BALDWIN HILLS COMMUNITY STANDARDS DISTRICT

Landscape Improvement Concepts

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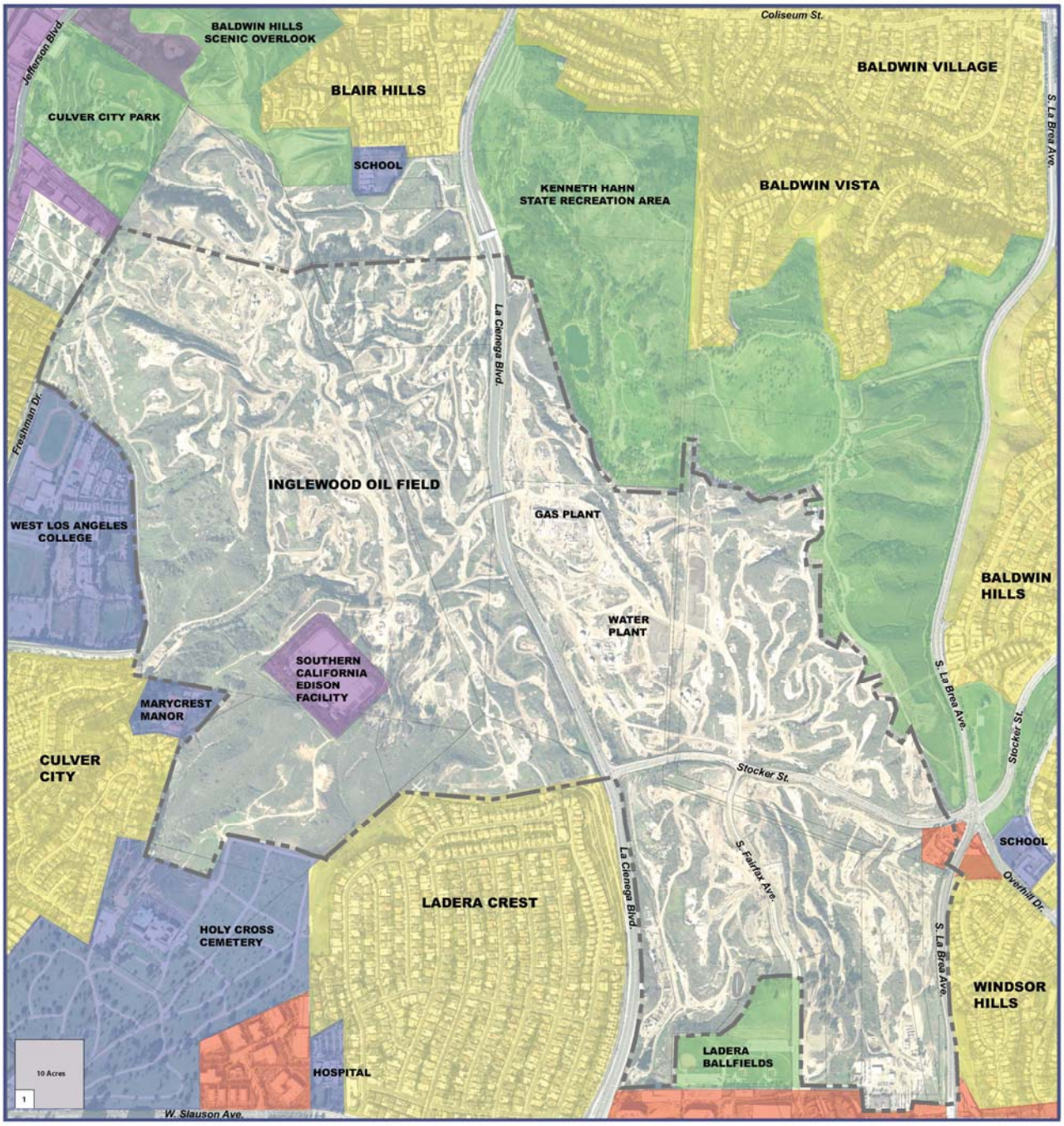
Baldwin Hills Community Standards District

Landscape Improvement Concepts

• Figure 1 *View Northbound on La Cienega Avenue through the Baldwin Hills and Inglewood Oil Fields.*

GOALS

The oil and gas mining operations in the Baldwin Hills are an urban industrial use bordering parks, educational institutions and established stable residential neighborhoods. Residents overlook a landscape of oil derricks and industrial processing facilities from their homes, adjacent parks and from the public streets that bisect the oil fields. The fields occupying the center area between two 400 foot high ridges above sea level are a well known visual blight.



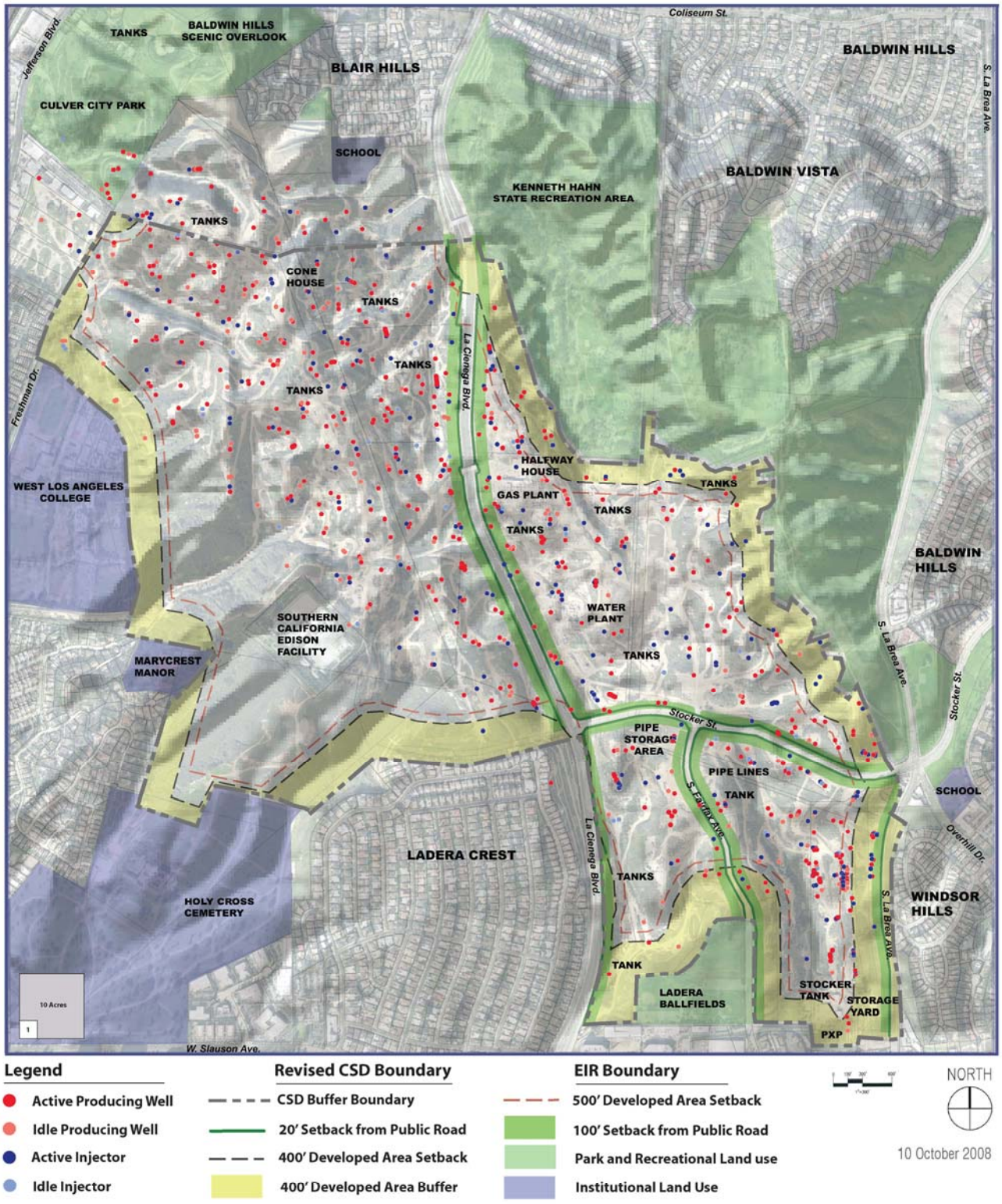
EXISTING LAND USE

- Figure 2 *Existing Land Use for Baldwin Hills Community Standards District*

• Figure 3 *Oil Fields West of La Brea and South of Stocker.*

The Baldwin Hills Landscape Improvement Concepts propose solutions that will improve the visual qualities of the oil fields from surrounding homes, schools, parks and other sensitive land uses; and provide air and water quality benefits in a manner that is compatible with the existing land ownership and continued production of oil and gas from the Baldwin Hills fields.

The Landscape Improvement Concepts have been developed to improve the appearance of the oil and gas mining fields by providing continuous screening of the industrial areas with evergreen vegetation. Roadside setbacks with planting have also been established along La Cienega Boulevard, a heavily trafficked street with direct views into the oil fields. The intent of the Landscape Improvement guidelines is to create rapid visual landscape improvements for the public benefit.



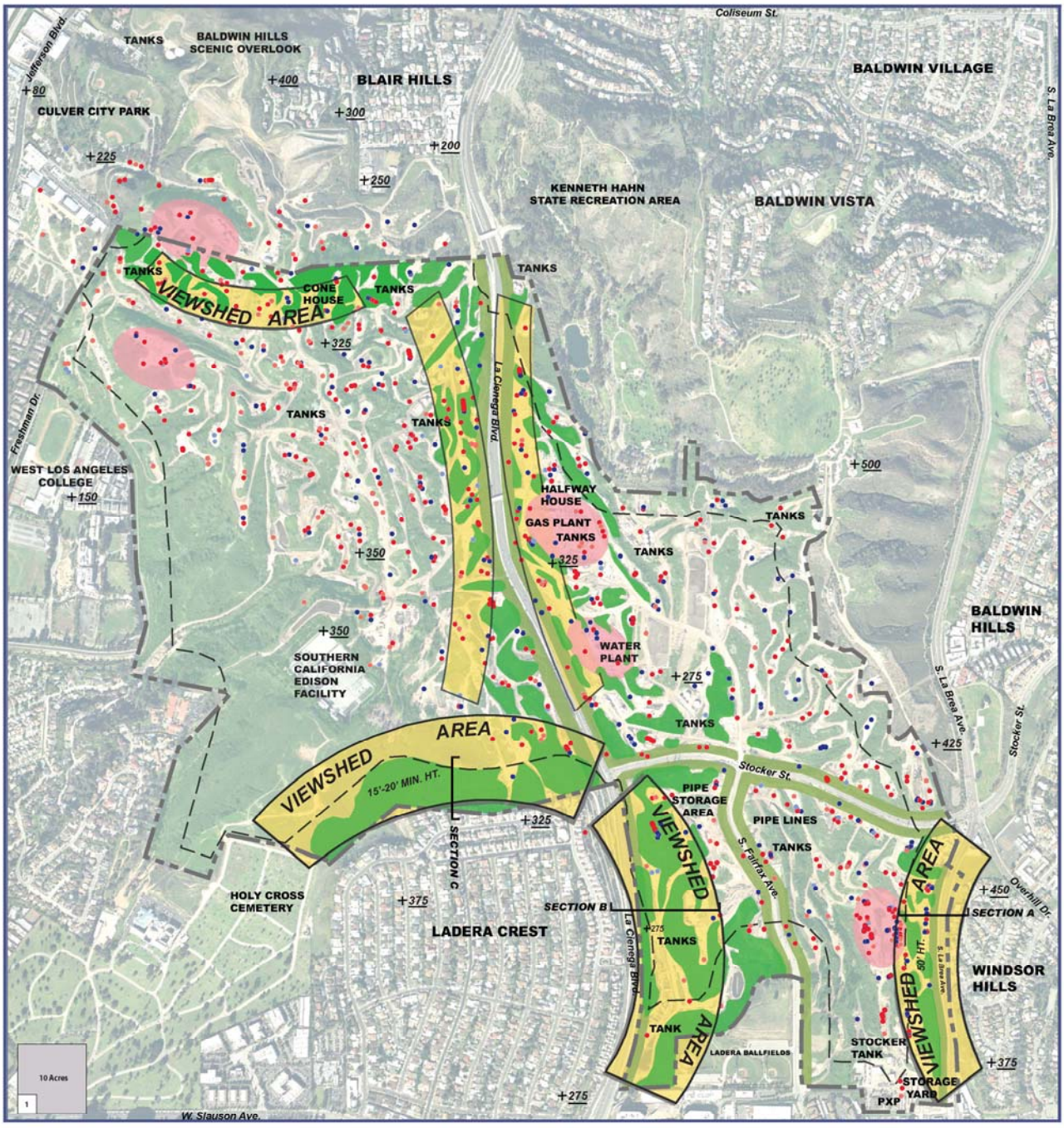
EIR Boundary, CSD Boundary, and Baldwin Hills Landscape Improvement Boundary

- Figure 4 *EIR Boundary, CSD Boundary, and Baldwin Hills Landscape Improvement Boundary*

The improvements propose that a small fraction of the fields will be strategically planted with quickly growing, low water use, low maintenance trees and shrubs planted in currently unused areas of the field to achieve effective and consistent screening of new and existing wells, buildings and other industrial facilities.

The varying topography of the fields, and the fact that not all areas are equally visible, call for specifically tailored and articulated solutions. Improvements will be concentrated on the field perimeters so that the most active areas of the fields can be avoided. Planting is proposed in areas that are currently vegetated and have not been developed with wells or other facilities. Redundant existing roadways should be consolidated to expand potential planting locations.

The Landscape Improvement Concepts illustrate the highest priority visual improvement zones from adjacent neighborhoods, schools and public rights of ways. The improvements will include tree and shrub planting, irrigation and the painting of mining equipment and facilities to merge with vegetation. These improvements will improve the appearance of the oil fields, provide improved air quality and stabilize slope areas to reduce potential erosion and improve storm water quality.



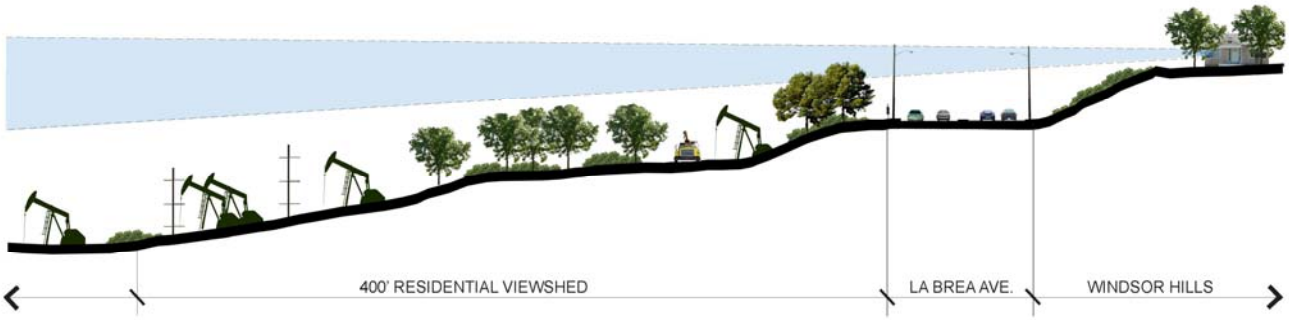
Landscape Improvement Plan

- Figure 5 *Landscape Improvement Plan for Baldwin Hills CSD*

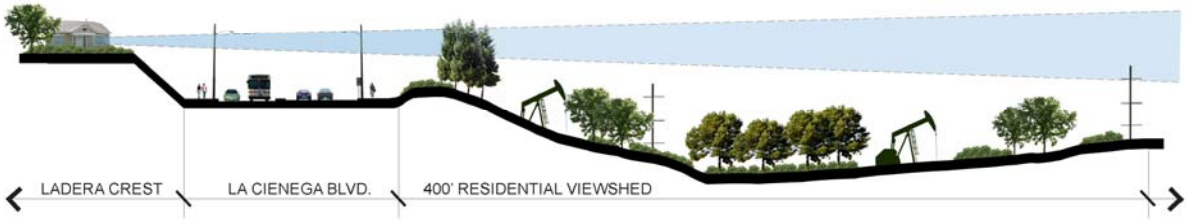
LANDSCAPE IMPROVEMENT PLAN CRITERIA

The plan sets the following goals and principles:

- Establish vegetation screening that will provide effective visual screening of the industrial portions of the oil fields from homes, schools, public roads and other sensitive land uses.
- Locate new planting and irrigation along the perimeters of these areas using existing unused land to avoid conflicts with current production.
- Aggregate planting areas to achieve efficiency in soil remediation, planting and irrigation work. Eliminate redundant roads where possible.
- Provide adequate depth of planting areas to allow for multi-row tree plantings that will result in informal groves as opposed to single file hedges.
- Locate planting areas to provide full and consistent screening from homes, schools, public roads and other sensitive land uses.
- Select tree species and heights based on topography and views. Trees must be tall enough to screen industrial equipment and buildings but low enough to preserve long range views from homes above the fields.
- Maintain all trees with low branching to screen views from eye level.
- Plant evergreen, low water use, low maintenance shrubs and groundcovers in all planting areas to reduce erosion and stabilize slopes.
- Remove invasive plant species when present.
- Remediate soil where new planting and irrigation are installed to reduce erosion and improve soil quality.
- Reduce soil erosion through tree and ground cover planting on slopes
- Use reclaimed or recycled water for irrigation if possible.
- Sleeve all irrigation lines under roads.
- Use drip or other highly efficient irrigation systems with soil and weather monitoring.
- Improve air quality through tree planting.
- Improve runoff water quality through reduced soil erosion and vegetative filtration.
- Reduce the visual impact of drill rigs, fences, buildings and other equipment by painting them dark colors, preferably greens that are similar to the natural landscape.



Windsor Hills Looking West Above La Brea Avenue
Section A
Scale: 1"=20'-0"



Ladera Crest Looking East Above LaCienega Bouelvard
Section B
Scale 1"=20'-0"

Ladera Crest Looking North from Residential Area
Section C
Scale 1"=20'-0"

LANDSCAPE IMPROVEMENT SECTIONS FROM RESIDENTIAL AREA 10 October 2008

- Figure 6 *Landscape Improvement Sections from Residential Areas*

Proposed landscape plan submittals must include the following documentation for review:

- Conduct agronomic soil testing analysis and recommendations for every 25,000 sf of area to be planted.

- Replace unsuitable soil to a depth of 18 inches in shrub planting areas and the full depth of tree wells in tree planting areas.

- Irrigation plans at a scale no smaller than 1 inch = 10 feet showing all proposed equipment.

- Irrigation details, specifications and equipment schedules designed for the use of recycled water.

- Irrigation systems based on water conservation principles using soil moisture monitoring and weather station data input.

- Planting plans at a scale no smaller than 1 inch = 10 feet showing the size spacing and quantity of all proposed plants.

- Planting details and specifications consistent with good horticultural practices in Southern California.

- Site perspectives or elevations showing the plant materials at the time of planting and two years later at a scale of 1/8 inch equals one foot or larger.

REMEDIATION PLANT SELECTION

• Figure 7 *La Brea Avenue looking West at the Oil Fields*

The Baldwin Hills oil mining areas are visible from a distance, the surrounding communities and local streets. The overall planting strategy for the Community Standards District is a planting palette that remediates the site; screens the views from the adjacent neighborhoods, schools and public rights of ways, and has low maintenance requirements compatible with an active mining area. Existing planting covers the steep slopes, canyons and open areas from the ridgelines to the boundaries of the site.

The selection for the planting material palette was based on criteria such as fast growth rate, screening ability, low water usage and salt / alkaline resistance. Plants will be selectively located in the existing vegetation areas, and areas not needed for oil and gas production as shown in the Landscape Improvement Plan as landscape buffers, and the vegetated roadway buffer. Species such as Coast Live Oak, California Black Walnut, and Toyon are for larger areas that can have a more naturalized appearance.

Plants will provide multiple benefits to the environment and people. Trees improve the air through carbon sequestration and reduction of other pollutants such as sulfur dioxide, ozone, nitrogen oxide and particulates. There is measurable data on the benefits of trees in urban areas especially in areas where air pollutant concentrations are high due to tailpipe emission from automobiles and other vehicles as well as industrial facilities. Trees planted along streets

create vertical elements defining edges, guiding movement through an area and may reduce traffic speeds and vehicle incidents. They also act as natural pollution filters through their canopies, trunks, roots and associated soil to filter polluted particulate matter in water.

Criteria of Planting Selection

- EVERGREEN
- FAST GROWTH RATE
- LOW MAINTENANCE
- LOW WATER USAGE
- SCREENING ABILITY
- LANDSCAPE CHARACTER
- "CALIFORNIA FRIENDLY"
- RESISTANCE TO DUST AND PESTS
- NON-INVASIVE ROOT SYSTEM
- SUITABILIITY FOR TRANSPLANTING
- WIND RESISTANCE
- SALT/ALKALINE RESISTANCE

Tree Pallette

TREES	Growth Rate	Evergreen	Drought Tolerant	Salt / Alkaline Tolerant	Wind Resilience	Fire Retardant	Pest Resilience	Wood Harvesting	Special Situations
Eucalyptus ficifolia RED FLOWERING GUM	F	X	X	H	L		M		
Eucalyptus polyanthemos SILVER DOLLAR GUM	F	X	X	H	L		M		
Juglans californica hindsii CALIFORNIA BLACK WALNUT	F	X	-		M	LB			P
Pinus eldarica AFGHAN PINE	M	X	-		H				
Pinus halepensis ALEPPO PINE	M	X	-	H	H				
Pinus radiata MONTEREY PINE	M	X	-		H				
Populus fremontii WESTERN COTTONWOOD	F	-	-			X		X	W
Populus nigra 'Italica' LOMBARDY POPULAR	F	-	-			-		X	W
Prunus lyonii	M	X	X		X	LB	X		
Quercus agrifolia COAST LIVE OAK	M	X	-			X			P
Vitex angus-castus CHASTE TREE	M	-	X						

Abbreviation Key

F	Fast	H	High	W	Plant at low topographic areas with natural drainage
M	Moderate	L	Low		
S	Slow	LB	Limited Basis	P	Plant for permanent planting areas
X	Yes				

Shrubs

Shrubs	Growth Rate	Flowering	Drought Tolerant	Salt / Alkaline Tolerant	Wind Resistance	Fire Retardant	Pest Resilience
Atriplex lentiformis QUAIL BUSH	F		X	H	H		
Baccharis piluaris DWARF COYOTE BUSH	F		X	LB		LB	X
Encelia californica		Y	X				X
Epilobium sp FIREWEED		Y	X				
Erigonum fasticulatum FLEABANE			X				X
Heteromeles arbutifolia TOYON	M	X	X		H	LB	H
Isomeris menzesii	F	X	X				
Mimulus aurantiacus STICKY MONKEY FLOWER		X	X				X
Opuntia littoralis			X			LB	
Sambucus Mexicana BLUE ELDERBERRY	F	C	X				X

Abbreviation Key

F	Fast	H	High	W	Plant at low topographic areas with natural drainage
M	Moderate	L	Low		
S	Slow	LB	Limited Basis	P	Plant for permanent planting areas
X	Yes				

Hydro-Seed

A hydro-seed mix of groundcover planting is recommended for the Inglewood Oil Field. The groundcover is to be planted to heal the scarred areas.

The seed list was based on the following criteria:

- The seed mix may or may not be regularly irrigated
- The plant material is to be low growing approximately one foot in height
- Planting cannot occur within 50 feet of the oil well equipment
- The plants to be non-flammable since fire is a concern, due to the nature of the facility operations.

Seed Species	BULK POUNDS OF SEED /Acre
Ambrosia psilostachys	2.0
Iva hayesiana, San Diego Poverty Weed	1.0
Cressa truxillensis, Alkali weed	0.5
Frankenia salina, Alkali heath	10
Hordeum depressum	8.0
Lotus purshianus, Purshing	3.0
Nassella lepida	5.0
Plantago insularis	10

Today's View Looking West from Windsor Hills

Today's View Looking East from Ladera Crest

Today's View Looking North from Ladera Crest

• Figure 8 *Today's Views at Baldwin Hills*

Proposed View Looking West from Windsor Hills with Landscape Improvements

Proposed View Looking East from Ladera Crest with Landscape Improvements

Proposed View Looking North from Ladera Crest with Landscape Improvements

• Figure 9 *Proposed Views with Landscape Improvements*

GENERAL SOIL REQUIREMENTS

The following are the recommended general suitable soil requirements for plant growth.

General – Planting soil shall be free of excessive clods, stones, gravel, soil residues, pockets of coarse sand, noxious weeds, sticks, lumber, brush and other litter Remove all road base, stones and construction debris greater than 1 inch in diameter. Soil shall not be infested with nematodes or other undesirable disease-causing organisms such as insects and plant pathogens.

The soil shall be friable and have sufficient structure in order to give good tilth and aeration to the soil.

Gradation limits - soil shall be a sandy loam, loam, or clay loam. The definition of soil texture shall be the USDA classification scheme. Gravel over ¼-inch in diameter shall be less than 20% by weight.

Permeability Rate - Hydraulic conductivity rate shall be not less than one inch per hour nor more than 20 inches per hour when tested in accordance with the USDA Handbook Number 60, method 34b or other approved methods.

Fertility - The range of the essential elemental concentration in soil shall be as follows:

	Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram dry weight basis
phosphorus	2 - 40
potassium	40 - 220
iron	2 - 35
manganese	0.3 - 6
zinc	0.6 - 8
copper	0.1 - 5
boron	0.2 - 1
magnesium	50 - 150
sodium	0 - 100
sulfur	25 - 500
molybdenum	0.1 - 30

Soil may need to be amended and conditioned to optimize plant growth. The above listed fertility is for soil selection.

Acidity - The soil pH range measured in the saturation extract (Method 21a, USDA Handbook Number 60) shall be 6.0 - 7.9.

Salinity - The salinity range measured in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 0.5 - 2.5 dS/m.

Chloride - The maximum concentration of soluble chloride in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 150 mg/l (parts per million).

Boron - The maximum concentration of soluble boron in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 1 mg/l (parts per million).

Sodium Adsorption Ratio (SAR) - The maximum SAR shall be 6 measured per Method 20b, USDA Handbook Number 60.

Aluminum – Available aluminum measured with the Ammonium Bicarbonate/DTPA Extraction shall be less than 3 parts per million.

Soil Organic Matter Content - Sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter. The desirable range is 2% to 5%. The carbon:nitrogen ratio should be about 10. A high carbon:nitrogen ratio can indicate the presence of hydrocarbons or non-humified organic matter.

Heavy Metals - The maximum permissible elemental concentration in the soil shall not exceed the following concentrations:

Ammonium Bicarbonate/DTPA Extraction

	Parts per million (mg/kilogram) dry weight basis
arsenic	1
cadmium	1
chromium	10
cobalt	2
lead	30
mercury	1
nickel	5
selenium	3
silver	0.5
vanadium	3

If the soil pH is between 6 and 7, the maximum permissible elemental concentration shall be reduced 50%. If the soil pH is less than 6.0, the maximum permissible elemental concentration shall be reduced 75%. No more than three metals shall be present at 50% or more of the above values.

Phytotoxic constituent, herbicides, hydrocarbons etc. – Plants are sensitive to hydrocarbons, especially the aromatic ones and short chained ones. Methane seepage thorough the rooting zone is inhibitory. Total petroleum hydrocarbons shall not exceed 50 mg/kg dry soil measured per the modified EPA Method No. 8015. Total aromatic volatile organic hydrocarbons (benzene, toluene, xylene and ethylbenzene) shall not exceed 0.5 mg/kg dry soil measured per EPA Methods No. 8020. Growth inhibitory substances can be determined with germination and growth tests using monocots and dicots.

Soil Recommendations

Soil in each plant area needs to be evaluated for suitability. Suitable soil needs to be amended to optimize plant growth. Unsuitable soil needs to be removed and replaced with suitable soil. Planting areas need to be protected from potential impacts and migration of inhibitory material including salinity and brine into the planting areas.

The planting areas need free drainage to avoid perched water table and to avoid salinization of the soil.

If methane is migrating through the rhizosphere, perforated pipe could potentially be used to remove it from the rhizosphere.

Soil Evaluation Criteria

Provide soil analysis to be performed by a qualified agronomic laboratory with the following analysis criteria for recommendations and specifications needed to be determine and provide impart to suitable growth conditions for the successful development of the screening plantings. Recommendations need to be formulated to remediate unsuitable conditions.

Planting soil protocol includes:

- Map of test locations
- Measurement of hydraulic conductivity
- Interpretation of data
- Acidity/alkalinity reported as pH
- Salinity with the concentrations of soluble ions (nitrate, sulfate, sodium, potassium, calcium, magnesium, phosphate, boron and chloride)
- Fertility including the concentrations of all essential elements (nitrogen, phosphorus, potassium, sulfur, zinc, copper, iron, manganese, molybdenum, boron, calcium, magnesium, chloride)
- Toxicity - The concentrations of non-essential, potentially toxic elements (aluminum, arsenic, cadmium, chromium, cobalt, lead, lithium, nickel, selenium, silver, strontium, tin and vanadium).
- Soil texture (sand, silt, clay) and gravel
- Concentration and quality of soil organic matter

IRRIGATION

A professionally designed, installed, maintained and managed landscape irrigation system will greatly reduce or eliminate the volume of irrigation water waste and lower overall maintenance costs. A system that delivers 70 percent of the water to the upper half of the root zone and 30 percent to the lower root zone encourages deep root development and overall improved plant health. Also disease control is improved with more uniform application of water and plants can tolerate higher salinity levels from the irrigation water. A properly managed irrigation system will use less water, cost less to operate, reduce maintenance costs, enhance plant health and provide good water management practices.

Irrigation Design Approach

- Utilize Best Management Practices and noted in the "Handbook Five: A Guide for Implementing Large Scale Irrigation Projects" as required by The California Water Conservation in Landscaping Act (Assembly Bill 325).

- Separate watering zones with individual valves for trees and other plants with different water needs.

- Apply water to a uniform depth at or below the surface of the planted area.

- Match water application rate to the soil's infiltration rate and apply water directly to the root zones to eliminate evaporation.

- Specify automatic controllers that use soil moisture monitoring and weather data to refine the required rate and quantity of water application.

- Strive for optimum moisture levels through a properly managed irrigation system.

- Add a filter to the irrigation system to ionize the water especially reclaimed water.