs).
- Hint: Assure students no tigers, bears, (last California Grizzly was shot in the 1920s), etc. Address each fear that they raise individually. Remind students to stay with the group for all the fun that will follow.
- Agree on safety issues – create a signal that the instructor can use to assemble the group after an activity. Example: Your raised hand with thumb touching your two middle fingers (like the muzzle of a fox), with pointer and little finger extended into the air like ears on a fox head … As soon as students see your hand extended as fox head (hand signal) they raise their hand in the same gesture and become quiet. Once they raise their fox head, they stop talking; “hand up, mouth shut… quiet as a fox!” (You can emphasize by putting your pointer finger from your other hand up against your lips to “shush” the group.)
Appendix

Notes to Instructors

- You can practice the technique by having everyone talking and then, put your hand up to stop talking – it makes for a fun game.
- Agree on deportment issues while at Sunol AgPark – talk about how you are going to treat each other; like: allow one speaker at a time, stay with the group, etc.
- Tell them how much time they have with you and what you all are going to try to accomplish in that amount of time. Instructors must keep an eye on the time; you only have 50 minutes per lesson.
- It’s always great to have something students can eat from the farm. Food is the universal tranquilizer.
Sunol AgPark Farm Journal
A million farm stories are out there. Start writing yours!

This journal belongs to ________________________________

I visited the Sunol AgPark on ________________________________

Memorable people that I met: ____________________________________

Memorable food that I ate: ____________________________________

Memorable moments that I experienced: ________________________________

Things that I saw: ____________________________________

Things that I did: ____________________________________

Things I would like to do again: ________________________________

Things I wouldn’t do again: ________________________________

If they made a movie about our farm experience, it would be called ________________________________

Things that made me laugh: ____________________________________

Things that made me think: ____________________________________
Watershed Model Instructions

MATERIALS

For the entire group:
- 10 lbs of sand (fine sand is best - try using Netafim farm filter sand)
- Food dye
- Water
- Duct tape
- Large bucket (2-5 gallon)
- Nail
- Aluminum foil (optional)

For each student team – 2 to 4 students per team:
- Plastic blanket box (~20”x15”x3”)
- Plastic one gallon milk or water jug
- Two foot length of ¼” drip line tubing
- Adjustable drip emitter
- Connector fitting for drip line
- Clothes pin
- Sponge
- Block of wood (2”x4”x6”)
- Sturdy cardboard box or pot with eared handles
- Small wooden pieces, PVC, straws, sticks, trees, other objects to put in watershed

Advance preparation:
1. Fill the large bucket ¼ full with water. Place it in a convenient location for handwashing.

2. Pour 13 cups of sand into the pan. Add water slowly to the tub until the sand is moistened and sticks together.

3. Position a block of wood under one end of the tub, for maximum slope. Shake the lower end of the tub to settle the contents into a uniform slant.

4. Install the drip emitter on the end of the drip tubing. Fit the coupler fitting into the other end of the spaghetti tubing. Poke a hole with a nail into the lower rim of the jug and insert the coupler fitting. Tape around the jug-coupling connection with duct tape to prevent leaks.

5. Fill the jugs with water.

6. Place the jug on the box or pot to raise it above the watershed model. Position the drip emitter over the pan by clamping the tubing onto the pan’s rim with a clothes pin.
Have students try different scenarios to alter the path of the river on the land. Some ideas:

- Make a channel with aluminum foil.
- Place debris in the path of the river (i.e. pebbles, twigs, cotton).
- Make a dam from aluminum foil and scoop out a hollow for a reservoir.
- Try to change the creek’s location by digging it a new channel.
- Add “culverts” using the plumbing parts.
- Make “trees” with twigs and cotton balls. Try lining the sides of the channel to see if they keep the creek banks from eroding.
- If there is time, have kids apply a few drops of food dye to the sand, refill the water jug, and do the activity again to mimic what happens when fertilizers are applied to farmland in a watershed.
- Encourage students to use their imagination with the available materials to create different scenarios around the river.
<table>
<thead>
<tr>
<th>Lesson Number</th>
<th>Lesson Title</th>
<th>English Lang-Arts</th>
<th>Health Education</th>
<th>History-Social Sci.</th>
<th>Science</th>
<th>Math</th>
<th>Visual Arts</th>
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<td>Sunol Water Temple Works of Art</td>
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<td>Plumbing, Can’t Live With It, Can’t Live Without It!</td>
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<td>You Are What You Eat</td>
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<td>Watersheds - Not Just a Drop in the Bucket</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking. 1.2 Combine short, related sentences with appositives, participial phrases, adjectives, adverbs, and prepositional phrases. 1.3 Identify and use regular and irregular verbs, adverbs, prepositions, and coordinating conjunctions in writing and speaking. Listening &amp; Speaking - 2.1 Make narrative presentations.</td>
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<td>Artistic Perception - 1.5 Describe and analyze the elements of art, emphasizing form as they are used in works of art and found in the environment. Historical and Cultural Context - 3.1 Describe how art plays a role in reflecting life. 3.2. Identify and discuss the content of works of art in the past and present focusing on the different cultures that have contributed to California's history and art heritage. Aesthetic Valuing - 4.2 Identify and describe how a person's own cultural context influences individual responses to works of art. 4.3. Discuss how the subject and the selection of media relate to the meaning or purpose of a work of art. 4.4 Identify and describe how various cultures define art differently.</td>
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<td>Creative Expression - 2.6 Use perspective in an original work of art to create a real or imaginary scene. Aesthetic Valuing - 4.1 Identify how selected principles of design are used in a work of art and how they effect personal responses to and evaluation of the work of art. 4.2 Compare the different purposes of a specific culture for creating art.</td>
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<td>Creative Expression - 2.1 Use various observational drawing skills to depict a variety of subject matter. Historical &amp; Cultural Context - 3.1 Research and discuss the role of the visual arts in selected periods of history, using a variety of resources. Aesthetic Valuing - 4.1 Construct and describe plausible interpretations of what they perceive in works of art. 4.2. Identify and describe ways in which their culture is being reflected in current works of art.</td>
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### Detailed California State Educational Standards by Lesson for Grades 4-8

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<tr>
<td>2</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking 1.2 Combine short, related sentences with appositives, participial phrases, adjectives, adverbs, and prepositional phrases. Listening &amp; Speaking - 1.1 Ask thoughtful questions and respond to relevant questions with appropriate elaboration in oral settings. 1.2 Summarize major ideas and supporting evidence presented in spoken messages and formal presentations. 1.6 Use traditional structures for conveying information (e.g., cause and effect, similarity and difference, posing and answering a question). 1.8 Use details, examples, anecdotes, or experiences to explain or clarify information.</td>
<td></td>
<td>Geographic Features of CA - 4.1.4 Identify the locations of the Pacific Ocean, rivers, valleys, and mountain passes and explain their effects on the growth of towns. 4.2.2 Identify the early land and sea routes to early European settlements in California with a focus on the exploration of the North Pacific. 4.2.3 Describe the Spanish exploration and colonization of California, including the relationships among soldiers, missionaries, and Indians. 4.2.6 Discuss the role of the Franciscans in changing the economy of CA from a hunter-gather economy to an agricultural economy.</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker’s verbal and nonverbal messages, purposes and perspectives. 1.3 Make inferences or draw conclusions based on an oral report.</td>
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<td>Pre-Columbian Settlements - 5.1.1 Describe how geography and climate influenced the way various nations lived and adjusted to the natural environment, including locations of villages, the distinct structures that they built, and how they obtained food, clothing, tools, and utensils. 5.1.2 Describe their varied customs and folklore traditions. 5.2.2 Explain the aim, obstacles, and accomplishments of the explorers, sponsors, and leaders of key European expeditions and the reasons Europeans chose to explore and colonize the world.</td>
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<td>Written/Oral Language - 1.1 Use simple, compound, and compound-complex sentences; use effective coordination and subordination of ideas to express complete thoughts.</td>
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<td>3</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking. 1.2 Combine short, related sentences with adjectives, adverbs, and prepositional phrases. Listening &amp; Speaking - 1.3 Ask thoughtful questions and respond to relevant questions with appropriate elaboration in oral settings. 1.2 Summarize major ideas and supporting evidence presented in spoken messages and formal presentations.</td>
<td>California Life - 4.3.3 Analyze the effects of the Gold Rush on settlements, daily life, politics, and the physical environment. 4.4.1 Understand the story and lasting influence of the Pony Express, Overland Mail Service, Western Union, and the building of the transcontinental railroad, including the contributions of Chinese workers to its construction. 4.4.6 Describe the development and locations of new industries since the 19th century. 4.4.9 Analyze the impact of 20th century Californians on the nation's artistic development, including the rise of the entertainment industry.</td>
<td>Visual Literacy - 5.3 Construct diagrams, maps, graphs, timelines, and illustrations to communicate ideas or tell a story about a historical event.</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes and perspectives. 1.3 Make inferences or draw conclusions based on an oral report. 1.6 Engage the audience with appropriate verbal cues, facial expressions, and gestures.</td>
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<td>Earth Sciences - 3.e Students know the origin of the water used by their local communities.</td>
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<td>Written/Oral Language - 1.1 Use simple, compound, and compound-complex sentences; use effective coordination and subordination of ideas to express complete thoughts.</td>
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<td>Resources - 6.e Students know the natural origin of the materials used to make resources.</td>
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<td>Transformation of Economy - 8.12.1 Trace patterns of agricultural and industrial development as they relate to climate, use of natural resources, markets, and trade and locate such developments on a map.</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking. Listening &amp; Speaking - 1.8 Use details, examples, anecdotes, or experiences to explain or clarify information. 2.1 Make narrative presentations.</td>
<td>Nutrition &amp; Physical Activity 1.1N Identify and define key nutrients and their functions.</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes and perspectives. 1.5 Clarify and support spoken ideas with evidence and examples.</td>
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<td>Nutrition &amp; Physical Activity 1.2N Identify nutrients and their relationships to health.</td>
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<td>Listening and Speaking - 1.1 Ask thoughtful questions and respond to relevant questions with appropriate elaboration in oral settings</td>
<td>Geographic Features of CA - 4.1.4 Identify the locations of the Pacific Ocean, rivers, valleys, and mountain passes and explain their effects on the growth of towns</td>
<td>Earth Sciences - 5.c Students know moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places</td>
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<td>Listening and Speaking - 1.5 Clarify and support spoken ideas with evidence and examples</td>
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<td>Earth Sciences - 3.c Water vapor in the air moves from one place to another and can form fog, or clouds, which are tiny droplets of water or ice, and can fall to Earth...3.d The amount of freshwater is limited...3.e Students know the origin of water used by their local communities</td>
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<td>Written/Oral Language - 1.1 Use simple, compound, and compound-complex sentences; use effective coordination and subordination of ideas to express complete thoughts</td>
<td>Listening and Speaking - 1.3 Restate and execute multiple-step oral instructions and directions</td>
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<td>Earth Sciences - 2.a Students know water running downhill is the dominant process in shaping the landscape, including California’s landscape</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking. Listening and Speaking - 1.7 Emphasize points in ways that help the listener or viewer to follow important ideas or concepts. 1.8 Use details, examples, anecdotes, or experiences to explain or clarify information. 2.1 Make narrative presentations.</td>
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<td>Written/Oral Language - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes, and perspectives. Listening and Speaking - 1.5 Clarify and support spoken ideas with evidence and examples.</td>
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<td>Nutrition and Physical Activity - 2.2 N Recognize that family and cultural influences affect food choices. 3.2 N Interpret information provided on food labels. 8.1 N Encourage and promote healthy eating and increased physical activity opportunities at school and the community.</td>
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<td>5</td>
<td>Listening and Speaking - 1.5 Arrange supporting details, reasons, descriptions and examples effectively and persuasively in relation to the audience.</td>
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<td>Earth Sciences - 5.5 Students know the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit.</td>
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## Detailed California State Educational Standards by Lesson for Grades 4-8

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<td>7</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking. 1.2 Combine short, related sentences with appositive, participial phrases, adjectives, adverbs, and prepositional phrases. Listening &amp; Speaking - 1.1 Ask thoughtful questions and respond to relevant questions with appropriate elaboration in oral settings. 1.2 Summarize major ideas and supporting evidence presented in spoken messages and formal presentations.</td>
<td>Nutrition &amp; Physical Activity - 2.1.N Identify internal and external influences that affect food choices. 3.1.N Identify resources for valid information about safe and healthy foods.</td>
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<td>Listening and Speaking - 1.1 Ask questions that seek information not already discussed. 1.2 Interpret a speaker’s verbal and nonverbal messages, purposes and perspectives.</td>
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<td>Nutrition and Physical Activity - 2.2.N Recognize that family and cultural influences affect food choices. Personal &amp; Community Health - 8.1.N Encourage others to minimize pollution in the environment.</td>
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<td>Listening &amp; Speaking - 1.2 Summarize major ideas and supporting evidence presented in spoken messages and formal presentations</td>
<td>Nutrition &amp; Physical Activity - 1.1.N Identify and define key nutrients and their functions 1.3.N Describe the relationship between food intake, physical activity, and good health 2.1.N Identify internal and external influences that affect food choices 5.1.N Describe how to use a decision-making process to select nutritious foods and beverages 7.1.N Practice how to take personal responsibility for eating healthy foods 7.3.N Identify ways to establish and maintain healthy eating practices consistent with current research-based guidelines for a nutritionally based diet</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes and perspectives</td>
<td>Nutrition &amp; Physical Activity - 1.5.N Describe safe food handling and preparation practices 1.6.N Differentiate between more nutritious and less nutritious beverages and snacks 7.1.N Identify ways to choose healthy snacks based on current research-based guidelines 7.2.N Demonstrate how to prepare a healthy meal or snack using sanitary food preparation and storage practices</td>
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Fitness Concepts - 4.4 Identify healthful choices for meals and snacks that help improve physical performance
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<td>Fitness Concepts - 3.2 Demonstrate the correct body position for pushing and pulling large objects Aerobic Capacity - 3.7 Sustain continuous movement for an increasing period of time while participating in moderate to vigorous physical activity</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker’s verbal and nonverbal messages, purposes and perspectives</td>
<td>Nutrition &amp; Physical Activity - 8.1.N Encourage and promote healthy eating and increasing physical activity opportunities at school and in the community</td>
<td>Muscular Strength/Endurance - 3.7 Sustain continuous movement for an increasing period of time while participating in moderate physical activities</td>
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- **Mathematical Reasoning - 2.1 Use estimation to verify the reasonableness of calculated results**
- **3.3 Develop generalizations of the results obtained and apply them in other circumstances**
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<td>Life Sciences - 2.a Students know plants are the primary source of matter and energy entering most food chains</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking</td>
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<td>Life Sciences - 2.e Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals. Earth Sciences - 5.b Students know natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces. Investigation and Experimentation - 6.c Formulate and justify predictions based on cause-and-effect relationships</td>
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<td>Listening and Speaking - 1.5 Clarify and support spoken ideas with evidence and examples</td>
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<td>Investigation and Experimentation - 6.a Classify objects in accordance with appropriate criteria</td>
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<td>Listening &amp; Speaking - 1.2</td>
<td>Geographic Features of CA - 4.1.3</td>
<td>Earth Sciences - 5.c Students know moving water erodes landforms, reshaping land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places.</td>
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<td>Listening and Speaking - 1.2</td>
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<td>Earth Sciences - 3.d Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water. Students know the origin of the water used by their local communities.</td>
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<td>Written/Oral Language - 1.1</td>
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<td>Earth Science - 2.a Students know water running downhill is the dominant process in shaping the landscape, including CA's landscape. Earth Science - 2.b Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.</td>
<td>Investigation &amp; Experimentation - 7.f Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a small-scale map.</td>
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<td>Personal and Community Health - 8.3.P Demonstrate ways to accept responsibility for conserving natural resources.</td>
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<td>Listening &amp; Speaking - 1.2 Summarize and paraphrase important messages and information from spoken and written sources using appropriate language and voice inflections, and present ideas, information, and opinions clearly and coherently using correct grammar, punctuation, and capitalization.</td>
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<td>Environmental Impact - 5.a Students know major issues associated with the impact of human activities on the environment.</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes and perspectives.</td>
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<td>16</td>
<td>Earth Science - 5.a Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.</td>
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<td>Written/Oral Language - 1.1 Use euphonic, conversational, and figurative language.</td>
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<td>Earth Science - 2.a Students know water running downhill is the dominant process in shaping the landscape, including CA’s landscape.</td>
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<td>Investigation &amp; Experimentation - 7.h Identify changes in natural phenomena over time without manipulating the phenomena.</td>
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<td>Earth Science - 4.a Students know that Earth processes today are similar to those that occurred in the past and slow geographic processes have large cumulative effects over long periods of time.</td>
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<td>Personal and Community Health - 8.3.P Demonstrate ways to accept responsibility for conserving natural resources.</td>
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<td>Earth Science - 4.c Students know that the rock cycle includes the formation of new sediment and rocks, and that rocks are often found in layers with the oldest generally on the bottom.</td>
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<td>Personal and Community Health - 8.3.P</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking</td>
<td>Geographic Features of CA - 4.1.4 Identify the locations of the Pacific Ocean, rivers, valleys, and mountain passes and explain their effects on the growth of towns (This lesson focuses on the growth of farms)</td>
<td>Investigation and Experimentation - 6.c Formulate and justify predictions based on cause-and-effect relationships</td>
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<td>Listening and Speaking - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes and perspectives</td>
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<td>Earth Sciences - 3b Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water. 3c Students know water vapor in the air moves from one place to another and can form fog or clouds which are tiny droplets of water or ice, and can fall to Earth as rain, sleet, or snow. 3e Students know the origin of the water used by their local communities. 4.a Students know uneven heating of Earth causes air movements (convection currents). 4.b Students know the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.</td>
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<td>Written/Oral Language - 1.1 Use simple, compound, and compound-complex sentences; use effective coordination and subordination of ideas to express complete thoughts</td>
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<td>Physical Sciences - 3a Students know energy can be transferred from one place to another by heat flow or by waves, including water... 4.a Students know the sun is the major source of energy for phenomena on Earth's surface; it powers wind, ocean currents, and the water cycle. 4.b Students know differences in pressure, heat, air movement, and humidity result in changes of weather.</td>
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<td>Written/Oral Language - 1.1 Use simple and compound sentences in writing and speaking</td>
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<td>Applications - 5.3 Construct diagrams, maps, graphs or illustrations to communicate ideas or tell a story about a historical event</td>
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<td>Listening and Speaking - 1.5 Clarify and support spoken ideas with evidence and examples</td>
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<td>Evolution - 5.3.1 Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms</td>
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<td>18</td>
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<td>Written/oral Language - 1.1 Use simple and compound sentences in writing and speaking</td>
<td>Nutrition &amp; Physical Activity 1.1N Identify and define key nutrients and their functions</td>
<td>Earth Sciences - 5.c Students know moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places</td>
<td>Number Sense - 1.2 Order and compare whole numbers and decimals to two decimal places 2.2 Round two place decimals to the nearest whole number and judge the reasonableness of the rounded answer 3.4 Solve problems involving division of multi-digit numbers by one-digit numbers Measurement and Geography - 1.1 Measure the area of rectangular shapes by using appropriate units, such as square meter Mathematical Reasoning - 3.3 Develop generalizations of the results obtained and apply them in other circumstances</td>
<td>Algebra and Functions - 1.1 Use information taken from a graph or equation to answer questions about a problem situation Mathematical Reasoning - 3.3 Develop generalizations of the results obtained and apply them in other circumstances</td>
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<td>Written/oral Language - 1.2 Interpret a speaker's verbal and nonverbal messages, purposes, and perspectives</td>
<td>Listening and Speaking - 1.5 Clarify and support spoken ideas with evidence and examples</td>
<td>Earth Sciences - 3.a Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface 3.d Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water</td>
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<td>Written/oral Language - 1.1 Use simple, compound, and compound-complex sentences; use effective coordination and subordination of ideas to express complete thoughts</td>
<td>Nutrition &amp; Physical Activity 1.2N Identify nutrients and their relationships to health Personal and Community Health - 8.3.P Demonstrate ways to accept responsibility for conserving natural resources</td>
<td>Earth Science - 2.a Students know water running downhill is the dominant process in shaping the landscape, including California's landscape 2.b Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns</td>
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Appendix

Glossary

Introductory Tour of the Sunol AgPark

AgPark – Abbreviation for Agricultural Park. A collaborative, urban-edge farm on publicly owned land that integrates sustainable agriculture, natural resource stewardship, and public education, and that provides land access to multiple small-scale farmers.

Natural Resource Conservation – The care and protection or management of the Earth and all that resides on it and in it

Relief Map – A map with texture, raised areas, and color representing different heights of landforms such as hills and valleys.

SAGE – Sustainable Agriculture Education, a non-profit organization based in Berkeley, CA, whose goal is to develop urban edge agriculture and engage diverse regional populations with the sustainable agriculture movement.

Shaded Relief Map – A flat map that uses shading or colors to represent different heights of landforms such as hills and valleys.

Stewardship – Being morally responsible for the careful use of natural resources with respect to the principles or needs of a community or group of people.

Watershed – A land area where surface water from rain or melting snow and ice drains into a body of water such as a river, lake, river, lake, wetland, or ocean; also called a drainage basin.

Water Temple – A structure built to honor the liquid of life.

UNIT 1

Lesson 1: Sunol Water Temple Works of Art

Confluence – Two streams, creeks or rivers flowing together; a place where they join.

Commission – To grant certain powers or the authority to carry out a particular task or duty.

Earthquake – A shaking or trembling of the crust of the earth caused by breaking and shifting rock underneath the surface.

Watershed – A land area where surface water from rain or melting snow and ice drains into a body of water such as a river, lake, river, lake, wetland, or ocean; also called a drainage basin.

Water Temple – Structure built to honor the liquid of life.

Lesson 2: The First Groups of People in the Sunol Valley

Adobe – Clay and silt deposits on the earth often used in making bricks.

Dynamic – Relating to or tending toward change or productive activity.

Geology – The science dealing with the physical nature and history of the earth, including its structures and the development of its crust, composition of its interior, individual rock types, life found in fossils, etc.

Inhabitants – Local residents.

Muwekma-Ohlone Indians – Local “tribe” or group of the Ohlone Indians.

Pre-historic Ancestors – The people from whom a person or group of people descended before written history.
Appendix

Glossary

**Spanish Missions** – Religious facilities established in California between 1769 and 1823 by the Spanish Catholics of the Franciscan Order with the purpose of converting Native Americans to Catholicism and assimilating them into European culture. Native Americans were often coerced into joining and remaining at the missions.

**Spanish Rancheros** – The large tracts of land divided by the Spanish Government to the benefit of the more wealthy Spanish cattle owners 1700 to 1850.

**Vaqueros** – Spanish cowboys.

**Taunen-Ohlone** – Group of Ohlone Indians who lived where the Sunol Water Temple is currently located.

**Lesson 3: Recent Past, Present, and Future of the Sunol Valley**

**Alameda Creek Watershed** – The land that drains into the Alameda Creek, where the Sunol AgPark, Town of Niles, Sunol Regional Wilderness are located.

**Charades** – A game in which a word, phrase or story is acted out without talking for others to guess.

**Chronology** – The arranging of events and dates in order of occurrence.

**Hang Man** – A game in which parts of a stick figure are drawn for every letter that is guessed incorrectly in the pursuit of guessing the right word. If the total figure is drawn before the word is correctly guessed, the guesser loses the game.

**Heritage** – The evidence of the past, found in historical sites, buildings, and the natural environment, considered the inheritance of modern society.

**Natural Resources** – The natural wealth of an area, consisting of land, forests, minerals and water.

**Niles Canyon** – A canyon created by earthquakes and erosion by Alameda Creek, where the town of Niles is located in southeastern Alameda County.

**Pictionary** – A game where a word, phrase or story is drawn out for others to guess.

**SFPUC** – Acronym for “San Francisco Public Utility Commission,” the government agency that manages the water resources for San Francisco and environs, and that owns much of the Alameda Creek Watershed, including the property where the Sunol AgPark and Sunol Water Temple are located.

**Timeline** – A visual representation of the order of occurrence of events.

**Lesson 4: Nurturing a Sense of Place**

**Bioregion** – An area characterized by its flora (plant life), fauna (animal life), and environmental conditions; an ecological community.

**Guided Imagery** – To give instruction or direction to imagine the life or being of something other than what is being physically experienced at the time of instruction.

**Sound Map** – A map that one creates by locating different sounds relative to oneself.

**Lesson 5: Plumbing, can’t live with it, can’t live without it!**

**Alameda Creek Watershed** – The land that drains into the Alameda Creek, where the Sunol AgPark, Town of Niles, Sunol Regional Wilderness are located.

**Culvert** – A conduit, especially a drain or a pipe-like construction of stone, concrete or metal that provides a pathway or diversion for water
Deposition – The act of depositing, especially the laying down of matter by a natural process.
Erosion – The wearing away of rocks and other materials on the earth’s surface by the action of water, ice, or wind.
Hetch Hetchy Watershed System – The Tuolumne River system which has been dammed to provide water for the San Francisco Bay Area 167 miles away. Managed by the SFPUC.
PVC – A type of plastic used to make irrigation pipes.
Relief Map – A map with texture (raised areas) and color representing different heights of landforms such as hills and valleys.
Reservoir – A place where anything is collected, especially a natural or artificial lake or pond in which water is collected and stored for use.
Shaded Relief Map – A flat map that uses shading or colors to represent different heights of landforms such as hills and valleys.
Watershed – A land area where surface water from rain or melting snow and ice drains into a body of water such as a river, lake, river, lake, wetland, or ocean; also called a drainage basin.
Westerly Winds – The predominant wind pattern in California; winds that come from the west.

Lesson 6: Where in the World Did Our Crops Come From?
Foodshed – A new term for the area from which we get our food. Can be conceived locally, regionally, or globally.
Global solutions – Sustainable decisions that are good for the whole world.
Originate – To come from.

UNIT 2

Lesson 7: Farmers as Stewards of the Land
Aquatic ecosystem – An underwater system made up of a community of animals, plants, and bacteria interdependent on each other and on their physical environment.
Contamination – The addition of substances making a material harmful or impure, often the result of pollution.
Cultural knowledge – Knowledge that has been passed down from generation to generation within a particular culture.
Destabilized rural communities – Agrarian (farming) communities that have been made unstable, often by political, social, or economic changes.
Irrigation – The process of watering crops.
Mechanization – The replacement of manual labor with the use of machines.
New crop varieties – New types of plants, traditionally bred through crossing strains or artificially created through genetic modification.
Organic agriculture – Agricultural production system that prohibits the use of synthetic fertilizers, pesticides, and other chemicals, and relies instead on composting, healthy soil building, crop rotation, and biological pest control.
Pollution – The introduction of harmful substances into the air and the environment.
Sustainable agriculture – Any of a number of environmentally friendly farming methods that preserve an ecological balance by avoiding depletion of natural resources.
Synthetic pesticides and fertilizers – Man-made chemicals, designed to help protect and feed plants, which can negatively affect the environment and the people who come into contact with them.

Lesson 8: You Are What You Eat
Additive – A substance added directly to food during processing for preservation, coloring, or stabilization.
Carbon footprint – The amount of carbon dioxide released into the atmosphere as a result of a particular action or lifestyle.
Complex Carbohydrates – Complex carbohydrates are chains of three or more single sugar molecules linked together, and are found in foods like legumes, starchy vegetables like potatoes and corn, rice and grain products. These foods contain dietary fiber and many other nutrients.
Conventionally grown food – Food produced with chemical fertilizers to promote plant growth, insecticides to reduce pests and disease, and chemical herbicides to manage weeds. Pesticide residues often remain on and in the foods when they are eaten.
Dietary fiber – Edible plant fiber found in whole fruits, vegetables and grains. Although humans are unable to digest fiber, it maintains digestive tract health and is thus an important part of a healthy diet.
Environmental impact – Positive or negative effects of our actions on the environment.
“Green” economy – A monetary system that is designed to reduce environmental risks and result in improved human well-being and social equality.
Nutritious – Providing nourishment; healthful.
Strokes/Cardiovascular Diseases/Cancer – Examples of diseases that have been linked to lifestyle and diet.
Thrive – To grow or develop vigorously; to flourish.
Vitamins/Minerals/Nutrients – Different natural substances found in the food that we eat that keep us healthy and strong.

Lesson 9: Working on an Urban Edge Farm
Community Supported Agriculture (CSA) – A system in which growers and consumers share the up-front costs of a farming operation, as well as the risks and benefits of food production. In exchange for their support, the consumers receive a weekly share of the farm’s produce during the growing season.
Global Market – International trade and commerce.
Local ecosystem – A system made up of local communities of animals, plants, and bacteria interdependent on each other and on their physical environment.
Pest Population – A group of insects that are harmful towards agriculture.
Vagary – An unpredictable or erratic action, occurrence, course, or instance.

Lesson 10: Organic Food Production and the Economy of Food
Production Costs – The combined costs of raw material and labor incurred in producing goods.
Lesson 11: Insects R Us!

Co-evolution – The evolution of two or more species that interact closely with one another, with each species adapting to changes in the other.

Field Guide – Written and/or pictorial information of use in a natural setting to inform the reader about the environment and/or the natural objects in it.

Integrated Pest Management (IPM) – An ecological approach to controlling pest populations that seeks to limit or eliminates dependence on petroleum-based pesticides and herbicides.

Lesson 12: Growing Soil for Food

Compost – Plant matter that has been decomposed by worms, fungi, and bacteria, used for fertilizing and conditioning soil.

Clay – A natural substance with moldable properties composed of very fine, flat particles.

Duff or humus – Decayed plant material, often found on top of topsoil.

Fertilizers – Substances that enhance the growth production of plants; can be petroleum-based or organic.

Hormone – A substance formed in an organ or cells and carried by fluid to another organ or tissue where it has a specific effect such as growth; now often prepared synthetically to encourage rapid growth in livestock animals.

Igneous – Formed by solidification from a molten or partially molten state; also called plutonic rock – one of three basic classifications of rocks.

Loam – The topsoil that farmers love - a perfect combination of clay, silt, sand and organic matter.

Metamorphic – Formed from a different type of rock in a solid state in response to pronounced changes of temperature, pressure and chemical environment; one of three basic classifications of rocks.

Parent Material – Also known as bedrock. The origin of the soil in which we grow our food.

Petroleum – Also known as crude oil. A naturally occurring, flammable liquid formed from ancient living matter that is found beneath the Earth’s surface.

Riparian Community – A group of interacting organisms along a river or stream.

Sand – A granular material composed of rock and mineral particles, often containing a high amount of quartz.

Sedimentary – Formed from sediment or debris. Examples of sedimentary rocks include sandstone, shales, conglomerate, limestone, and gypsum. One of three basic classifications of rocks.

Silt – A soil sediment consisting of at least 80% fine earth and very fine sand and less than 12% clay.

Soil – Earth material that has been so modified by physical, chemical and biological agents that it will support rooted plants.

Subsoil – Soil that is less rich, and lies under the topsoil.

Topsoil – The generally rich soil that is a combination of organic and inorganic material that occurs on the top of the stratum of soils and from which our food grows; often called “dirt.”
UNIT 3

Lesson 13: Get to Know your Watershed

Alameda Creek Watershed - The land that drains into the Alameda Creek, where the Sunol AgPark, Town of Niles, Sunol Regional Wilderness are located.

Arid – Extremely dry.

Degradation – The wearing down of the land by the erosive action of water, wind, or ice.

Groundwater – Water located beneath the ground surface in soil pore spaces and in the fractures of rock formations.

Hetch Hetchy Watershed System – The Tuolumne River system which has been dammed to provide water for the San Francisco Bay Area 167 miles away. Managed by the SFPUC.

Aquifer – A wet underground layer of water-bearing permeable rock, gravel, or sand, from which water can be extracted through a well.

Reservoir – A place where anything is collected, especially a natural or artificial lake or pond in which water is collected and stored for use.

Watershed - A land area where surface water from rain or melting snow and ice drains into a body of water such as a river, lake, river, lake, wetland, or ocean; also called a drainage basin.

Lesson 14: Sustaining Our Soil to Sustain Ourselves

Compost – Plant matter that has been decomposed by worms, fungi, and bacteria, used for fertilizing and conditioning soil.

Cover crop – A plant, often a legume, grown to keep nutrients from leaching, soil from eroding, and land from weeding over, during the non-growing season. Cover crops are often plowed under instead of harvested, in which case they can be called “green manure.”

Decompose – To break down organic matter into simpler forms of matter, often by bacterial or fungal action; to rot.

Erosion – The process whereby earthy or rock material is loosened or dissolved and transported from one part of the earth’s surface to another.

Filter strip – A long, narrow section of plants at the edge of a farm which slows the rate of runoff, allowing sediments, organic matter, and other pollutants to settle out before they reach the edge of the farm. Filter strips reduce erosion and surface water pollution.

Geology – The science and study of the solid Earth and the processes by which it is shaped and changed, and the rocks of which it is composed.

Hedgerow – A row of plants, generally perennial shrubs, bushes, or trees, planted close together forming a barrier.

Humus – The dark organic material in soils, produced by the decomposition of vegetable or animal matter and essential to the fertility of the earth

Parent Material – Also known as bedrock. The origin of soil in which we grow our food.

Subsoil – Soil that is less rich, and lies under the topsoil

Tillage – The process of preparing the land for planting by mechanical agitation, such as digging, stirring, and overturning the soil.

Topsoil – The generally rich soil that is a combination of organic and inorganic material that occurs on the top of the stratum of soils and from which our food grows; often called “dirt.”
Lesson 15: Biodiversity at the Farm Edge

Aquatic – In or of water.

Terrestrial- On or of the land.

Biodiversity – The degree of variation of life forms within a given ecosystem, biome, or planet. Biodiversity is a measure of the health of an ecosystem.

Domesticated livestock – Animals that have been tamed and are raised in an agricultural setting to produce food or fiber, or are used for labor. Common examples include cows, sheep, goats and chickens.

Ecosystem – A system made up of communities of animals, plants, and bacteria interdependent on each other and on their physical environment.

Erosion – The wearing away of rocks and other deposits on the earth’s surface by the action of water, ice or wind.

Field guide – Written and/or pictorial information of use in a natural setting to inform the reader about the environment and/or the natural objects in it.

Leaf key – A pictorial and written guide to identifying plants by their leaves.

Leaf rubbing – An impression of a leaf’s texture made by rubbing a soft crayon or pencil across a piece of paper held against the leaf.

Riparian community – A group of interacting organisms along a river or stream.

Soil nutrient recycling – A process whereby nutrients are recycled in an ecosystem. Plants take nutrients from the soil and store them in plant tissues until they get eaten by animals or fall to the ground. There, they break down along with decomposing animals and feces. They are eventually re-incorporated into the soil by rainfall and earthworms, and the organic matter is further broken down into nutrients, which then become available to growing plants, starting the cycle over again.

Lesson 16: Geography and You

Alameda Creek Watershed – The land that drains into the Alameda Creek, where the Sunol AgPark, Town of Niles, Sunol Regional Wilderness are located.

Climate – The prevailing or average weather conditions of a region as determined by the temperature and meteorological changes over very long periods of time.

Geography – A descriptive science that deals with the study of the Earth and its lands, features, inhabitants, and phenomena.

Niles Canyon – A canyon created by earthquakes and erosion by Alameda Creek, where the town of Niles is located in southeastern Alameda County.

Relief map – A map with texture (raised areas) and color representing different heights of landforms such as hills and valleys.

“Topo” Map – Short for “topographical map.” A map that uses contour lines to designate geographical features on a flat piece of paper. Contour lines connect all the points of equal elevation.

Westerly Winds – The predominant wind pattern in California; winds that come from the west.
Lesson 17: Can Agriculture and Nature Work Together?

Agro-ecosystem – An ecosystem that relates to agriculture, but is not restricted to the immediate site of agricultural activity (the farm), but rather includes the entire region that is impacted by farming.

Compost Pile – A heap of plant matter that is in the process of being decomposed by worms, fungi, and bacteria.

Decompose – To decay or rot.

Diversify crops – To plant many different kinds of crops in order to mimic natural systems.

Hedgerow – A row of plants, generally perennial shrubs, bushes, or trees, planted close together forming a barrier.

Species-specific – Affectong only one type of crop, plant or animal.

Sustainable practice – A routine that is good for the long-term health of the planet and its inhabitants.

Lesson 18: Watersheds – Not Just a Drop in the Bucket!

Cohesion – Community building, clinging together; the attraction of water molecules to each other as a result of hydrogen bonding.

Habitat – A place where plants and/or animals prefer to live; an animal or plant species’ home.

Surface tension – The attraction among water molecules at the surface of the liquid which creates a skin-like barrier between the air and underlying water molecules.

Watershed – A land area where surface water from rain or melting snow and ice drains into a body of water such as a river, lake, river, lake, wetland, or ocean; also called a drainage basin.
Sunol Water Temple AgPark Education and Public Engagement Programs
Summary of Accomplishments - July 2012 to June 2013

STUDENT EDUCATION PROGRAMS

Target Population. SAGE’s Environmental Education and Service Learning Program annually serves students in grades 4-12 from urban Bay Area schools. SAGE focuses its programming on youth from diverse, low-income communities and Title I schools, for which SAGE underwrites all or most program costs and transportation through grants.

Program Goals. SAGE inspires environmental stewardship in the next generation through hands-on sustainable agriculture education in schools and on site at Sunol AgPark for students from underserved communities. SAGE’s Environmental Education and Service Learning Program provides urban children, youth and families with hands-on, experiential education about sustainable agriculture, watershed and ecosystem health, and community health and nutrition, while inspiring environmental consciousness, team-building, leadership skills, and academic improvement. Youth in the target population are rarely exposed to gardening at home or outdoors activities with their families; many have never been on a farm before they come to the AgPark. By addressing this lack of exposure to agriculture and nature, this program also addresses multiple, complex and interrelated problems experienced by urban Bay Area youth such as obesity, reduced physical activity, lack of access to nutritious food, lack of access to outdoor recreation, low academic achievement, and lack of teamwork and leadership skill-building opportunities. SAGE’s hands-on education program excites students about academics by putting book learning into real-world context, increases health by providing a connection between urban youth and the food that they eat, and forwards youth development by building teamwork and leadership skills.

Program Activities. SAGE’s Environmental Education and Service Learning Program is centered around activities conducted in schools and on site at SAGE’s Sunol Agricultural Park (AgPark), adjacent to the 100-year-old Sunol Water Temple. While rural Sunol is only a 30 to 60 minute drive from the urban Bay Area, it feels a world away to the urban children, youth and families who participate in SAGE’s programs. SAGE’s program consists of several different elements, tailored for different age groups:

On-Farm Education at Sunol AgPark (4th-8th grade): Education programs at the AgPark follow SAGE’s standards-based Farming in the Watershed curriculum, which consists of 18 detailed, engaging lessons and activities developed by SAGE in 2011. The curriculum directly addresses the California State Educational Standards for fourth through eighth grade students. All 18 lessons in the curriculum meet requirements for addressing English Language Arts standards: Written/Oral Language, Listening and Speaking. 13 lessons address Science standards: Earth Sciences, Resources, Life Sciences, Investigation and Experimentation, Ecology, Physical Sciences, and Evolution. 10 lessons address Health Ed. standards: Nutrition and Physical Activity, Personal and Community Health. 6 lessons address History-Social Science standards: Geographic Features of California, Pre-Columbian Settlements, People in the West 1800s, California Life, Transformation of Economy. 5 lessons address Visual Arts standards: Artistic Perception, Creative Expression, Historical and Cultural Context, Visual Literacy, Applications. 2 lessons address Math standards: Mathematical Reasoning, Number Sense, Algebra and Functions. 2 lessons address PE standards: Fitness Concepts, Muscular Strength/Endurance.
in which small groups of students work alongside a farmer. Other changes included refinements to accommodate programs of varying lengths, sometimes planned by a school being on too limited a schedule for the two-lesson format and sometimes necessitated by a bus being late.

- **Accomplishments, FY 2012-2013**
  - Schools served: 62 classes from 24 schools. 63% are low-income schools.
  - Number of students served: 1,585
  - A summary of the program evaluation and outcomes is at the end of this document.

**In-School Education Program (4th-8th grade):** SAGE encourages all schools that have Field Trips to the AgPark to complement and extend on-farm learning by having an in-school *Farming in the Watershed* experiential learning activity. Students learn about topics such as the geography of watersheds, the relationship between soils and water, the water systems that serve both farms and cities, and the relationship of water to the production of the food they eat. Students tour their schoolyards and surrounding areas to identify how scientific principles learned on the farm are at work in the school and urban environments as well as the rural environment. For this coming year, we plan to refine the in-school watershed lesson so that it can be efficiently and effectively delivered in a range of classroom settings.

- **Accomplishments, FY 2012-2013**
  - Schools served: 29 classes from 14 schools. 65% are low-income schools.
  - Number of students served: 671
  - A summary of the program evaluation outcomes is at the end of this document.

**Service Learning Program (9th-12th grade):** SAGE’s *Youth Bridging Nature and Agriculture* connects underserved high school students from urban East Bay communities to their local foodshed and the natural world through experiential learning about sustainable agriculture and ecology. Over a series of four field and classroom days throughout the school year, youth get their hands dirty designing and planting a hedgerow of native, ornamental and edible plants with farmers at Sunol AgPark, investigate ecology of the Alameda Creek watershed, enhance habitat with conservation scientists, collect data, learn farm economics, build leadership skills, and discover green careers, while working closely in teams with educators and green career mentors. This year, the program also included an overnight trip to Camp Arroyo after a morning at the AgPark for those students who were able to plan for a two-day activity.

- **Accomplishments, FY 2012-2013**
  - Schools served: Kennedy High School, Fremont; Castlemont High School, Oakland (low-income school)
  - Number of students served: 120 10th grade students
  - A summary of the program evaluation and outcomes is at the end of this document.

**Summer Farm Internship Program (youth and young adults):** SAGE is launching a new Summer Farm Internship Program to provide job training and intensive hands-on education for high school students and young adults. In summer 2013, SAGE advertised the paid internship opportunity throughout the East Bay and then offered internships to three students, all from public high schools in Fremont. The interns work side-by-side with experienced AgPark farmer-educators. Goals of the program include:

- Provide a significant hands-on job training/learning experience for interns about the art, science and craft of farming from excellent farmer-educator mentors
• Interns learn about work ethic generally and what the responsibilities are of a farmer
• Interns help farmers accomplish the work they need to do
• Interns meet their own learning and job training goals
• SAGE contributes to creating a pipeline for the next generation of farmers, mentoring aspiring new farmers from diverse backgrounds

An evaluation of the program will be completed at the end of August.

COMMUNITY ENGAGEMENT PROGRAMS

SAGE implements community outreach and education activities in order to engage Sunol residents, to accommodate groups that want to tour and have events at the AgPark and to connect East Bay communities and families with sustainable agriculture, their food and the natural environment. All SAGE Education Program participants are invited to return to the AgPark with their families for Community Field Work Days and other family-friendly public events.

Workdays: SAGE hosts Community Field Work Days to help community members get involved as volunteers in natural resource stewardship opportunities at the AgPark, and to encourage access to open space and recreation on the farm. This year, SAGE hosted four community workdays, most of which focused on the hedgerows (e.g. ground preparation, planting, mulching, weeding, and making plant identification tags) as well as on other farm and restoration-related tasks.

Sunol Community Garden: In response to requests and interest from Sunol residents, SAGE dedicated around 1/6th of an acre as the Sunol Community Garden. Twelve Sunol residents organized in two groups have established beautiful, productive garden beds next to the ramada, near the riparian edge of the farm. In exchange, the community gardeners gladly volunteer on workdays and for special AgPark projects.

Events: SAGE hosted several large events at the AgPark this spring.
• Clif Bar Company Workday, June 13. In collaboration with Volunteers for Outdoor California (and with all materials paid by SAGE), around 300 Clif Bar Company employees spent a day at the AgPark and accomplished the following significant tasks: construction of a fence around the orchard (and removal of the old fence); weeding and mulching over 10,000 SF of native plant hedgerow; building five picnic tables with benches; constructing the trellised roof for the ramada; clearing the site for construction of an outdoor classroom; building shelving in the SAGE storage shed; planting SAGE’s 1-acre pumpkin patch; and working with farmers on various projects. The employees all reported having an enjoyable and rewarding day.
• Outstanding in the Field Dinner, June 15. SAGE hosted this gala dinner for the third year in a row. Over 100 guests met the farmers, toured the farm and enjoyed a four-course feast prepared by Guillaume Bienaime from Portola Kitchen.
• Slow Money Northern California, June 22. This annual Farm Fest, hosted for the first time at the AgPark, brought together around 150 farmers, food entrepreneurs, investors and the Slow Money community to network and enjoy dinner on an exemplary Bay Area farm.

Custom Tours: SAGE and SAGE farmers host and organize a variety of special tours and activities as resources allow. During this last year, visiting groups included: the Cupertino Senior Center; Alameda County Master Gardeners; Camp Edmo (a YMCA Camp); Close To Home speaker series tour; tour with Layma Murtaza (District Representative) from Assemblyman Bill Quirk's office; tour with the Center for
Eco Literacy; tour with Education Outside educators; and service-learning with Piedmont High School students.

**ORGANIZATION INFORMATION**

**Organization Mission.** Founded in 2001, Sustainable Agriculture Education (SAGE) is an entrepreneurial nonprofit that seeks to ensure that multifunctional agriculture – agriculture that provides food and other community benefits – is a key element of regional sustainability planning and that it is implemented on the ground in the San Francisco Bay Area. SAGE’s mission is to promote urban-edge agriculture to benefit farmers and communities and engage diverse populations with the sustainable agriculture movement. A key component of SAGE’s public education and outreach work is to inspire environmental stewardship in the next generation by providing hands-on sustainable agriculture education and service learning to urban students who often lack opportunities to get their hands dirty or experience for themselves where food is grown.

**Program Staffing.** SAGE is a small, lean non-profit pursuing an ambitious agenda. The organization depends on long-time, stable and fruitful relationships with advisors and contractors, which include: partner firms; collaborating agencies and organizations; senior AgPark Agricultural and Education Advisors; development and communications contractors; project consultants; and contract teachers at the AgPark.

**Partnerships and Funding.** SAGE’s approach is collaborative and entrepreneurial, leveraging deep and long-term partnerships. SAGE’s partners include public agencies, farmers, educators, schools, conservationists, economists, planners, developers, public-interest advocacy organizations, and community groups from urban and rural areas. SAGE implements much of its Education Program in collaboration with the Alameda County Resource Conservation District (ACRCD), which provides technical expertise and conservation scientists who, teaming with SAGE staff, instruct and interact with students in the classroom and on the farm. SAGE’s educational activities at the AgPark are conducted in partnership with the San Francisco Public Utilities Commission (SFPUC), which owns the land and is dedicated to it serving as a model for watershed education. ACRCD and USDA Natural Resources Conservation Service provide technical assistance, and Alameda County Office of Education and East Bay Regional Park District staff advise on education programs and outreach. SAGE collaborates with teachers and school administrators to tailor programs to meet each student group’s particular educational needs.

In addition to SFPUC, primary funding partners include the American Honda Foundation, Clorox Company Foundation, the Banbury Fund, The FruitGuys Community Fund, and the Clean Water Community Stewardship Grant Program.
# Sunol Water Temple AgPark Student Education Programs

## Participating Schools, July 2012 to June 2013

### Title 1 Free & Reduced Meal Plan

#### Grades

<table>
<thead>
<tr>
<th>Sunol AgPark Field Trip # of Classes</th>
<th>In-School # of Classes</th>
<th># of Unique Students</th>
<th>Paid 25%-100% of cost</th>
</tr>
</thead>
</table>

### Schools within SFPUC Service Area

<table>
<thead>
<tr>
<th>District</th>
<th>School Name</th>
<th>Title 1</th>
<th>Free &amp; Reduced Meal Plan</th>
<th>Grades</th>
<th>Sunol AgPark Field Trip # of Classes</th>
<th>In-School # of Classes</th>
<th># of Unique Students</th>
<th>Paid 25%-100% of cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremont Unified School District (FUSD)</td>
<td>Hirsch Elementary School</td>
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<td>80%</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>20</td>
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<tr>
<td></td>
<td>Cherryland Elementary School</td>
<td>Yes</td>
<td>90%</td>
<td>6</td>
<td>4</td>
<td></td>
<td>120</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glassbrook Elementary School</td>
<td>Yes</td>
<td>90%</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>80%</td>
<td>4; 5; 6</td>
<td>3</td>
<td>2</td>
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<td></td>
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<td>3; 4</td>
<td>4</td>
<td>3</td>
<td>120</td>
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<tr>
<td>Livermore Valley Joint Unified School District</td>
<td>Joe Michell Elementary School</td>
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<td>60</td>
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<td></td>
<td>Marylin Avenue Elementary School</td>
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<td>3</td>
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<td></td>
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<tr>
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<td></td>
<td>66</td>
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<tr>
<td></td>
<td>Louis Milani Elementary School</td>
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<td>3</td>
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</table>

**Total Unique Students**: 1025

### Schools outside of SFPUC Service Area

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<tr>
<th>District</th>
<th>School Name</th>
<th>Title 1</th>
<th>Free &amp; Reduced Meal Plan</th>
<th>Grades</th>
<th>Sunol AgPark Field Trip # of Classes</th>
<th>In-School # of Classes</th>
<th># of Unique Students</th>
<th>Paid 25%-100% of cost</th>
</tr>
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<tbody>
<tr>
<td>Napa School District</td>
<td>Pueblo Vista Elementary</td>
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</tr>
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<td>55%</td>
<td>4</td>
<td>4</td>
<td>107</td>
<td>x</td>
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<td></td>
<td>Sequoia Elementary School</td>
<td>Yes</td>
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<td>4; 5</td>
<td>4</td>
<td>120</td>
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<td></td>
<td>Glenview Elementary School</td>
<td>Yes</td>
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<td>4</td>
<td>120</td>
<td>x</td>
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<td>Oakland International High School</td>
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<td>-</td>
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<td>28</td>
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<td>4</td>
<td>4</td>
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<td>x</td>
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<td>1</td>
<td>10</td>
<td>x</td>
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<td></td>
<td>Presidio Knolls</td>
<td>No</td>
<td>No</td>
<td>K</td>
<td>1</td>
<td>10</td>
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</table>

**Total Unique Students**: 560
SAGE AgPark Education Programs

Farming in the Watershed Field Trip and In-School Programs
Youth Bridging Nature and Agriculture High School Service Learning Program
July 2012 – June 2013

Outcomes and Teacher and Student Evaluations Summary

OUTCOMES AND EVALUATION OVERVIEW

Academic achievement: Students make academic improvements as they take book learning into the real world via standards-based curriculum (Farming in the Watershed-FW). As participants collect survey data, enhance habitat, and design and plant their hedgerow, they solidify their understanding of plant and soil sciences, entomology, ecology, and hydrology. (Service Learning-SL).

Youth development, teamwork and leadership skills: Children develop teamwork by working in small groups (FW). Carrying a project from design through implementation with green career mentors, students gain self-esteem and teamwork skills. They feel a sense of pride in their accomplishments and their abilities and in seeing the real-world, living manifestation of their hard work (SL).

Health and wellness: Participants benefit from physical exercise and improved knowledge of organic farming and good nutrition, as well as where to find locally produced food and how to get involved in small-scale agriculture in their community. Participants eating fruits from the farm and soup made from farm vegetables experience healthy food as delicious food (FW & SL).

Career development: Students are exposed to green careers through presentations and working alongside professionals such as: farmers, entomologists, soil scientists, landscape architects, irrigation experts, naturalists, biologists, resource conservationists, planners, native plant nursery owners, chefs, and non-profit personnel. Students learn about relevant summer internships, including SAGE’s new Summer Farm Internship Program. By providing interaction, mentorship and information about internships and post-secondary training and education, the project offers underserved urban youth a way to envision themselves in career fields such as agriculture, green energy, conservation, or food systems. SAGE is striving to recruit more diverse green career professionals who better represent the diverse backgrounds of student participants (SL).

FARMING IN THE WATERSHED FIELD TRIPS

Accomplishments, FY 2012-2013
- Schools served: 62 classes from 24 schools. 63% are low-income schools.
- Number of students served: 1,585
- Number of teachers and adult chaperones accompanying students on field trips: 173

Evaluations from Teachers and Chaperones on Farming In The Watershed Field Trips

Elementary school teachers reported that the experience helped their students
- appreciate the work that goes into growing food – 95%
- feel more comfortable outside/in nature – 91%
- understand the importance of healthy soil and clean water – 84%
- increase their understanding about where food comes from – 92%
- improve their observation skills – 86%
What teachers said about *Farming in the Watershed* Field Trips

- “I would love to come back next year as our students were so excited and did not want to leave.” -- Jennifer Hurlaw, William Burnett, 6th grade
- “We loved, loved, LOVED harvesting the tomatoes! They tasted delicious too! Even the kids who don’t normally like tomatoes still tried them!” -- Joanne Stallings, William Burnett, 6th grade
- “It was very refreshing and calming walking around in the openness and between the mountains on the farm.” -- Than Ibrahim, Northstar, 4th grade
- “They were so proud of their harvest.” -- Malaya Goris, East Avenue, 3rd grade
- “The pace was perfect, just what they need, time to enjoy their senses and just be in nature!” -- Betty Olson-Jones, Sequoia, 5th grade
- “We were pleasantly surprised at the local resource available that offered a hands-on and classroom experience for the kids.” -- Patrick Miller, Joe Mitchell, 5th grade
- “We brought our class last year. We enjoyed seeing our students’ enthusiasm, so we returned! Another great job.” -- Nesbitt, Hirsch Elementary
- “At the beginning, many of my boys didn’t want to get their Air Jordan’s dirty, by the end of the day they didn’t even mind and loved digging and getting dirty. They were so engaged in and connected with the land and animals! It was a wonderful experience for them!! Can't wait to return.” -- Bethanne Sally, Cherryland, 6th grade

Evaluations from Students on *Farming In The Watershed* Field Trips

Of the 1,585 students attending the Field Trips …

- 90% of students said the field trip helped them understand where their food comes from.
- Over 70% said the SAGE fieldtrip was the best day they’d had/a great day.
- Almost 50% felt encouraged to eat fresh food and spend more time in nature.
- 50% of students had a first time visit to a farm.
- Over 1/3 of students said they would like to work in a garden at home or cook healthy food.

What students attending field trips said…

- Liked helping out the farm and learning stuff about the farm and the nature.
- Seeing how we can reduce pollution.
- This let me know how fresh foods are processed.
- Learned that farming is hard.
- I got to see things that you don't normally see.
- I liked to pick strawberries and eat them.
- Liked helping other people accomplish something.
- Understand more about my food
- Liked learning about the Water Temple

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**FARMING IN THE WATERSHED IN-SCHOOL PRESENTATIONS**

- **Accomplishments, FY 2012-2013**
  - Schools served: 29 classes from 14 schools. 65% are low-income schools.
  - Number of students served: 671
Evaluations from teachers about Farming in the Watershed In-School Presentations

- **What was the best part of the program?** Visuals to go with farm explanation and great explanation of what to expect on the trip; hands on activities to support understanding of erosion and rock cycle.
- **What was the least successful part of the program?** Need more erosion stations and more bug identification charts.
- **Most teachers stated that:**
  - The program helped prepare students for the field trip and/or got them interested to go.
  - Taught students something new that helped support their classroom studies.
  - The lessons were accessible to students and addressed different learning styles.
  - The program helped my students better understand where food comes from.

### YOUTH BRIDGING NATURE AND AGRICULTURE

#### HIGH SCHOOL SERVICE-LEARNING PROGRAMS

- **Accomplishments, FY 2012-2013**
  - Schools served: Kennedy High School, Fremont; Castlemont High School, Oakland. 50% are low-income schools.
  - Number of students served: 120 10th grade students

*Youth Bridging Nature and Agriculture* was a four-part service-learning project with two classroom visits and two field trips for each school. The program highlights exposure to experts in the fields of agriculture and conservation, and to skill building in landscape design, farming, and data collection. The students learned about hedgerows and then designed and planted 500 SF of new hedgerow. One-quarter of participating Castlemont students also attended a final visit to the farm and an overnight at Camp Arroyo approximately 3 months after their workday.

#### Classroom Teachers Evaluating YBNA (3 teachers)

- 100% of teachers strongly agreed that:
  - This experience helped my students appreciate the work that goes into growing food.
  - This experience helped my students to feel more comfortable outside/in nature.
- 2/3 of teachers strongly agreed:
  - This experience increased my students’ understanding of organic farming practices supporting healthy habitats and clean water.

What they said…

- “I wanted my students to learn about their local food system, explore green careers, and provide a project for service learning. And YES, my expectations were definitely met.”
- “My expectations were that students would have a structured outdoor experience to learn about environmental design and local farm connections. That staff would be prepared, organized and communicative. And yes, my expectations were fully met.”

#### Goals for the coming year.

The primary evaluation tool will be pre and post surveys for students and evaluations for teachers conducted after on-farm and in-school programs. SAGE is streamlining the evaluation process through a “teacher partner contract” to ensure evaluations are timely and reliable. SAGE will evaluate the project’s success by the following measures:

- At least 85% of teachers will indicate that they thought participation in the service learning project would improve students’ academic performance in one or more subject areas;
- At least 75% of students will indicate improved understanding of the relationship between sustainable farming, their own food, watersheds, environmental stewardship and personal health;
- At least 70% of teachers will indicate that they thought participation in the project would improve teamwork and/or leadership skills among their students by increasing involvement in physical work and experiencing the hard work that does into farming;
- At least 65% of students will indicate that they feel a greater sense of their own leadership abilities by seeing the impact of their actions at the farm;
- At least 50% of students will indicate willingness to adopt new behaviors to protect the watershed and/or benefit personal and community health; and
- At least 25% of students will indicate an increased interest in exploring green career pathways.
Sunol Water Temple AgPark Education and Public Engagement Programs

Summary of Accomplishments - July 2013 to June 2014

Introduction

Sustainable Agriculture Education (SAGE) successfully completed another year of its formal education program and public outreach and engagement at the Sunol Water Temple AgPark. This report details accomplishments from July 2013 through June 2014.

SAGE’s Environmental Education and Service Learning Program served a total of 2,208 students over the reporting period. SAGE’s evaluations continue to show that the Farming in the Watershed on-farm field trips and in-school lessons, as well as service learning for middle and high school students, are popular with students and considered by teachers to be effective in reaching the program’s experiential learning and curriculum-related goals.

SAGE facilitated community engagement at the Sunol AgPark through a series of six volunteer workdays, the first annual Harvest Festival celebration, a May plant sale, and various custom tours for farming, educational, and public works groups. Community response to these events was extremely positive, with the Harvest Festival alone drawing more than 1,000 participants, many of them first-time visitors to the AgPark.

Sunol AgPark farmers facilitated public engagement at the AgPark through participating in the education program, hosting small events on their farms, engaging a broad customer base with their farm products, and appearing in media publicity in print and television mediums.

STUDENT EDUCATION PROGRAMS

Target Population. SAGE’s Environmental Education and Service Learning Program annually serves students in grades 4-12 from urban Bay Area schools. SAGE focuses its programming on youth from diverse, low-income communities and Title I schools, for which SAGE underwrites all or most program costs and transportation through grants.

Program Goals. SAGE inspires environmental stewardship in the next generation through hands-on sustainable agriculture education in schools and on site at Sunol AgPark for students from underserved communities. SAGE’s Environmental Education and Service Learning Program provides urban children and youth with hands-on, experiential education about sustainable agriculture, watershed and ecosystem health, and community health and nutrition, while inspiring environmental consciousness, team-building skills, and academic improvement. Youth in the target population are rarely exposed to gardening at home or outdoors activities with their families; many have never been on a farm before they come to the AgPark. By addressing this lack of exposure to agriculture and nature, this program also addresses
multiple, complex and interrelated problems experienced by urban Bay Area youth such as obesity, reduced physical activity, lack of access to nutritious food, lack of access to outdoor recreation and low academic achievement. SAGE’s hands-on education program excites students about academics by putting book learning into real-world context, increases health by providing a connection between urban youth and the food that they eat, and forwards youth development by building teamwork skills and self-esteem.

Program Activities. SAGE’s Environmental Education and Service Learning Program is centered around activities conducted in schools and on site at SAGE’s Sunol Agricultural Park (AgPark), adjacent to the 100-year-old Sunol Water Temple. While rural Sunol is only a 30 to 60 minute drive from the urban Bay Area, it feels a world away to the urban children, youth and families who participate in SAGE’s programs. SAGE’s program consists of several different elements, tailored for different age groups:

On-Farm Education at Sunol AgPark (4th-8th grade): Education programs at the AgPark follow SAGE’s standards-based Farming in the Watershed curriculum, which consists of 18 detailed, engaging lessons and activities developed by SAGE in 2011. The curriculum directly addresses the California State Educational Standards for fourth through eighth grade students. The ratio of SAGE teachers to students is 1 teacher to 15 students. Students also participate in a ‘farm chore,’ in which small groups of students work alongside a Sunol AgPark farmer and help with a specific farm task, including harvesting crops, gleaning fields, weeding, collecting chicken eggs, and digging rows. The field trip schedule is adjusted and refined to accommodate programs of varying lengths, sometimes planned by a school being on too limited a schedule for the two-lesson format and sometimes necessitated by uncontrollable circumstances such as weather or a bus arriving late.

- **Accomplishments, FY 2013-2014**
  - Schools served: 69 classes from 29 schools. 52% are low-income schools.
  - Number of students served: 1,864
  - A summary of the program evaluation and outcomes is at the end of this document.

In-School Education Program (4th-8th grade): SAGE encourages all schools that have field trips to the AgPark to complement and extend on-farm learning by having an in-school Farming in the Watershed experiential learning activity. Students learn about topics such as the geography of watersheds, the relationship between soils and water, the water systems that serve both farms and cities, and the relationship of water to the production of the food they eat. This past year, the in-school watershed lessons gave classes rosemary plants for students to take care of and record ongoing observations. Some classes transplanted the rosemary into their school garden, thus tying back to the hands-on experience at the Sunol AgPark field trip. An additional in-school curriculum was developed for middle school classes, which looked at economics of a farm and illustrated how farmers must balance cost, sales and profit to maintain an economically healthy farm.

- **Accomplishments, FY 2013-2014**
  - Schools served: 62 classes from 26 schools. 58% are low-income schools.
  - Number of students served: 1,654
  - A summary of the program evaluation and outcomes is at the end of this document.

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Service Learning Field Trips (7th-12th grade): SAGE offers customized service-learning field trips for middle and high school students. Our farmer-educators customize the visits based on discussions with classroom teachers over what they want their students to get out of the day. Teachers seek out Sunol AgPark service learning trips for group volunteer project experiences, and/or education on specific farming related topics (i.e. farm economics, environmental careers, or native plants and hedgerows).

- **Accomplishments, FY 2013-2014**
  - Schools served: Kennedy High School, Fremont; Oakland International High School, Oakland (low-income school); Head-Royce School, Oakland; The Athenian School, Danville
  - Number of students served: 219 students

Youth Bridging Nature and Agriculture for High School Students (9th-12th grade): SAGE’s Youth Bridging Nature and Agriculture program connects underserved high school students from urban East Bay communities to their local foodshed and the natural world through experiential learning about sustainable agriculture and ecology. Over a series of four field and classroom days throughout the school year, youth get their hands dirty designing and planting a hedgerow of native, ornamental and edible plants with farmers at Sunol AgPark, investigate ecology of the Alameda Creek watershed, enhance habitat with conservation scientists, collect data, learn farm economics, build teamwork skills, and discover green careers, while working closely in teams with educators and green career mentors.

- **Accomplishments, FY 2013-2014**
  - Schools served. Castlemont High School, Oakland (low-income school); San Lorenzo High School, San Lorenzo (low-income school)
  - Number of students served: 125 10th grade students
  - A summary of the program evaluation and outcomes is at the end of this document.

Summer Farm Internship Program (youth and young adults): SAGE completed its second year of the Summer Farm Internship Program to provide job training and intensive hands-on education for high school students and young adults. In summer 2013, SAGE offered paid internships to three students from public high schools in Fremont. In summer 2014, SAGE offered paid internships to two students from public high schools in Fremont and Pleasanton. The interns worked side-by-side with experienced AgPark farmer-educators. Goals of the program include:

- Provide a significant hands-on job training/learning experience for interns about the art, science and craft of farming from excellent farmer-educator mentors
- Interns learn about work ethic generally and what the responsibilities are of a farmer
- Interns help farmers accomplish the work they need to do
- Interns meet their own learning and job training goals
- SAGE contributes to creating a pipeline for the next generation of farmers, mentoring aspiring new farmers from diverse backgrounds

- **Accomplishments, FY 2013-2014**
  - Schools served: Mission San Jose High School, Fremont; Foothill High School, Pleasanton. Both high schools are within 10 minutes driving distance of the Sunol AgPark.
  - Number of students served: 3 summer interns in 2013, 2 summer interns in 2014
  - Number of intern hours: Summer Interns each contributed 60 paid hours of work. Two interns engaged further with SAGE by offering 15 additional volunteer hours at the Sunol AgPark, assisting with the Harvest Festival, and serving volunteer hours in the SAGE office.
  - A summary of the program evaluation and outcomes is at the end of this document.
COMMUNITY ENGAGEMENT PROGRAMS

SAGE implements community outreach and education activities in order to engage Sunol residents, to accommodate groups that want to tour and have events at the AgPark, and to connect East Bay communities and families with sustainable agriculture, their food and the natural environment. All SAGE Education Program participants are invited to return to the AgPark with their families for Community Field Work Days and other family-friendly public events.

**Work Days:** SAGE hosts Community Field Work Days to help community members get involved as volunteers in natural resource stewardship and farming opportunities at the AgPark, and to encourage access to open space and recreation on the farm. This year, SAGE hosted six community workdays, most of which focused on the hedgerows (e.g. ground preparation, planting, mulching, weeding, and installing irrigation) as well as on other farm and restoration-related tasks. A total of 50 people attended the volunteer work days.

**Workshops:** As part of the USDA Beginning Farmer and Rancher Development Grant program in partnership with Alameda County Resource Conservation District (ACRCD), SAGE hosted three workshop and field days at the Sunol AgPark. The workshops focused on specific topics of farm management for the beginning farmer and rancher community, including soil fertility, weed management and irrigation management. Workshops were presented on the Sunol AgPark and were followed by a field day component on the farms. A total of 130 people attended the three workshops.

**Sunol Community Garden:** In response to requests and interest from Sunol residents, SAGE dedicated around 1/6th of an acre as the Sunol Community Garden. Five community gardeners established beautiful, productive garden beds next to the ramada, near the riparian edge of the farm. In exchange, the community gardeners gladly volunteer their help in AgPark projects. They put in over one hundred hours of volunteer work mulching the hedgerow and ramada area, pulling out Bermuda grass and weed whacking. The community gardeners are excited when school groups visit, and often talk to students about their gardening work and offer free vegetables for students to try. They also trade vegetables and seeds with Sunol AgPark farmers.

**Events:** SAGE hosted several large events at the AgPark this past year.

- **Sunol AgPark Harvest Festival and U-Pick Pumpkin Patch,** October 6, 2013. This was the first Harvest Festival at the Sunol AgPark. SAGE dedicated an acre of land to a U-Pick pumpkin patch; festival attendees picked and purchased pumpkins. SAGE partnered with eight community organizations, many from the Sunol area, to host family activities and provide educational resources. The AgPark farmers and Sunol Community Gardeners also hosted activities such as farm tours, farm crafts for kids, and garden demonstrations. Over 1,000 people attended the Harvest Festival. Based on the positive community response, SAGE plans to make it an annual event; the 2014 Harvest Festival will be held on October 5.

- **Sunol AgPark Spring Plant Sale and Farm Tour,** May 3, 2014. SAGE and Sunol AgPark farmers hosted an open day at the Sunol AgPark for the public to tour the farms, meet farmers, and buy farm products. Farmers hosted tours of their farms and educated visitors about their operations and the Sunol AgPark. Farmers also sold plant starts, seeds and farm goods to visitors. Approximately 200 people attended the Spring Plant Sale.

- **Beginning Farmer and Rancher Summer Celebration,** July 19, 2014. SAGE, ACRCD, and the Berkeley Food Institute hosted a summer dinner celebration as a wrap-up to SAGE and ACRCD’s Beginning Farmer and Rancher Development grant activities. SAGE partnered with restaurants that source produce from Sunol AgPark farmers. The dinner hosted 130 attendees in
the beginning farmer and rancher community, such as new farmers, mentor farmers, agricultural academics, and supporters of beginning farmers and ranchers.

**Custom Tours:** SAGE hosts and organizes a variety of special tours and activities as resources allow. During this last year, SAGE hosted seven custom tour groups. Visiting groups included the East Bay Regional Park District, International Rescue Committee, Sustainable Law Economies Center, B&S Excursions, Asian Seasonings, PCC Farmland Trust, and Northridge Cooperative Homes. These tours brought out 120 visitors to the Sunol AgPark.

### SUNOL AGPARK FARMER COMMUNITY ENGAGEMENT

In 2013-2014, SAGE leased land at the Sunol AgPark to four new farms, which are made up of a total of ten new farmers. The new farms along with the four existing farms pursued a commitment to public engagement and education about sustainable agriculture and resource management at the Sunol AgPark.

**Education Program:** Sunol AgPark farmers demonstrate a commitment to public education by acting as farmer-educators for the Farming in the Watershed program and field trips at the Sunol AgPark. Three farmer-educators lead field trip groups, and almost all farmers offer use of their farms for field chores and demonstrations for school field trips. This year, one of our farmer-educators started teaching in-school lessons of the *Farming in the Watershed* curriculum, displaying even further engagement with SAGE education programs.

**Sunol AgPark Farmer Events:** Sunol AgPark farmers host small events on their farms to engage with their customers and support base. Farmers host seasonal events, workshops, and educational tours. Baia Nicchia hosted a tomato breeding workshop. Foolish Hens hosted a farm party for its CSA members and donors. Namu hosted a Buddhist seasonal celebration and a Chuseok Festival, a Korean harvest holiday. Happy Acre Farm hosted two work party events to help set up their irrigation system and construct a greenhouse and shade structure, and a harvest party with family and friends to celebrate their first harvest season. Terra Bella Family Farm hosted two tours on their farm for their CSA members. These nine events brought 207 people to the Sunol AgPark.

**Sunol AgPark Farmer Publicity:** In addition to publicity through Sunol AgPark farmers’ market outlets, farmers also received substantial press recognition this past year. *Edible East Bay* highlighted Oakland-based farmers from Root and Bloom Farm, Feral Heart Farm and Happy Acre Farm in the article “Crop of Dreams” by Cynthia Salaysay. Young farmers at the Sunol AgPark were featured on KPIX 5 news with a segment by Ann Notarangelo titled “Young Urban Farmers Take To The Land With New Attitude.” Baia Nicchia was featured in a *San Francisco Chronicle* Home and Gardening Issue, profiling Fred Hempel and his tomato breeding and seed saving techniques that are used at the Sunol AgPark, in the front-page article “The Quest for the Perfect Tomato.” Terra Bella Family Farms and Foolish Hens have been featured in *Edible East Bay* articles. Kristyn Leach and Namu Farm received publicity from various San Francisco news outlets, largely as a result of the farm’s important role in the popular San Francisco Namu Gaji restaurant. This past year, Namu was also part of *Final Straw*, a documentary film focusing on stories from Japanese, Korean and American farmers, teachers and chefs. Jellicles Farm received key publicity upon winning an online, voter-based ‘Local Foodmaker’ grant competition with Whole Foods Fremont for “Support your Local Farmer Day.” The grant gave Jellicles Farm not only local publicity and tabling opportunities at Whole Foods, but also donated 3% of the store sales from July 2 to Jellicles Farm.
**Organization Mission.** SAGE cultivates urban-edge places where farming and local food culture can thrive and be celebrated. SAGE’s Public Education and Outreach Program is an important part of our organizational purpose in that it helps broaden the community of supporters for urban-edge farming, one of SAGE’s three main organizational goals. As part of this work, SAGE engages in both formal education programs to schools and broader public education and community outreach. SAGE seeks to inspire environmental stewardship in the next generation by providing hands-on sustainable agriculture education and service learning to urban students who often lack opportunities to get their hands dirty or experience for themselves where food is grown.

**Program Staffing.** SAGE is a small, lean non-profit pursuing an ambitious agenda. The organization depends on long-time, stable and fruitful relationships with advisors and contractors, including partner firms, collaborating agencies and organizations, senior AgPark Agricultural and Education Advisors, development and communications contractors, project consultants, and contract teachers at the AgPark.

**Partnerships and Funding.** SAGE’s approach is collaborative and entrepreneurial, leveraging deep and long-term partnerships. SAGE’s partners include public agencies, farmers, educators, schools, conservationists, economists, planners, developers, public-interest advocacy organizations, and community groups from urban and rural areas. SAGE implements much of its Education Program in collaboration with the Alameda County Resource Conservation District (ACRCD), which provides technical expertise and conservation scientists who, teaming with SAGE staff, instruct and interact with students in the classroom and on the farm. SAGE’s educational activities at the AgPark are conducted in partnership with the SFPUC, which owns the land and is dedicated to it serving as a model for watershed education. ACRCD and USDA Natural Resources Conservation Service provide technical assistance, and Alameda County Office of Education and East Bay Regional Park District staff advise on education programs and outreach. SAGE collaborates with teachers and school administrators to tailor programs to meet each student group’s particular educational needs.

In addition to the SFPUC, primary funding partners of educational programming at the Sunol AgPark have included the American Honda Foundation, the Clorox Company Foundation, the Banbury Fund (now known as the Robertson Family Foundation), the East Bay Community Foundation, the Give Something Back Community Fund, and the FruitGuys Community Fund.
### Sunol AgPark Student Education Programs Programs Overview, July 2013 to June 2014
### Participating Schools from within SFPUC Service Area

<table>
<thead>
<tr>
<th>All Schools, 4th-12th grade</th>
<th>Title 1</th>
<th>FRMP</th>
<th>Grades</th>
<th>On-farm # of Classes</th>
<th>In-School # of Classes</th>
<th># of Unique Students</th>
<th>School Paid 25%-100% of cost</th>
</tr>
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<td><strong>Total Unique Students</strong></td>
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### Sunol AgPark Student Education Programs FY 2013-2014
### Participating Schools from within SFPUC Service Area

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<th>School District, Grade Level</th>
<th>Title 1</th>
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<th>Grades</th>
<th>On-farm # of Classes</th>
<th>In-School # of Classes</th>
<th># of Unique Students</th>
<th>School Paid 25%-100% of Cost</th>
</tr>
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<td>3</td>
<td>3</td>
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</tr>
<tr>
<td></td>
<td>Castlemont High School †</td>
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<td>2</td>
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<tr>
<td></td>
<td>Joaquin Miller Elementary</td>
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<td>Private Schools</td>
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<td>80%</td>
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<td>2</td>
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</tbody>
</table>

| Total Unique Students | 698 |
| Total Unique Students in SFPUC and non SFPUC Service Area | 2,208 |

† Youth Bridging Nature and Agriculture High Schools
* Service Learning Middle and High Schools
OUTCOMES AND EVALUATION OVERVIEW

Academic achievement: Students make academic improvements as they take book learning into the real world via standards-based curriculum (Farming in the Watershed-FW). As participants collect survey data, enhance habitat, and design and plant their hedgerow, they solidify their understanding of plant and soil sciences, entomology, ecology, and hydrology. (Service Learning-SL).

Youth development, teamwork and leadership skills: Children develop teamwork by working in small groups (FW). Carrying a project from design through implementation with green career mentors, students gain self-esteem and teamwork skills. They feel a sense of pride in their accomplishments and their abilities and in seeing the real-world, living manifestation of their hard work (SL).

Health and wellness: Participants benefit from physical exercise and improved knowledge of organic farming and good nutrition, as well as where to find locally produced food and how to get involved in small-scale agriculture in their community. Participants eating fruits from the farm and soup made from farm vegetables experience healthy food as delicious food (FW & SL).

Career development: Students are exposed to green careers through presentations and working alongside professionals such as: farmers, entomologists, soil scientists, landscape architects, irrigation experts, naturalists, biologists, resource conservationists, planners, native plant nursery owners, chefs, and non-profit personnel. Students learn about relevant summer internships, including SAGE’s new Summer Farm Internship Program. By providing interaction, mentorship and information about internships and post-secondary training and education, the project offers underserved urban youth a way to envision themselves in career fields such as agriculture, green energy, conservation, or food systems. SAGE is striving to recruit more diverse green career professionals who better represent the diverse backgrounds of student participants (SL).

FARMING IN THE WATERSHED FIELD TRIPS

Evaluations from Teachers and Chaperones on Farming In The Watershed Field Trips

Elementary school teachers reported that the experience helped their students

- Appreciate the work that goes into growing food – 84%
- Feel more comfortable outside/in nature – 83%
- Understand the importance of healthy soil and clean water – 70%
- Increase their understanding about where food comes from – 74%
- Improve their observation skills – 71%

What teachers and chaperones said about Farming in the Watershed field trips:

- This ties into our standards in both science and social studies. For example, water cycle, life cycle, and irrigation. The lesson on watershed was excellent and the lesson on harvesting was great.
- Teaches a good amount of team work, following directions, to appreciate all animals and insects and good information to care for where their food comes from.
• Learning about water and water cycle, we have also been learning how to conserve water and resources. This trip will motivate kids to take care of our planet. These types of field trips are important to expose our kids to all the different things they learn on paper only. This makes it real.
• Students learned about differences between organic/non-organic, life cycle of plants and animals. This field trip gave them real life examples to what they previously learned.
• It was marvelous that kids could sample food right from the field and help weed. I think it would be great for kids to come back in a different season to further understand the cycle.
• The importance of farm life and water being a source of life were definitely emphasized. I am really happy. The interaction and working/tasting the fruits of somebody else's labor was an amazing experience.
• Really liked the structure of the day--starting with the overall farm visits-good mix of hands on and teaching.
• We've been fortunate to have participated in this trip for 3 years and are always happy with the experiences.
• I liked that my students were able to use their hands and contribute to work on the farm. Thank you! Your staff was wonderful!

Evaluations from Students on Farming In The Watershed Field Trips

Students reported:
• 84% of students said the field trip helped them understand where their food comes from.
• 42% of students had their first time visit to a farm.
• 62% rated the SAGE fieldtrip as a ‘great’ or ‘best’ day (with 83% total saying it was a ‘good day,’ ‘great day,’ or ‘best day’)
• 44% felt encouraged to eat fresh food, and 39% felt encouraged to cook healthy food
• 45% felt encouraged to spend more time in nature.
• 37% of students indicated interest to work in a garden at home, 25% indicated interest to work in a school garden, and 21% indicated interest to work in a community garden.

What students attending field trips said:
• I never planted much plants or worked with plants so much, so this was kind new to me. I like doing work which gets you dirty, and I learned new stuff and saw new things.
• I love Aspen and everyone else on the farm! It was very very very fun and I love the activities we did and eating flowers and honeycomb (nature's bubblegum)! Everyone is so nice and I learned a lot! (P.S. I might want to become a farmer one day!)
• If my day could be better, pigs would be flying everywhere! What was special was having fun. I had so much fun feeding chickens, petting a dog, catching bugs and so much more. I loved the visit and hop to come again.
• I liked getting to simulate working in the fields so I can make a connection to what we are studying in my class.
• I learned how you could get rid of weeds, feed them to an animal, and get fertilizer back from the animal.
• It was special when we saw flowers, insects and chickens. It was also fun when we fed the chickens. I liked coming to this farm. It was fun.
• I really enjoyed coming to this wonderful place and having a chance to harvest tomatoes and going on a scavenger hunt. I never knew that tomatoes can be all of those different types of colors. Thank you!
• The most special thing about today was we got to realize how important healthy food is and how much garden food is better than food from the store. It was basically an outside organic school.

FARMING IN THE WATERSHED IN-SCHOOL PRESENTATIONS

Evaluations from teachers about Farming in the Watershed In-School Presentations

Teachers indicated that they agree or strongly agree that:
- The program helped prepare students for the field trip and/or got them interested to go – 88%
- The program assisted my students understanding watersheds and their value – 100%
- The first activity effectively conveyed concepts of watershed – 100%
- The value of fresh water was effectively demonstrated in the second activity – 100%
- The grab bag activity demonstrated the practices farmers engage to protect the watershed – 88%
- Providing plants complemented the lesson and will increase my students desire to care for their plants like the Farmer's stewardship of their resources – 94%

What teachers and chaperones said about Farming in the Watershed in-school lessons:
- The classroom lessons really helped the class understand what to expect and got them excited about the trip. Went beyond my expectations. The hands on/group work was impressive.
- I thought it was great! Well prepared and thought out. All students were engaged.
- Instruction was excellent... patient, kind, and knowledgeable. Perfect pacing. I hope to participate next year.

YOUTH BRIDGING NATURE AND AGRICULTURE
HIGH SCHOOL SERVICE-LEARNING PROGRAMS

Youth Bridging Nature and Agriculture was a four-part service-learning project with two classroom visits and two field trips for each school. The program highlights exposure to experts in the fields of agriculture and conservation, and to skill building in landscape design, farming, and data collection. The students learned about hedgerows and then designed and planted 300 SF of new hedgerow. Of the 125 students participating this year, 50% of them said this was their first visit to a farm.

Classroom Teachers Evaluating YBNA (2 teachers)
- 100% of teachers strongly agreed that:
  - This experience increased my students’ understanding of what aspects of nature and agriculture were supported by the building of a hedgerow.
  - This experience increased my students’ understanding of sustainable organic agriculture practices, and how they maintain the functioning of earth’s resources.
- 100% slightly to moderately agreed that
  - This experience helped my students appreciate the interconnections between nature and agriculture.
- Teachers diverged in their thoughts on the following. One moderately agreed and one strongly disagreed. Only the disagreeing teacher provided explanation.
  - This experience helped my students see more options for careers in the natural sciences and agriculture: It is hard for students from my site to see career options in the natural sciences and agriculture. They live in an urban setting, which doesn’t relate well to places like Sunol with a rural feel. Students also feel that if they are going to work on a field trip it should
happen in Oakland, this would also make them feel less exploited. Furthermore, students know that it takes a significant amount of capital to own land and farm, for many of them poverty is the order of the day and sustainable farming just isn’t what they see as a viable option. The careers presented to them such as park rangers, marketing, etc. are careers that students don’t relate to mostly because they have no one that looks like them or is from their community in these positions.

- This experience improved my students’ feeling of purpose. They saw the outcome of their actions. I am not sure what is meant by “saw”, I know students physically saw what they accomplished on the trip, but I do not think they really understand the impact. Mainly because it’s not in their community, they have no personal investment in the SAGE location, therefore no feelings other than they worked for a grade.

What teachers said about YBNA:

- [My expectation was that] students would learn how agriculture is part of and affects the surrounding ecosystem. Students would be able analyze environmental issues regarding agriculture and propose solutions. I think the students’ experiences met these expectations.
- The instructors all related well to my very diverse group of students and clearly communicated their material.
- I think having the hedgerow tying the concepts together worked well.
- My expectation of the program was simple: offer my students an experience outside of the classroom that was fun and educational. As a teacher, my expectations were met. For my students, the story differed. Many enjoyed the experience, said they had a good time and learned something, others felt it was a lot of work and not that engaging. For the most part, students gained from their experiences with SAGE.
- I think actually “doing,” not just learning about [how] something is done, was the most valuable educational experience that the students had.

GOALS FOR THE COMING YEAR:

SAGE created new evaluation metrics to better measure impact according to the program’s logic model and educational goals. These metrics will be incorporated into evaluations this coming year.

Farming in the Watershed program:

- 75% of teachers will indicate that they feel the program advanced their students’ understanding of scientific concepts (i.e. biological/plant diversity, geography).
- 85% of students will indicate that their on-farm program helped them understand where their food comes from.
- 35% of students will indicate willingness to adopt new behaviors to benefit nature and/or their own health.

Youth Bridging Nature and Agriculture program:

- 100% of teachers will indicate they believe participation in the program benefitted the academic growth of students.
- 75% of students will be able to define at least one specific sustainable agriculture practice and/or ways in which these practices(s) benefit the farm and nature.
- 50% of students will be able to name at least one practice that they could do at home or in their community to benefit their own and/or family/community’s health.
- 60% of students who attend the green career portions of the program will have increased clarity about their interest in green careers.
• 75% of students will express pride/self-confidence in seeing the impact of their work and/or learning new skill(s).
• 90% of teachers will indicate that they observed students participating in effective teamwork during program activities.

SUMMER FARM INTERNSHIP PROGRAM

Evaluation of Summer Internship Goals, 2013

• Goal 1: Provide a significant hands-on job training/learning experience for interns about the arts, science and craft of farming from excellent farmer mentors.
  o According to the all the evaluations we received and the journals from our two interns, this goal was fully met. Interns shared in great detail the things they learned, the clarity the program gave them and the breadth of experience they gained. In looking at the details they shared, there is a real sense of the art, science and craft of farming they discovered. Farmers felt that the experience was worthwhile, especially because of the interns and their motivation to learn.

• Goal 2: Interns learn more about what it means to work generally and about the particular job responsibilities of a farmer.
  o According to the all the evaluations we received and the journals from our two interns, this goal was fully met. Both interns shared the sense of the diversity of responsibilities that go into farming, from those expected such as planting and caring for soil and plants, to the less expected such as financials behind the work, marketing in different settings, working with chickens and bees.

• Goal 3: Interns help farmers accomplish the work they need to do.
  o Farmers have indicated that they found interns helpful. They are enthusiastic about the program and would like it to return next year.

• Goal 4: Interns meet their own goals.
  o According to intern evaluations and interviews with interns, this goal was fully met.

• Goal 5: SAGE contributes to creating a pipeline towards mentoring new farmers from diverse backgrounds.
  o This goal is either partially met or inconclusive. Both interns share a positive feeling about the experience and a sense that they have a far better understanding of farming than previously. However, given their youth, they are not sure they will become farmers as a full-time career. They evaluated the support they received from farmer-mentors are excellent to good.