This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





The Elmer Avenue Neighborhood
Demonstration Project:
A Plant Palette for a Southern
California Green Street

http://elmer.watershedhealth.org

WaterSmart Innovations Conference 2011

Drew Ready, Watershed Coordinator, Council for Watershed Health drew@watershedhealth.org

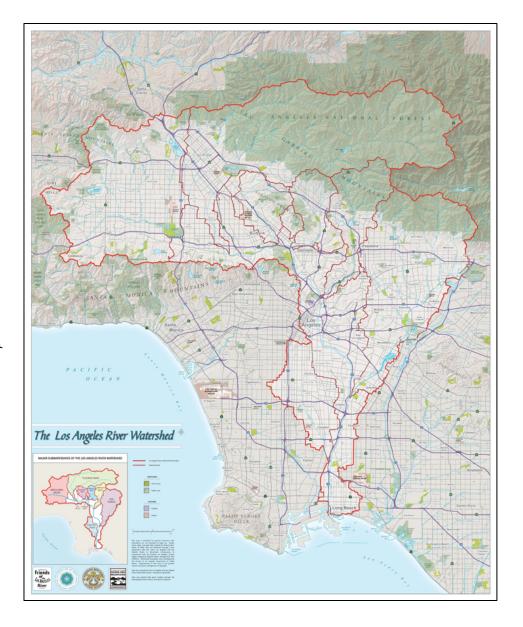
Guy Stivers, Landscape Architect , Stivers and Associates $\underline{\text{guystivers@att.net}}$

Ellen Mackey, Ecologist, Metropolitan Water District emackey@mwdh2o.com



Who we are:

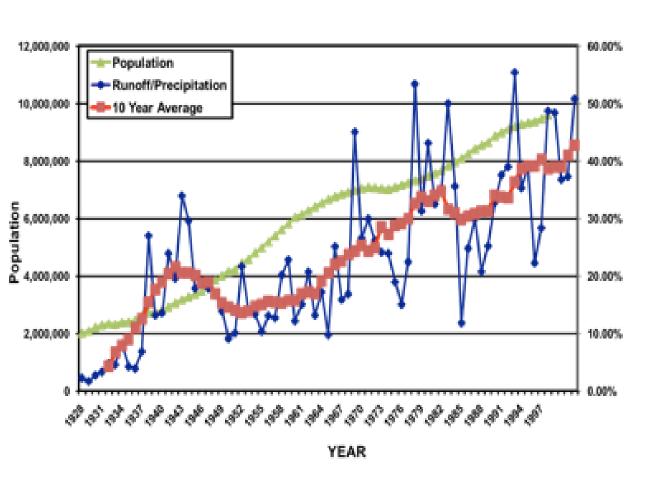
- Hub for Watershed Research and Analysis
 - Working at the intersection of research and policy
 - Driving applied research to improve policy and practice
 - Connecting diverse perspectives to address timely issues

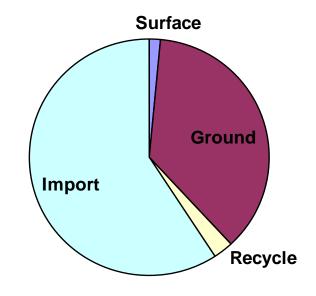




Challenges and Opportunities

Water Use in the LA Region







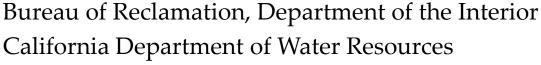




Project Partners and Funding









City of Los Angeles Watershed Protection Division

City of Santa Monica Environmental Programs

County of Los Angeles Department of Public Works

Guy Stivers and Associates Inc.

Metropolitan Water District of Southern California

Regional Water Quality Control Board, LA Region

TreePeople

University of California, Riverside

Water Replenishment District of Southern California

State grants: Prop 13 SWRCB, CalFed, Prop 50 DWR









TREEPEOPLE

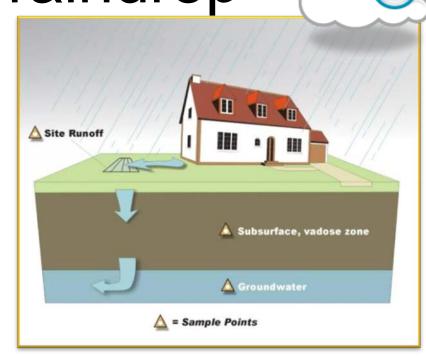
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA





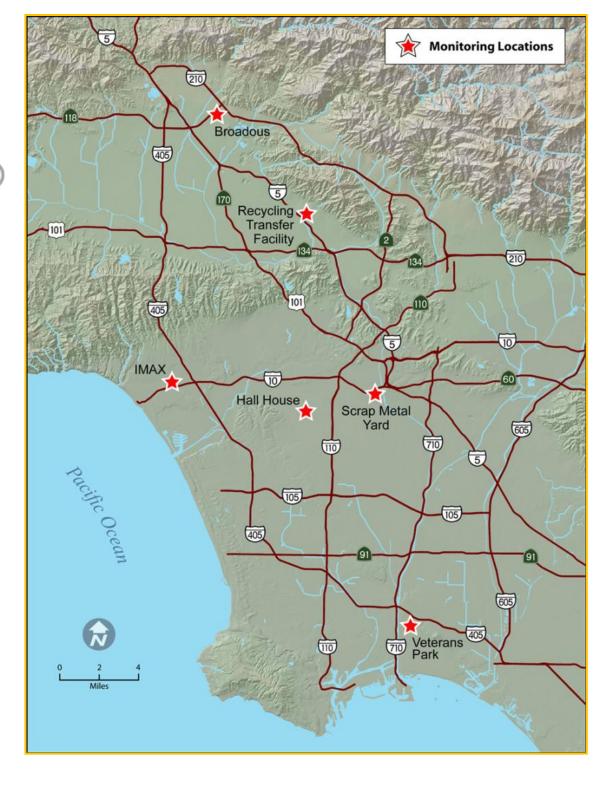


Follow the raindrop



- Metals recycling facility in downtown LA
- Materials sorting facility in Sun Valley
- School in Pacoima
- Commercial parking lot in Santa Monica
- SFR House in South LA
- Park in Long Beach





What We Learned

Six years of data analysis showed:

- Concentrations of pollutants in groundwater did not correspond to stormwater concentrations
- Groundwater quality is stable or improved
- Stormwater is safe for groundwater recharge*

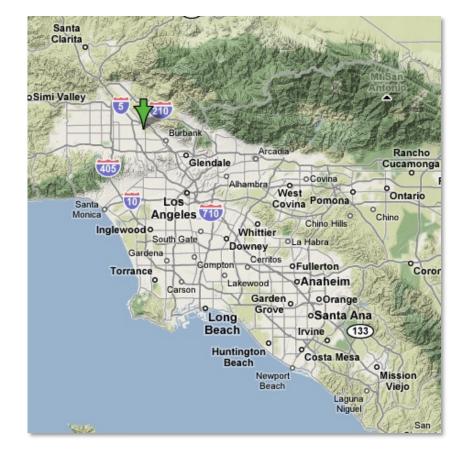






Neighborhood Retrofit Sun Valley, CA

- Chronic flooding
- Lack of storm drain system
- Appropriate soils for infiltration
- Newly adopted watershed plan
- Political and agency support







Elmer Avenue Neighborhood Retrofit



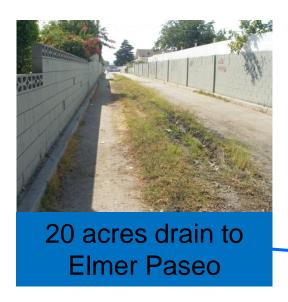






Elmer Avenue and Paseo







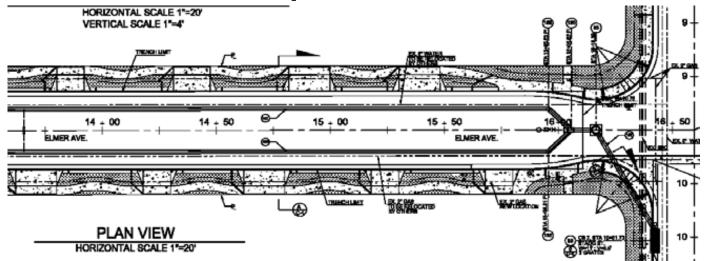


0 135 270 540 Feet

Elmer Avenue Retrofit Conceptual Design **APPROXIMATE** LOCATIONOF EXISTING GAS UTILITIES TO BE RELOCATED/PROTECTED PER CITY OF LOS ANGELES BUREAU OF STREET SERVICES 60'-0" RIGHT-OF-WAY APPROXIMATE LOCATION OF EXISTING 6-INCH CAST IRON SWALE PAVEMENT SWALE WATER PIPE TO BE GARDEN MEANDER NG SECTION : RELOCATED/PROTECTED PER GARDEN SIDEWALK MEANDER NG-CITY OF LOS ANGELES BUREAU **CURB & GUTTER** CURB & GUTTER-SIDEWALK OF STREET SERVICES INLET INLET FILTER: FABRIC S = +/-0.018S = +/-0.0181'-0", MIN 6" AC ON 6" AB, 95% MAX DENSITY DISTANCE VARIES, SELECT BACKFILL (OR EXISTING APPROVED DEPTH VARIES. BY ENGINEER), 95% MAX DENSITY SEE PIPELINE 3'-0" PROFILE 3'-0", PERMEABLE ROCK MATERIAL, 0'-6" 95% MAX DENSITY EXISTING 8-INCH SEWER PIPE GRAVEL FILLED 18-INCH PERFORATED PIPE INFILTRATION TRENCH 18-INCH PERFORATED PIPE 9'-0" 9'-0" 12'-0" 12'-0" INFILTRATION TRENCH SECTION - ELMER AVENUE SCALE: 1" = 4"



Stormwater Capture: Infiltration Gallery

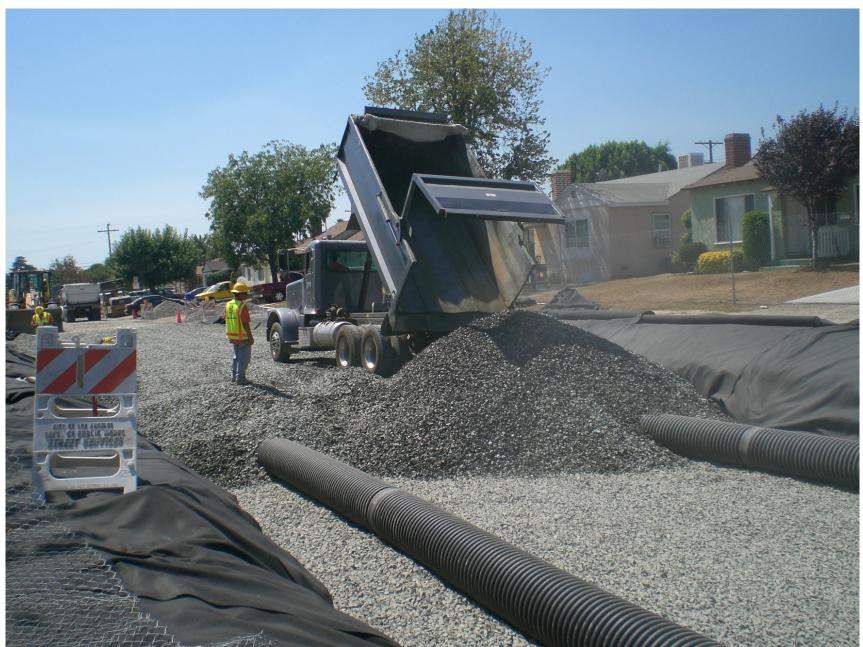








Elmer Retrofit Infiltration Trench



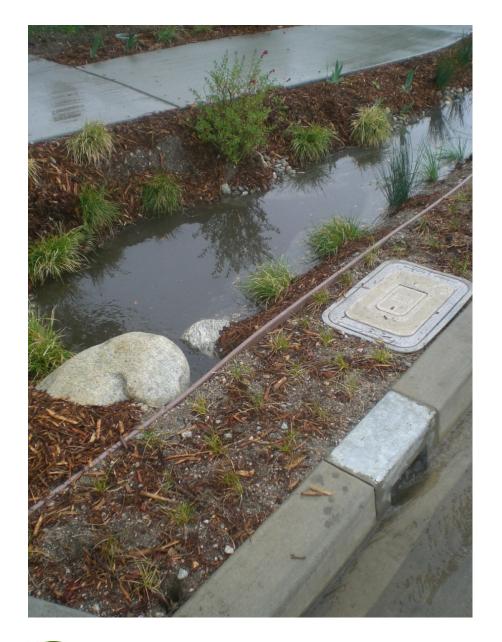


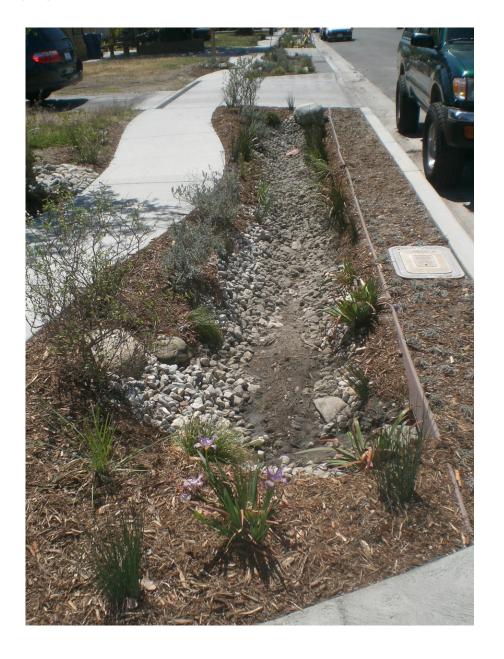
Elmer After Construction





Elmer Retrofit Bio-Swales







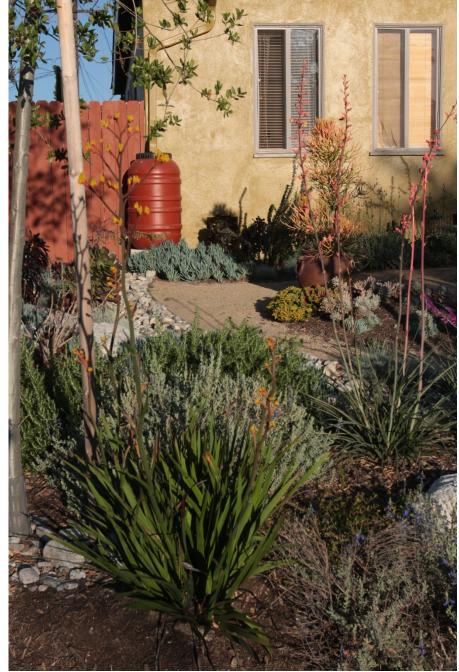
Stormwater Capture: Private Property Improvements

- Permeable pavers
- Smart controllers
- Drip irrigation
- Rain barrels
- Swales
- Native and water efficient plants
- Street trees









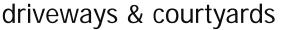






community entries "anchor homeowners"

> vehicular traffic speed & safety







water/sewer services





streetscape & community forest



site soils

- irrigation
- vegetation

Community Landscape: Inventory & Analyze



weekdays, weekends day & night



storm water flows



dry season flows



pedestrian traffic (Jr. High School)



community entries



fences, gates, masonry

waste removal

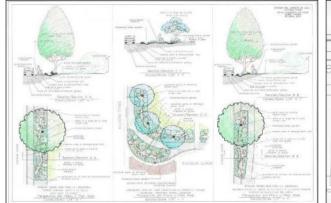


Opportunities & Constraints, Conceptual Plans & Construction Documents



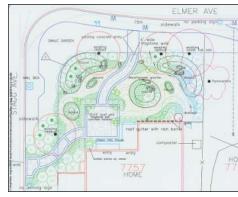
Community Improvements:

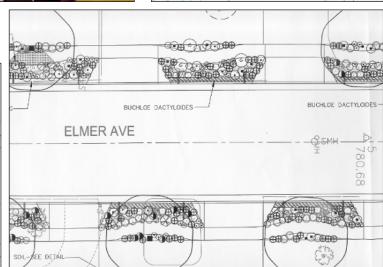
- Bio-swales, living soils, IPM, BMPs;
- Solar Street Lamps (LED);
- Aquifer recharge and drainage gallery;
- "California Friendly", bio-diversity, resilient, wildlife enhancement;
- Drip Irrigation, efficient spray heads, smart controllers;
- Community forestry and "Right Plant in Right Location";
- Rain barrels & gutters, composters, maintenance training;
- Permeable pavers and concrete, courtyards, and stone paving;
- Permeable pavers and concrete, countyards, and stone paving
- Curbs, gutters, drains, driveways, and sidewalks that drain to swales



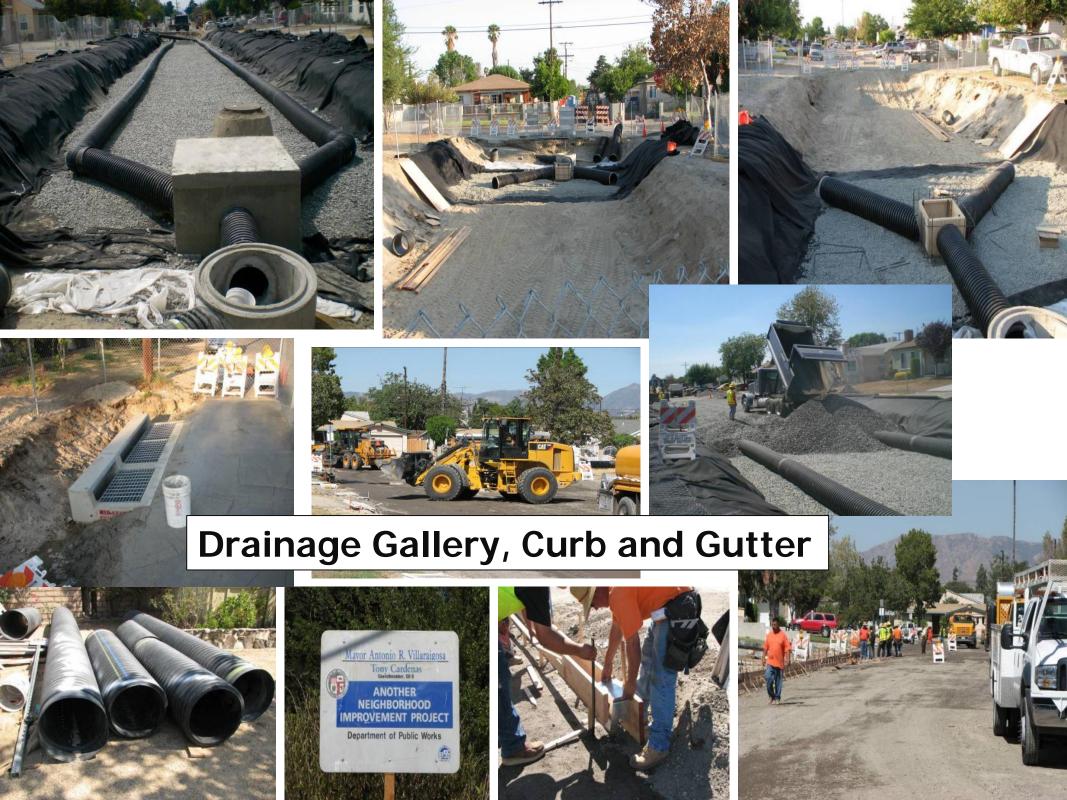
























California Friendly Landscapes

A brand of Metropolitan Water District of Southern California (MWD)

MWD is a cooperative of 26 cities and water agencies servicing 19 million people in six counties (Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura).

The six county region is diverse: coastal, valleys, foothills, mountains, and deserts. According to Sunset Western Garden Book, the MWD service area has 9 climate zones.

California Friendly Plants (vetted for):

- Low water consumption
- Low maintenance
- Reliability
- High performance
- Non-invasive
- Readily available

Plant Selected for Elmer Ave:

- City constructed set back: 80% California native and 20% Mediterranean type.
- Private Front Yards: 50% California native and 50% Mediterranean type.

Where to find California Friendly Plants: Bewaterwise.com











trench drains: capture & conveyance

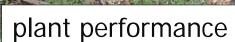
weed

abatement

nut sedge



water quality & system maintenance



urban forestry

tree roots vs. paving



homeowner

improvements

Ellen Mackey, Senior Ecologist Council for Watershed Health Metropolitan Water District of So. California









Outline

Need for ecological information to maintain climate-appropriate landscapes

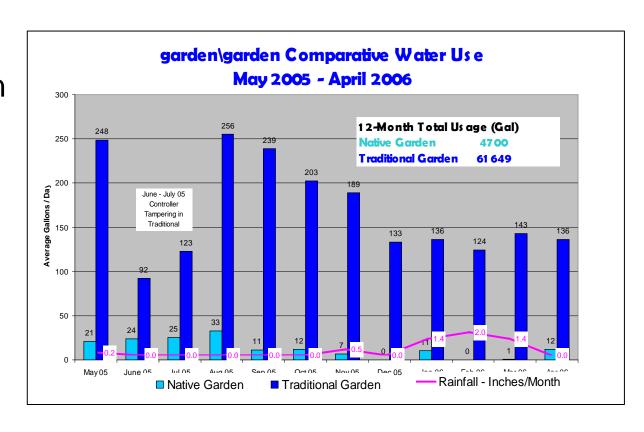




Outline

Need for ecological information to maintain climate-appropriate landscapes

Do they result in conservation and \$\$\$ savings?



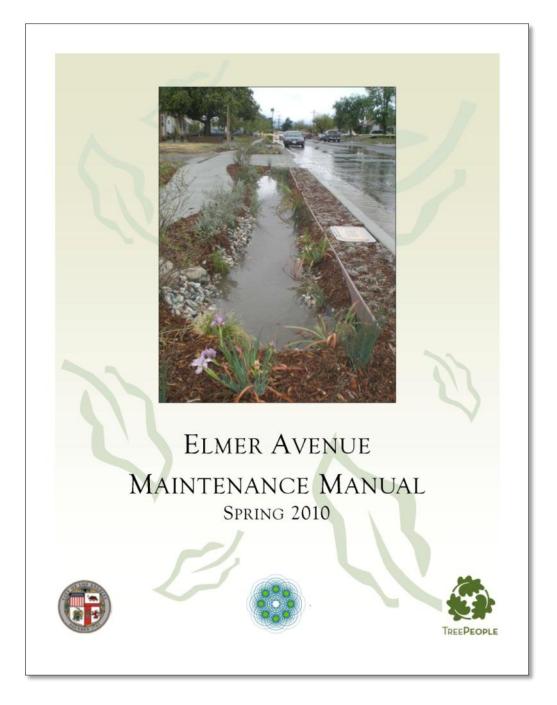


Outline

Need for ecological information to maintain climate-appropriate landscapes

Do they result in conservation and \$\$\$ savings?

Site-specific Maintenance Manuals







Planting – best time





Planting – best time

Weed control – timing seedlings & before seed set





Planting – best time

Weed control – timing seedlings & before seed set

Pruning when and how



Planting – best time

Weed control – timing seedlings & before seed set

Pruning when and how

Understanding watering





Planting – best time

Weed control – timing seedlings & before seed set

Pruning when and how

Understanding watering

Seasonality



Water Conservation Gardens

and

\$\$\$ Savings??

Do they save?

How do we know?





The comparison garden idea

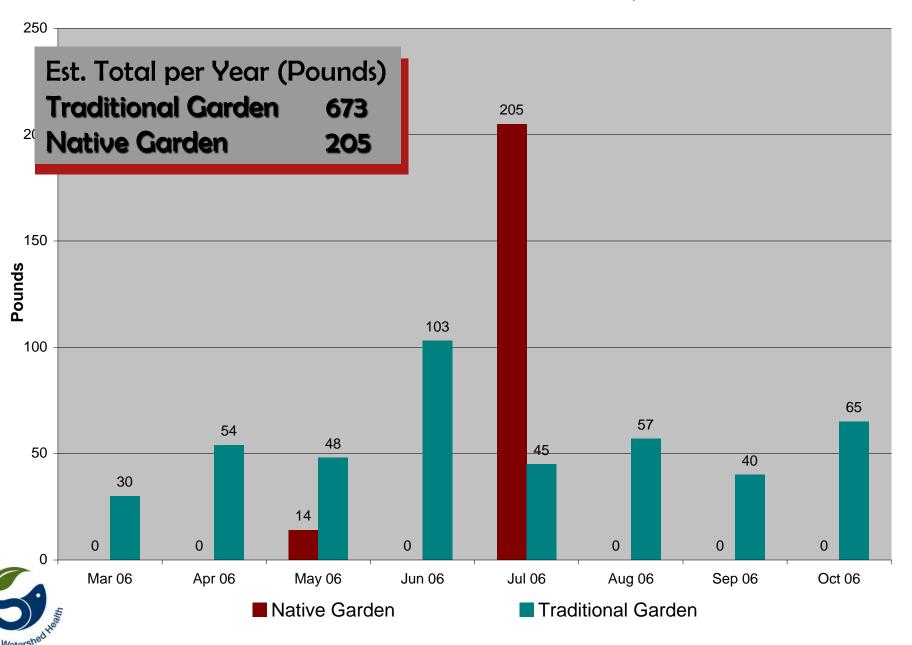
Native Garden

Traditional Garden

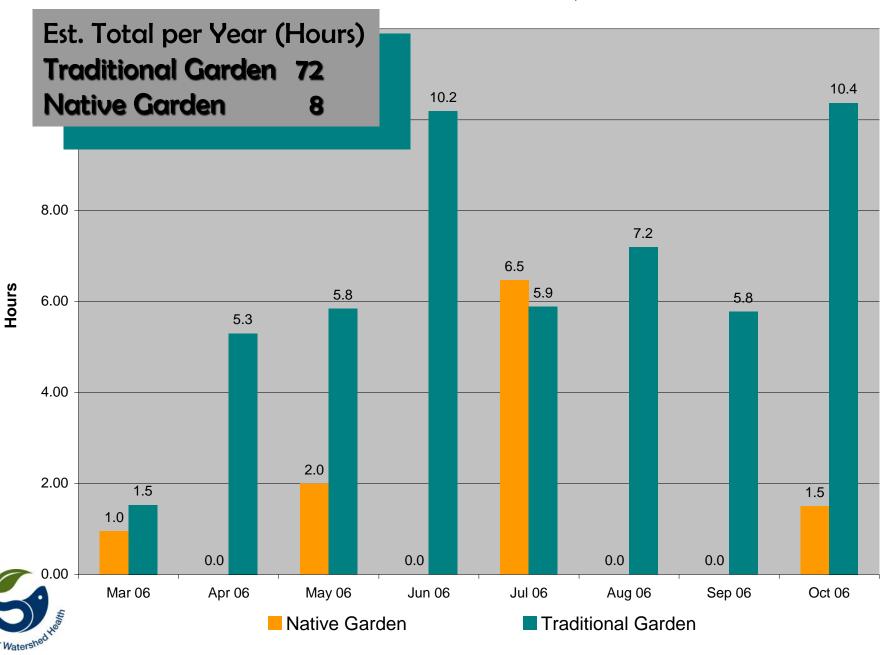




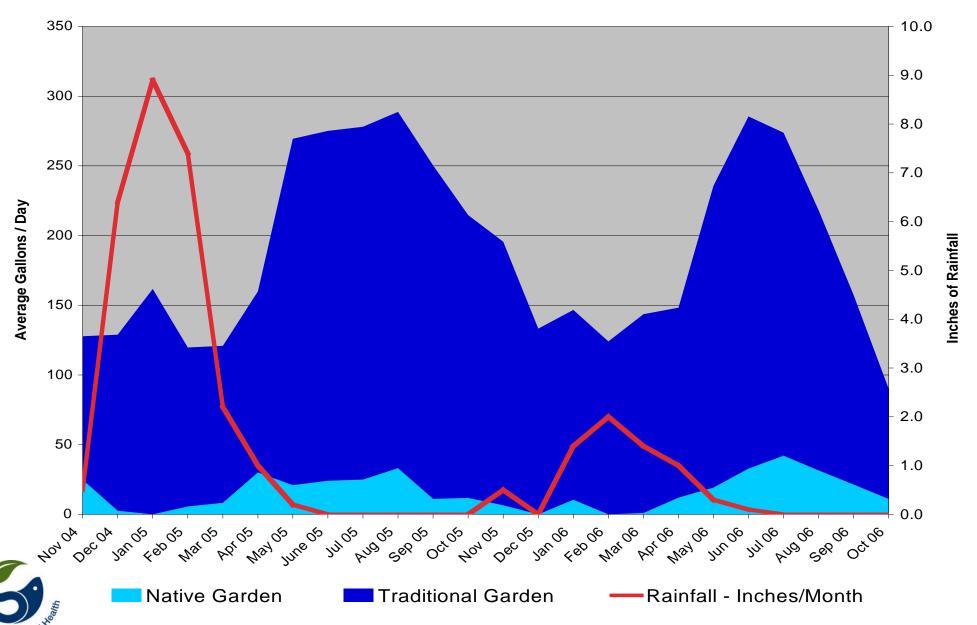
Greenwaste Production from Garden/Garden, Santa Monica



Comparative Labor Hours from Garden/Garden, Santa Monica



24-Month Comparative Water Use from Garden/Garden, Santa Monica



Elmer Ave. Maintenance Manual

- Define target audience
- Choice of two languages
- House specific
- •Widely different landscape choices
- •All houses have parkway swale, curving sidewalks and ROW "treatment"
- •Each homeowner could chose:

rainbarrel composter lawn



ELMER AVENUE

Maintenance Manual for 7752

Spring 2010



Problem:

- Need for water conserving, climate-appropriate landscaping and native plants
- Communicate the new landscaping paradigm shift to residents
- Communicate needs for watering and pruning to residents
- Predominately Spanish speakers



Solutions:

- Team of professionals including: community organizers, landscape architect, engineers, construction professionals, ecologist, and planners
- User-friendly individualized manual in 2 languages for each homeowner
- Training sessions with on-the-ground assistance several times per year for first few years
- Assess the effectiveness of the Maintenance Manual and supplements
- Continue to support neighborhood through several years



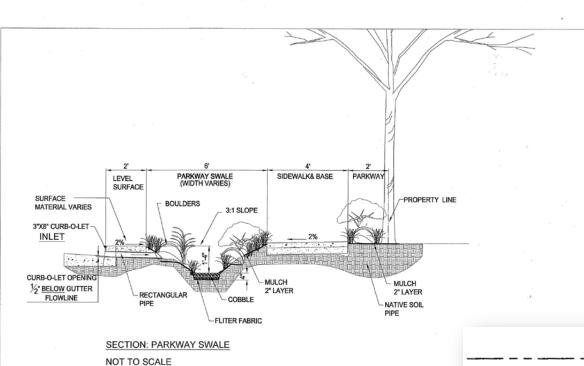




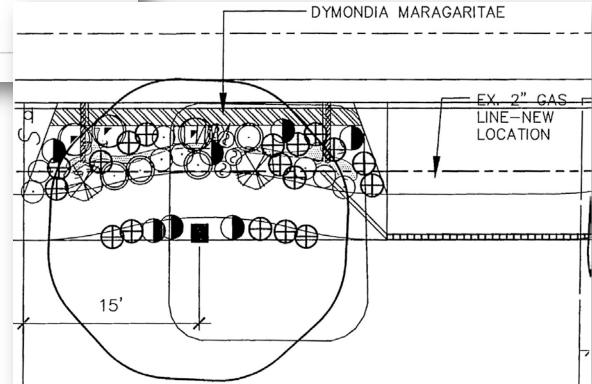






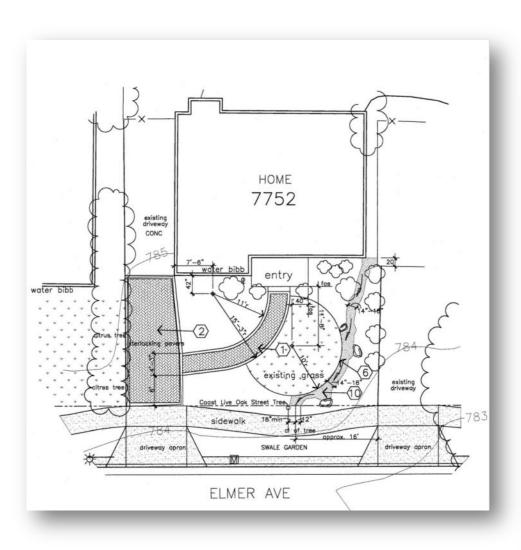


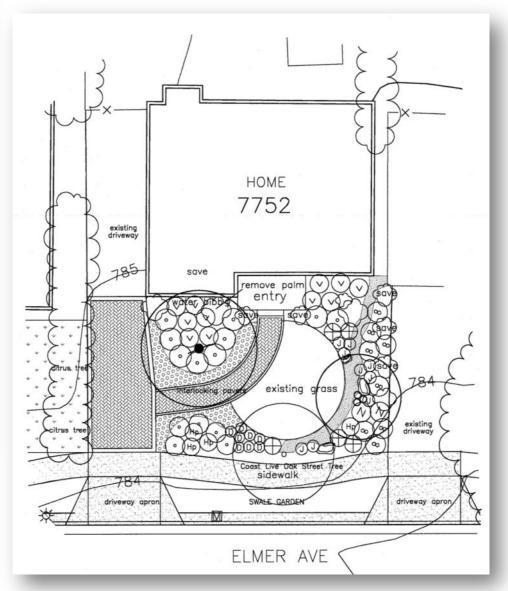
Parkway Sidewalk ROW





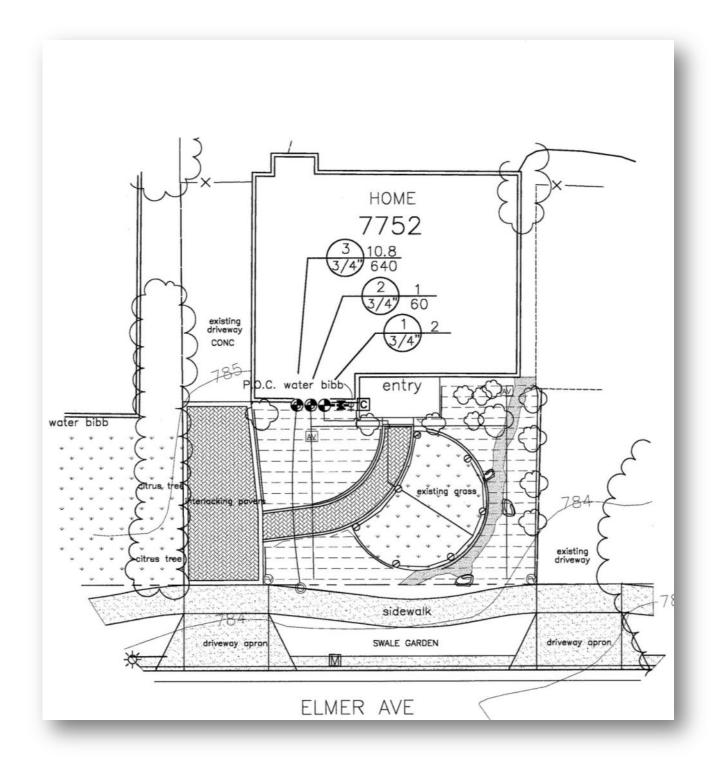
Individual construction and planting plans







Irrigation Plan





Maintenance Checklist & Schedule

Maintenance Checklist & Schedule												
	Winter			Spring			Summer			Fall		
Task	January	February	March	April	May	June	July	August	September	October	November	December
Soil testing												
Fertilization	no	novor	not	no	novor	not	no	novor	not	no	novor	not
	no	never	not	no	never		no	never	not	no	never	not
Mulch replacement		check/add				check/add				check/add		
Irrigation equipment	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly	weekly
Soil moisture monitoring	as	needed	as	needed	as	needed	as	needed	as	needed	as	needed
Backflow preventet certification	Х											
Tree maintenance	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes	check stakes
	CHECK Stakes			CHECK Stakes	CHECK Stakes	CHECK Stakes	CHECK Stakes	CHECK Stakes	CHECK Stakes	CHECK Stakes	CHECK Stakes	CHECK Stakes
Cercis occidentalis (western redbud)		prune if needed	prune ir needed									
Chitalpa tashkentensis 'Pink Dawn' (chitalpa)	prune if needed											prune if needed
Lagerstroemia indica (crape myrtle)	prune if needed					prune suckers	prune suckers	prune suckers	prune suckers			prune if needed
Platanus racemosa (sycamore)	prune if needed	prune if needed										prune if needed
Quercus agrifolia (coast live oak)								prune if needed	prune if needed	i		
Shrubs and perennials												
Achillea 'Moonshine' ('Moonshine' yarrow)					deadhead fls.	deadhead fls.	deadhead fls.	deadhead fls.	deadhead fls.			
Anigozanthos 'Harmony' (red-yellow kangaroo paws)							prune to ground	prune to ground				
Arctostaphylos edmundsii 'Carmel Sur' ('Carmel Sur' manzanita)					edge if needed	edge if needed						
Arctostaphylos 'Emerald Carpet' ('Emerald Carpet'					pinch/edge if	cuge ii liceucu						
manzanita)					needed	edge if needed						
Buxus microphylla (Japanese boxwood)						prune if needed						
Carex pansa (California meadow sedge)						prune ii necucu		mow if needed	mow if peeded	mow if needed		
Ceanothus griseus var. horizontalis (ceanothus 'Carmel								mow ii needed	mow ii needed	mow ii needed		
creeper')					prune	prune	prune					
Cietus calvifalius (caralant rackrosa)		remove old stems				ninch/shoar	ninch/choor	pinch/shear				remove old stems
Cistus salvifolius (sageleaf rockrose)	stems	stems				pinch/shear	pinch/shear	,				stems
Dudleya virens ssp. hassei (Catalina Island dudleya)					remove	remove stalks	remove stalks remove	remove stalks	remove stalks			
Epilobium canum 'Everett's Choice' (Everett's Choice)	cut back hard	cut back hard			seedlings		seedlings					
Erigeron karvinskianus (Mexican daisy)	nrune if needed	prune if needed					J					prune if needed
Galvezia speciosa (island snapdragon)	prane ii necaca	prune if needed	prune if needed			pinch						prane ii needed
,		,					cut back after					
Helianthemum nummularium (sunrose)							flowering					
Hemerocallis 'Rusty Red' ('Rusty Red' daylily)			divide if needed	deadhead	deadhead			deadhead	deadhead	deadhead	divide if needed	
Hesperaloe parviflora (red yucca)		divide				deadhead	deadhead	deadhead				
Heuchera maxima (island alum root)											prune if needed	prune if needed
Iris sp. (bearded iris)											cut back to 2"/divide	
sp. (bearded into)											divide/prune if	
Iris douglasiana (Douglas' iris)							snip brown tips	snip brown tips			needed	prune if needed
Juncus patens (California gray rush)	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed	prune as needed
Lantana montevidensis (trailing lantana)	cut back	cut back										cut back
									prune as	prune as		
Lavandula stoechas 'Otto Quast' (Spanish lavender)									needed	needed cut back hard		
Leymus condensatus 'Canyon Prince' ('Canyon Prince' wild rye)								cut back hard to 4 - 5" if needed		to 4 - 5" if		
Limonium californicum (California sea-lavender)											cut dried stalks	cut dried stalks
Muhlenbergia rigens (deergrass)					coppice if needed	coppice if needed						
Penstemon heterophyllus 'Margarita BOP' (penstemon)							cut back hard	cut back hard				

Keep it Simple, Sweetie

Quercus agrifolia (coast live oak)

Large evergreen oak.

Don't water in the summer, except for the first few years.

Prune August to September.

Salvia spathacea (hummingbird sage)

Very fragrant leaves.

Grows in colonies from underground stems.

Cut out unwanted stems.

Remove dried stalks in summer.

Stake tall flowering stems if needed.



Ongoing Training

- With community organizers
- Open the book
- Pulling weeds with residents
- Pruning training sessions







