Appendix B
Placer County LID Guidebook Pilot Project: Incorporating LID Into the Homewood South Base Redevelopment Project

This appendix documents the process used by the project team and TAC to learn about innovative ways to integrate LID into local commercial projects and to pilot test the preliminary LID Guidebook tools using the proposed Homewood expansion project design plans.

Thank you to David Tirman of JMA Ventures, LLC for hosting the June 9, 2010 TAC meeting (held on location at Homewood South Base), for his presentation on the Homewood Master Plan, and for his help compiling the necessary materials for this summary of the pilot project workshop and its outcomes.

Appendix B

Placer County LID Guidebook Pilot Project: *Incorporating LID Into the Homewood Mountain Resort Redevelopment Project*

Introduction/Background

In early 2010, Placer County and Sierra Business Council reached out to the Technical Advisory Committee formed to oversee development of the LID Guidebook to solicit ideas on a suitable pilot project which could both demonstrate LID principles and features and inform development of the Guidebook. David Tirman, Executive Vice President of JMA Ventures, LLC (JMA) offered the use of the Homewood Mountain Resort proposed redevelopment master plans for this purpose. Mr. Tirman is a licensed architect and an accredited LEED professional and his company had already committed to include LID in the master plan, but he was very interested in any recommendations his fellow TAC members might present. He provided all the necessary background, engineering studies and plans for the June 9, 2010 TAC workshop, which he hosted at the Homewood South Base so that the TAC members could get a firsthand look at site conditions (e.g., terrain, vegetation, soils, and hydrologic features) before conducting small group analyses and discussions related to integrating LID into the project design.

This appendix presents the results and outcomes of the TAC workshop and how the TAC feedback informed the development of the planning and design tools included in the Guidebook.

Pilot Project Description

The development of the Homewood Mountain Resort Master Plan began in 2006 and has undergone extensive regulatory and community review as a result of meetings with the regulators and the community, as well as the Draft Environmental Impact Statement (EIS) review process in 2009 (which generated over 1,800 comments), and the Draft EIR review process conducted in 2010-11. The project has been guided by the following three principles as a result of extensive input from the community:

The Homewood Master Plan will:

1. Remain consistent with the scale and character of Homewood.
2. Enhance the lifestyle and property values of West Shore residents.
3. **Elevate the environmental thresholds within the Lake Tahoe Basin.**

The master plan involves redevelopment of the North Base and South Base. For the purposes of this pilot project, only the South Base was studied (see maps in the appendix).

The proposed redevelopment project is or plans to use LID; for example, the following techniques are being employed or proposed:

- Watershed-based planning to place the redevelopment project in the context of the entire watershed (the project began in 2007 with the development of a watershed plan including identification of streams, drainage areas, uplands, forests, meadows, structures and the myriad of other elements that make up the watershed, to get an idea of how that watershed is functioning, how it can be protected, improved, etc. as resort redevelopment takes place)
- Clustered buildings to preserve natural vegetated areas.
- Narrow roadways to reduce impervious surfaces.
- Removal and revegetation of old impervious parking areas.
- Revegetation of disturbed areas with natives by restoration experts who have been conducting demonstration revegetation projects for the Homewood Resort for several years.
- Infiltration facilities to capture, store and slowly release stormwater and snowmelt into the ground to reduce runoff to the receiving stream and naturally recharge the groundwater table.
- Protection of the stream that flows through the property with a wide buffer to allow natural filtration of runoff, prevent streambank erosion and protect habitat.

The proposed development is being designed in a watershed context. Attachment 1 includes a Homewood newsletter article written by the Restoration Ecologist hired by the developer, Michael Hogan, which explains the goals and process.

June 9, 2010 TAC Workshop, Homewood South Base, Tahoe

On June 9, 2010, Placer County and their consultant team facilitated a TAC workshop at the Homewood South Base lodge (see agenda and list of TAC members in Attachment 2). The main goal of the workshop was to allow the TAC members to experience what it was like to participate in a simulated "integrated design team" to plan and design a "real world" LID project, using the draft Guidebook tools. The desired outcomes of the workshop included:

- Feedback and recommendations to the pilot project developer (JMA, Homewood Mountain Resort) from other design colleagues/technical experts about innovative ways to integrate additional LID into the design
- Feedback to the Guidebook consultant team about the usefulness, content and format of key Guidebook planning and design tools (process flowchart, planning and design checklist, LID selection matrix and LID fact sheets)

JMA provided the materials for the workshop, including base maps, groundwater elevations, soils report and the engineer's preliminary storm drain routing plan (copies provided in Attachment 2). Although they also provided preliminary LID plans/approaches, this information was withheld from the TAC until the end of the workshop, so as to allow the TAC to create their LID plans using only the basic information, their observations of the site, and their own technical experience.

Following an introductory presentation and site tour by David Tirman, as well as a water quality presentation by Bob Costa of Placer County (to provide regulatory context), the TAC was split into two teams and tasked with creating their ideal LID design plan for the site. Assignments were made so that each team was truly integrated, with a developer/builder, architect, landscape architect, engineer, planner and County staff person on each.

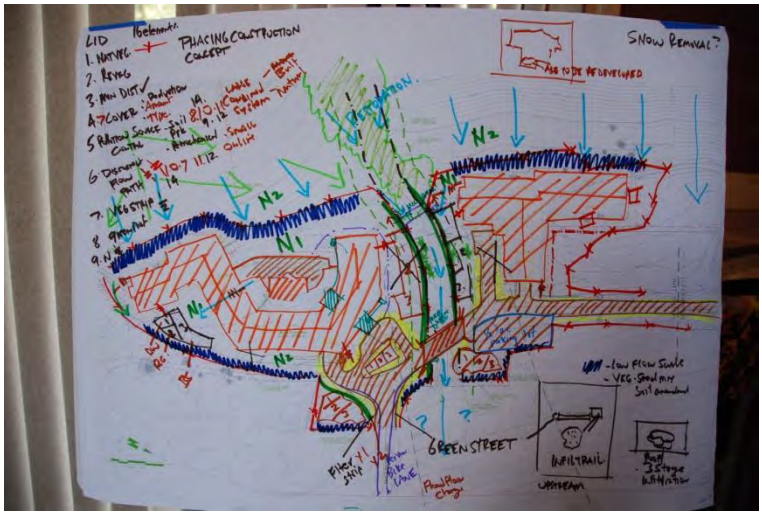
At the end of the workshop, the teams presented their plans to the group and additional discussion ensued about opportunities and constraints. JMA then presented the proposed LID plans for South Base and thanked the group for the additional feedback and recommendations, which would be considered during subsequent phases of the Homewood design process.

Pilot Project Workshop Outcomes and Recommendations

By the end of the June 2010 workshop, each of the two teams developed an LID site design for the South Base pilot project area and numerous notes and recommendations about modifications that should be made to the Guidebook planning and design tools. Attachment 3 contains the original workshop notes and copies of the original sketches (LID site plans) created by the two teams; below is a summary of the highlights.

GreenTeam Recommendations

(see large scale LID site plan in Attachment 3)

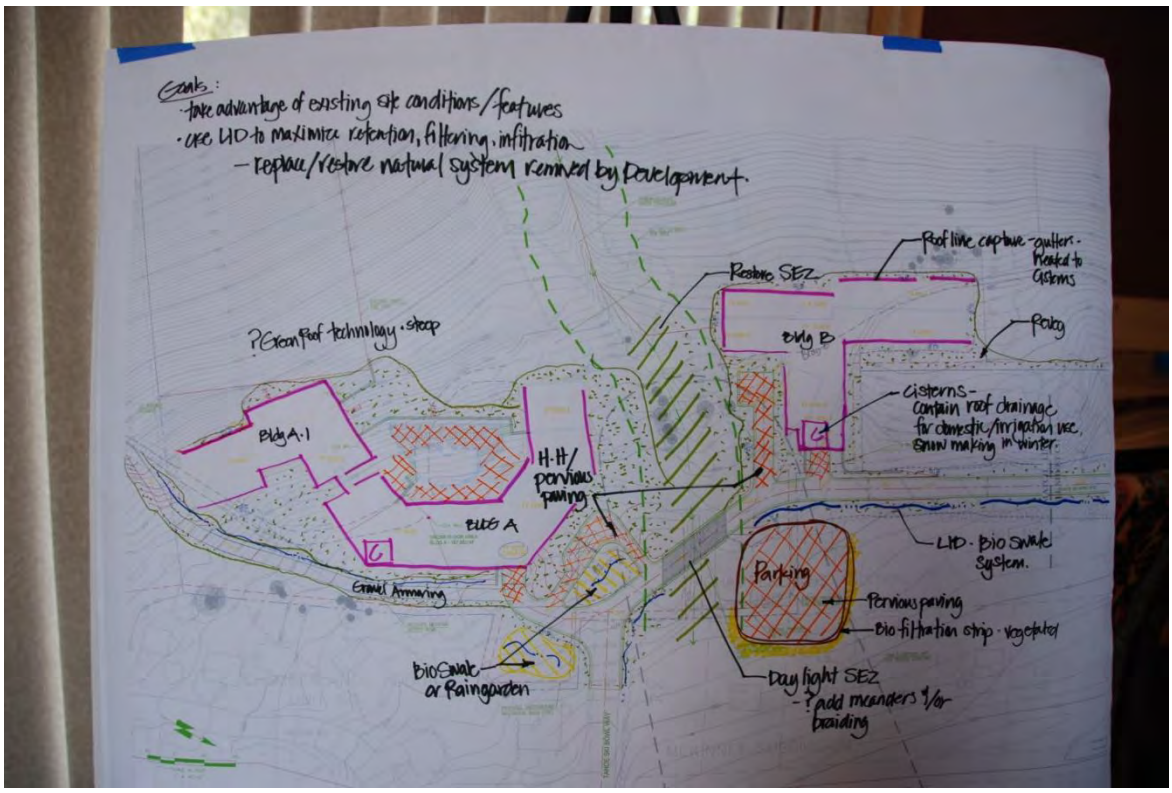


- Address the design at 2 different scales: Natural and built systems
- Preserve natural flows and drainage patterns
- Maintain and take advantage of existing vegetation and identify areas for revegetation (e.g., former building sites and parking lots)
- Create "LID systems" of multiple LID features
- Install a dry well to infiltrate roof runoff
- Install 2 rain gardens (will infiltrate rainwater and snowmelt)
- Install 3 vegetated swales
- Recreation trails should be pervious to allow infiltration
- Amend soils to enhance infiltration capacity
- Remove, stockpile native soil (including topsoil) and reuse it on-site rather than hauling it offsite
- Add a pedestrian bridge – public education facilities, taking advantage of the resource of the creek that runs through the project site
- Make public art out of the stormwater treatment system (e.g., City of Portland, OR examples)
- Harvest rainwater, snowmelt and stormwater runoff – consider the opportunity to reuse the stored snow to make snow for ski operations
- Consider heat transfer from sewer system, and circulate that heat to sidewalks to melt snow/ice
- Consider operation and maintenance needs when selecting, siting and designing the LID features (e.g., need for snow plowing/removal)

OrangeTeam Recommendations

(see large scale LID site plan in Attachment 3)

- Take advantage of existing conditions/features (creek, vegetation, topography, hydrologic features)
- Use LID to restore any part of the natural system removed by the new development
- Use cisterns to capture rainwater from roofs and consider using the water to make new snow for ski operations
- Use pervious pavement (e.g., decorative pavers for architectural interest) for parking and low traffic areas
- Install vegetated swales to treat and infiltrate road and parking lot runoff
- Daylight the portion of the stream (including outfall) that is currently in a pipe/culvert under the building/road
- Consider use of hydroponic heating to create "snow free" zones
- Do not recommend green roof due to historic architectural roof design/pitch and expected snow loads



Attachment 1

Background on the Ecological and Watershed Management Goals for the Homewood Mountain Resort Project

(Article by M. Hogan printed in 2007 Homewood Mountain Resort Master Plan Project Newsletter)

on the

HOMEFRONT

FEBRUARY 2007

Welcome to the second in a series of informational newsletters from *Homewood Mountain Resort*. The goal of these reports is to keep all interested parties updated on the exciting changes underway at Homewood as it moves forward under new ownership.

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Homewood Mountain Resort: A New Approach

Ski areas are notorious polluters. Everybody knows that, right? If you cut a ski run, you ruin (or seriously threaten) the watershed. At least that's what many people believe. And I'd actually go a step further and say that many folks feel they "know" that as sure as they know the sun rises in the east. But I've spent the last several years of my career asking simple questions such as "How do we 'know'?" and, just as importantly, "What do we really know about ski area erosion?"

It turns out that the research data shows us that we don't know as much as we thought we did. And sometimes the data challenges the core of our beliefs. For instance, simulated rainfall (and seasons of direct field observations) showed us that plants don't always minimize or even slow erosion significantly. We've also recently seen that some ski run construction practices can have negligible impacts on erosion. We've also seen that some restoration and erosion control practices can reduce erosion below native or background rates. How is that possible?

I think a couple of more important questions are: Why have we been using essentially the same practices for erosion control for so long without asking the hard questions, such as do they work? And that question leads to: How do we start to ask the tough questions in every erosion control project we do so that we can learn and understand how things are working? As humbling as it is, the so-called "experts"

don't have all the answers. Nor do the agencies tasked with regulating erosion, construction, etc. I don't see this as a problem. It's more like a great starting point.

Where does Homewood fit into this picture?

Homewood has long been the epitome of small, family-run ski resorts – old infrastructure, runs and roads built the "old way." The downside to older resorts is that there is seldom an excess of capital to fix, repair or replace aging infrastructure, including the environmental infrastructure.

The new owners have a different vision of what Homewood should be. They are posing the question: Can we still be a small, local, family-oriented resort, run for the love of skiing, and still set a new, higher standard across the board for community involvement, community improvement, environmental protection AND environmental improvement – and still make money? It's a good question.

One of the issues of ski area operations is whether ski runs and environmental protection can go side by side. Even in the short period of time that JMA Ventures has owned Homewood, they have already engaged in putting environmental protection projects on the ground and putting in place a process to monitor and quantify the benefits of those projects. We (Integrated Environmental Restoration Services) have been contracted to install three moderate-sized restoration demonstration projects in order to determine the types of materials and processes that will give us the greatest benefit going into the future.

These projects are designed to test and measure treatment outcome on three very different types of sites. Treatments range from complete road removal and re-contouring to simple soil loosening in areas where plants are growing but soil is compacted and prone to rapid runoff. Homewood has over 1.5 million square feet of roads that may eventually be removed and our task is to determine the most cost and environmentally effective restoration methods that can be used on those roads. And since we don't know all of the possible treatment types, we're testing some new ones on the mountain.

We are basing our approach on the fact that if water can infiltrate the soil, it can't run off (until soils become saturated). Thus, we are tilling soils, adding organic matter, seeding (using native grass and shrub seed) and using a variety of mulches to test concepts, determine effectiveness and assign a cost to various methods. We have seen, even after two small rainstorms, that this approach has resulted in zero runoff from treatment plots while areas all around the plots are showing signs of runoff. Thus, our way is

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fairly clear and the results are visibly obvious.

But that's not enough. We have also begun research-level monitoring of treatment areas using simulated rainfall to directly measure the benefits of treatment as compared to background and to other types of treated and untreated areas. In this way, when we continue to restore additional roads and runs next summer, we'll know how much benefit we get from each type of treatment.
We expect that Homewood will help lead the way in implementing state-of-the-art restoration and erosion control techniques and that the resort will do so in a manner that makes economic as well as environmental sense. Skiing is directly based on the environment. It seems strange that ski resorts are so often viewed as being at odds with the environment and that ski area operators see themselves at odds with the environmental community. Ski areas offer so many people the opportunity to engage with nature.

We now see ski resorts as being a prime opportunity to learn more about environmental restoration practices as well. And through efforts by groups like the California Alpine Resort Environmental Cooperative (CAREC) and resorts like Homewood, we believe that the gap between environment and business may be narrowed considerably. As Robert Kennedy, Jr. recently said: "The economy is a wholly owned subsidiary of the environment." We hope to show (and measure) that at Homewood Mountain Resort that statement is the gateway to a new standard of operations.

Homewood: Leading the Way into Watersheds

The thing that makes skiing great is the same thing that creates a high potential for runoff and erosion: steep, mountainous slopes. When those slopes are undisturbed, they tend to stay put and the streams that run through them tend to run clear. But when development takes place, disturbance can drastically accelerate erosion. That erosion is the thing that can have such a devastating effect on water quality, fish and all the other water-related benefits that we usually take for granted.

However, development and erosion don't have to go hand in hand. Careful planning and consideration of watershed processes are two critical elements in reducing or eliminating erosion in ski resorts. The third critical element is applying the right protections against erosion. In other words, once you've thought about where erosion might occur, you need to have the best tools available to do the job.

Homewood is engaged in a process to 1) look at the entire watershed and place the future of the ski resort and its related activities within that context, and 2) not only apply the best tools to protect water quality, but, where those tools don't exist, help develop them. With that in mind, Homewood is teaming with my company, Integrated Environmental, as well as with Jason Drew and Nichols Consulting Engineers to develop a whole watershed plan. This plan will serve as the foundation of all other management and development activities as the resort moves forward.

Many developments consider only the immediate surroundings. Homewood and IERS/Nichols are beginning down the road of looking at the whole watershed, including streams, drainage areas, uplands, forests, meadows, structures and the myriad of other elements that make up the watershed, and beginning to get an idea of how that watershed is functioning, how it can be protected, improved, etc. And as we go forward, we will fit our management into that context rather than try to make the watershed fit into our plan.

Watershed planning can be complex but can also provide us with extremely useful information. For instance, we want to know how much erosion is currently coming from the mountain, and as we move forward, we have a

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plan to remove many of the dirt roads on the mountain in order to restore hydrologic function. By doing this in a whole watershed context, we'll be better able to quantify the improvements in water quality and habitat quality. Homewood has been discussing a range of energy saving and energy production alternatives. Watershed planning will allow us to understand, for instance, how well small hydroelectric plants might work and whether they may have an impact on the overall watershed.

Another approach that Homewood and IERS is taking is to understand where our knowledge of watershed restoration is limited, and, in those cases, tackle that head-on by setting up test or experimental plots that can be measured. These plots can provide us and others with critical information that can be used at Homewood and elsewhere through the Tahoe Basin and beyond. The IERS team has been working on this issue for a number of years, working with the local Water Quality Control Board, TRPA, UC Davis researchers, the Sierra Business Council and our own team of specialists to develop and apply restoration and water quality protection technologies that mimic nature and ultimately result in a higher level of water quality.

Ski runs, roads and other disturbed areas are ultimately field laboratories where we can continually learn how to develop and apply management practices that can result in high levels of environmental protection. This information, when put into the context of an overall watershed management plan, will give us all something that we can not only live with, but that will ultimately improve the Lake Tahoe environment and help improve Lake clarity. At the same time, it can provide us with a high level of recreational opportunities and be something that we, as residents and visitors to the Tahoe Basin, can be proud of. We believe that this approach will lead the way into the future of watershed planning, environmental protection and restoration practices. The goal of "raising the bar on every level" starts here.

Article Written by Michael Hogan. *Michael has been involved in erosion control and restoration in the Sierras since 1985, having worked for the Forest Service, Squaw Valley, UC Davis and others before founding Integrated Environmental Restoration Services (IERS) in 1995. IERS is dedicated to developing and implementing science-based restoration practices throughout the Sierra Region. He additionally is a member of the Pathway 2007 Soils and SEZ technical advisory committee as well as heads the Forested Upland Category Group for the Tahoe Basin TMDL.*

Next Edition:
Transportation Issues

HOMEWOOD
Mountain Resort

skihomewood.com

530.525.2992 P.O. Box 165, Homewood, CA 96141

Attachment 2

June 2010 Technical Advisory Committee (TAC) Workshop Materials

- Agenda
- List of TAC Members
- Fact sheet of supplemental pilot project site information (soils, groundwater, surface water) provided to TAC teams prior to June 2010 workshop group exercise (prepared by consultant team based on review of soils report and storm drainage plan information prepared by project consultants)
- South Base maps and engineering plans provided by project owner

Placer County Low Impact Development Guidebook

Technical Advisory Committee Meeting #2

At Homewood Mountain Resort, South Base

Tahoe Ski Bowl Way

http://www.skihomewood.com/visit-ski-homewood/directions

June 9, 2010 • 9:30 am - 2:30 pm

Optional Tour to Homewood North Base 2:30- 4:00 pm

AGENDA

9:30	Welcome, Introductions
9:45	Homewood Pilot Project to Demonstrate LID Guidebook Tools • Introduction to the Group Exercise • Introduction to the Site/Setting
10:15	Work on Pilot Project (2 groups) • Review LID Process Toolkit • Visit Site • Formulate Design Concepts
12:15	Lunch
12:45	Present Pilot Project Conceptual LID Designs
1:15	LID Toolkit Comments/Recommendations
2:00	Homewood Feedback LID Concepts
2:15	Vision/ Purpose Discussion
2:30	Adjourn – Set Next Meeting Date
2:30-4:00	Optional Site Visit – Homewood North Base

Placer County LID Guidebook: Technical Advisory Committee

Kaitlin Backlund Executive Director Mountain Area Preservation Foundation P.O Box 971 Truckee, CA 96160 Office: 530 582-6751 kaitlin@mapf.org	Jeff Loux Chair, Science, Agriculture and Natural Resources Department University of California, Davis Extension & Adjunct Faculty, UC Davis Environmental Design 1333 Research Park Drive, Suite 267 Davis, CA 95616 Office: 530-757-8577 jdloux@ucdavis.edu	*Rebecca Taber (Alternate)* *Senior Civil Engineer* *Engineering and Surveying Department* *Placer County Community Development Resource Agency* *3091 County Center Dr., Suite 120* *Auburn, CA 95603* *Office: 530-745-7538* *Fax: 530-745-7589* *rtaber@placer.ca.gov*
Pat Davison Executive Director Contractors Association of Truckee Tahoe 12313 Soaring Way, Suite 1G Truckee, CA 96161 Office: 530-550-9999 Fax: 530-550-9998 pat@ca-tt.com	Tony Pastore Principal P˙R Design & Engineering, Inc. 8931 North Lake Blvd. P.O. Box 1847 Kings Beach, CA 96143 Office: 530-546-4500 Mobile: 530-308-2459 Fax: 530-452-2074 tpastore@prdei.com	Jessica Thompson, P.E. Assistant Engineer/Clean Water Program Coordinator Town of Truckee 10183 Truckee Airport Road Truckee, CA 96161 Office: 530-582-2938 jthompson@townoftruckee.com
Darin Dinsmore Principal Sustainable Communities Strategies.com P.O. Box 1803 Truckee, CA 96160 Mobile: 530-277-0196 darin@darindinsmore.com	*Andrew Ryan, PE (alternate)* *P˙R Design & Engineering, Inc.* *8931 North Lake Blvd.* *P.O. Box 1847* *Kings Beach, CA 96143* *Office: 530-546-4500* *Fax: 530-452-2074* *andrew@prdei.com*	David A. Tirman AIA Executive Vice President JMA Ventures, LLC P.O. Box 3938 Truckee, CA. 96160 Office: 530-582-6085 Mobile: 530-386-1907 Fax: 530-582-1851 dtirman@jmaventuresllc.com
Keith Franke Development & Design Director DMB/Highlands Group, LLC – Martis Camp 11253 Brockway Road, Suite 201 Truckee, CA 96161 Office: 530.550.2990 x 19 Mobile: 530.320.2807 keithf@martiscamp.com	Stefan Schuster, P.E. Principal CDM Inc. 12313 Soaring Way, Suite 2-D Truckee, CA 96161 Office: 530-582-7235 Fax: 530-582-1098 Mobile: 775-690-0850 SchusterSL@cdm.com	Lisa Wallace Executive Director Truckee River Watershed Council P.O Box 8568 Truckee, CA 96162 Office: 530-550-8760 lwallace@truckeeriverwc.org
Michael Hogan Integrated Environmental Restoration Services, Inc. 2780 Lake Forest Road P.O. Box 7559 Tahoe City, CA 96145 Office: 530-581-4377 mhogan@ierstahoe.com	Ed Staniforth, P.E. Associate Civil Engineer County of Placer Community Development Resource Agency Engineering and Surveying Department 565 West Lake Blvd. P.O. Box 1909 Tahoe City, CA 96145 Office: 530-581-6225 estanifo@placer.ca.gov	Robie Wilson Litchfield, ASLA Principal, Certified Green Building Professional L + P DesignWorks 10246 Donner Pass Road, Suite B4 Truckee, California 96161 Office: 530-587-9139 Fax: 530-587-9100 rwl@LPDesignWorks.com

Core Team Contacts

Edmund Sullivan Senior Planner Placer County Planning Department 3091 County Center Drive Auburn CA 95603	Nancy Richards Program Director Sierra Business Council P.O. Box 2428 Truckee, CA 96160

Office: 530-745-3030 Fax: 530-745-3080 esulliva@placer.ca.gov	Office: 530-582-4800 x21 Cell: 530-320-1694 Fax: 530-582-1230 nrichards@sbcouncil.org

Core Team members:

Technical Project Team

Carmel Brown, P.E. CKB Environmental Consulting, Inc.	Chris Bowles, Ph.D. cbec eco engineering
	Melanie Carr, M.S., P.E. cbec eco engineering

Placer County

Edmund Sullivan Placer County Planning Department	Robert Costa, P.E., L.S. Placer County Public Works Department
Jennifer Dzakowic Placer County Planning Department	Crystal Jacobsen Placer County Planning Department
Charlene Daniels Placer County Planning Department	

Sierra Business Council

Nancy Richards Project Manager	Martini Morris Sierra Nevada AmeriCorps Partnership

Updated May 21, 2010

TAC documents web portal address: http://cbecoeng.com/placerLIDTAC.php

Supplemental Information for Placer LID Guidebook TAC Meeting – June 9, 2010

Homewood Pilot Project to Demonstration LID Guidebook Tools

(team members can add their own notes if desired during the overviews by Chris, Michael, David & Bob)

Soils

- Silty sand, gravelly sand, gravel, cobble and boulders
- Infiltration rate: 4 inches/hour (102 mm/hr)

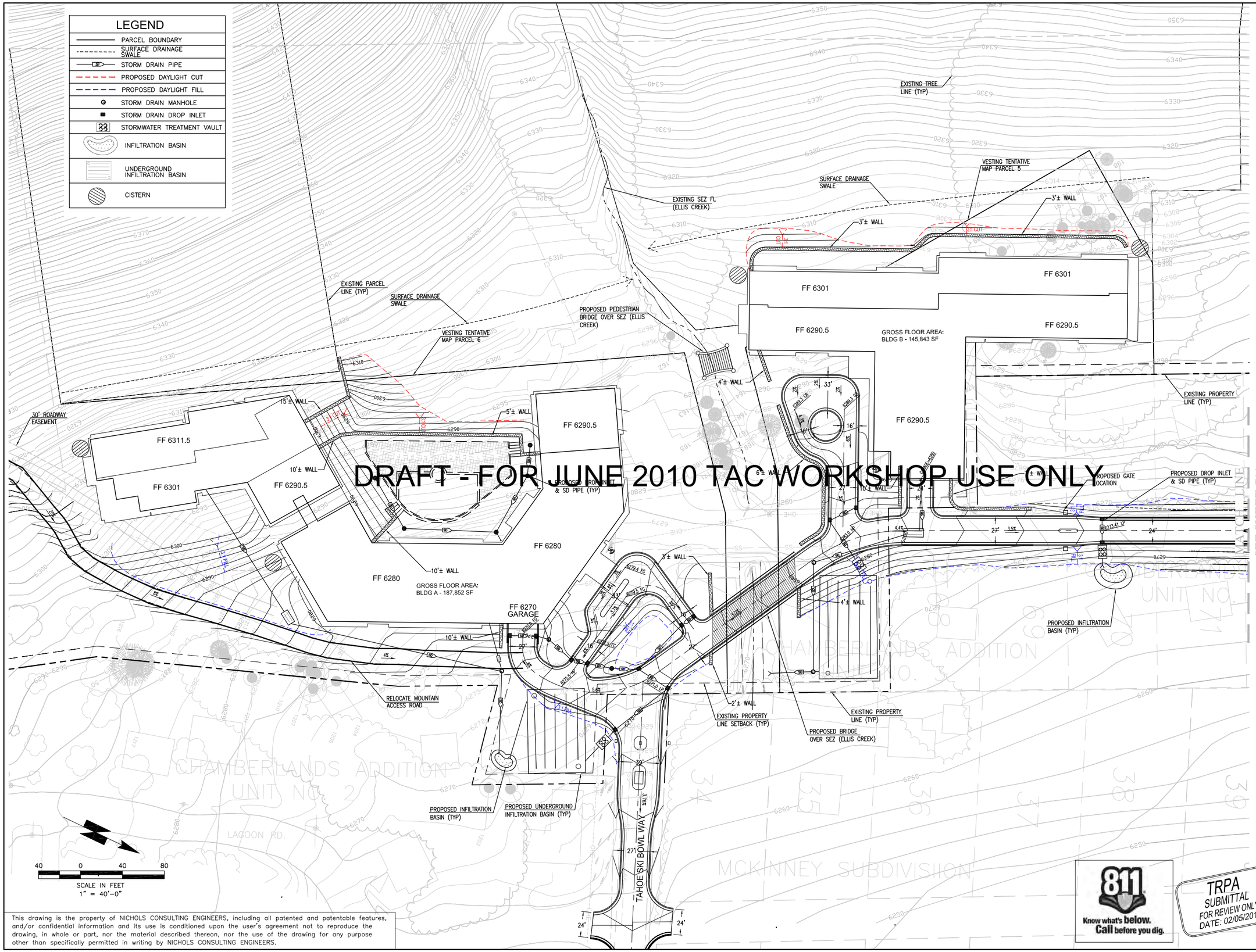
Groundwater

- Groundwater flow is to the east toward Lake Tahoe
- Depth to seasonal high groundwater is extremely variable on the site. For this exercise, assume:
    - beneath and in vicinity of north building (B): 2-3 ft (.6-.9 m)
    - beneath and in vicinity of south buildings (A1 and A2): 6-8 ft (1.8 – 2.4 m)
    - in the vicinity of Tahoe Ski Bowl Way: 4 ft (1.2 m)
- TRPA requires a minimum 1-foot separation between the bottom of an infiltration device to the seasonal high groundwater.
- Assume no existing groundwater contamination problems/concerns at this site.

Surface Water/Watershed

- Ellis Creek (aka Homewood Creek) traverses the property between the two main buildings – see flow line on plan; see SEZ setback shown on plan
- Any urban runoff discharges to the creek need to be treated. SEZ should only be used for final dissolved nutrient removal, after pretreatment to remove other pollutants.
- Assume no on-site wetlands
- Contributing drainage areas; assume:
    - North buildings (A1 and A2) and surrounding areas: 2 acres
    - South building (B) and surrounding areas: 1 acre
    - All site run-on is diverted around the development

Other Notes



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DATE: 02/05/2010

REGISTERED PROFESSIONAL ENGINEER
JACK W. NORBERG
No. 31080
CIVIL
STATE OF CALIFORNIA

DATE: _____

REVISIONS

No.	Date		CHKD	APPD

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DRAWN: PBR
CHECKED:
JOB No: A514.02.14
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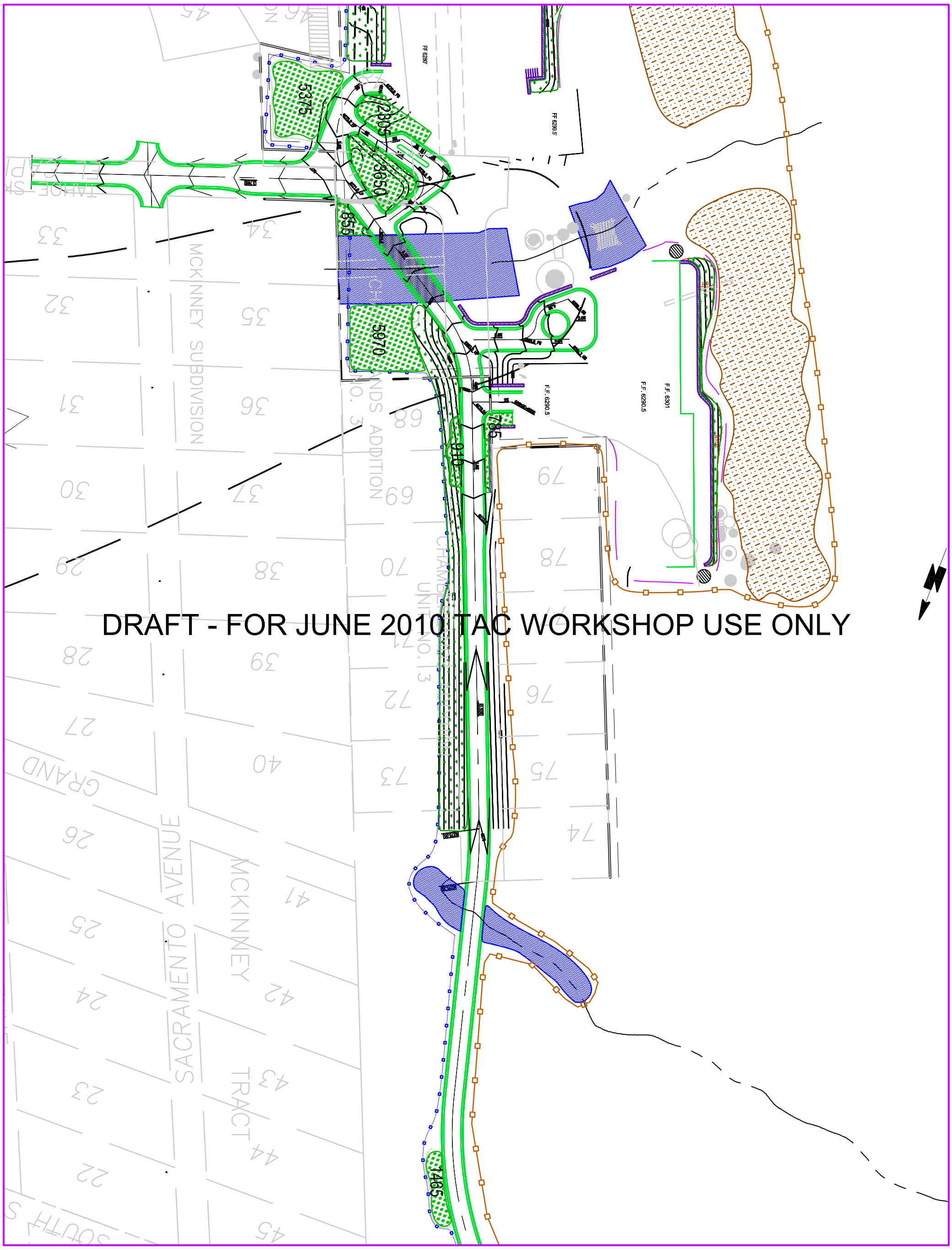
DATE: 01/22/2010

Nichols Consulting Engineers, Chtd.
Engineering & Environmental Services
1885 S. Arlington Ave., Suite #111
Reno, NV 89509
Ph: (775) 329-4955
Fx: (775) 329-5098

HOMEWOOD VILLAGE RESORTS, LLC

HOMEWOOD VILLAGE RESORTS, LLC
P.O. BOX 3938
TRUCKEE, CALIFORNIA 96160

SOUTH LODGE
GRADING & DRAINAGE PLAN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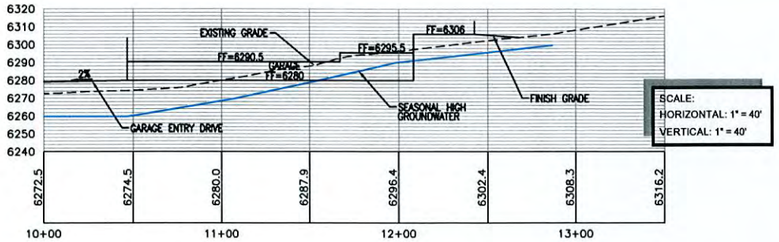
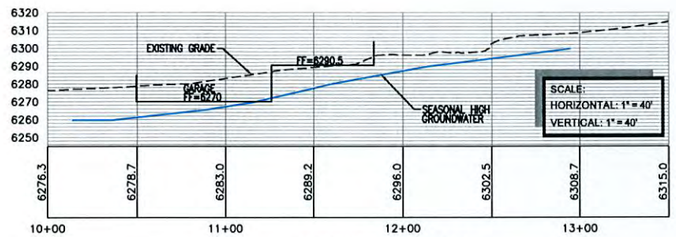


SOUTH BASE CROSS SECTION 5



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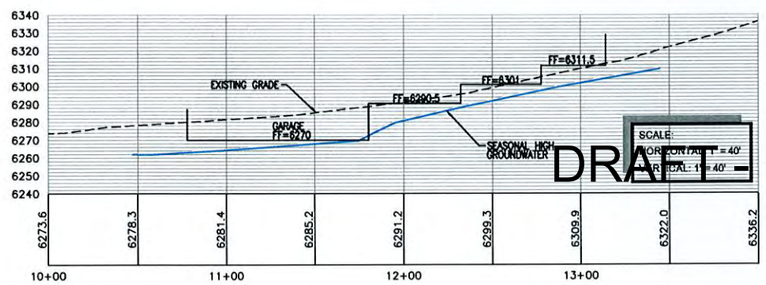

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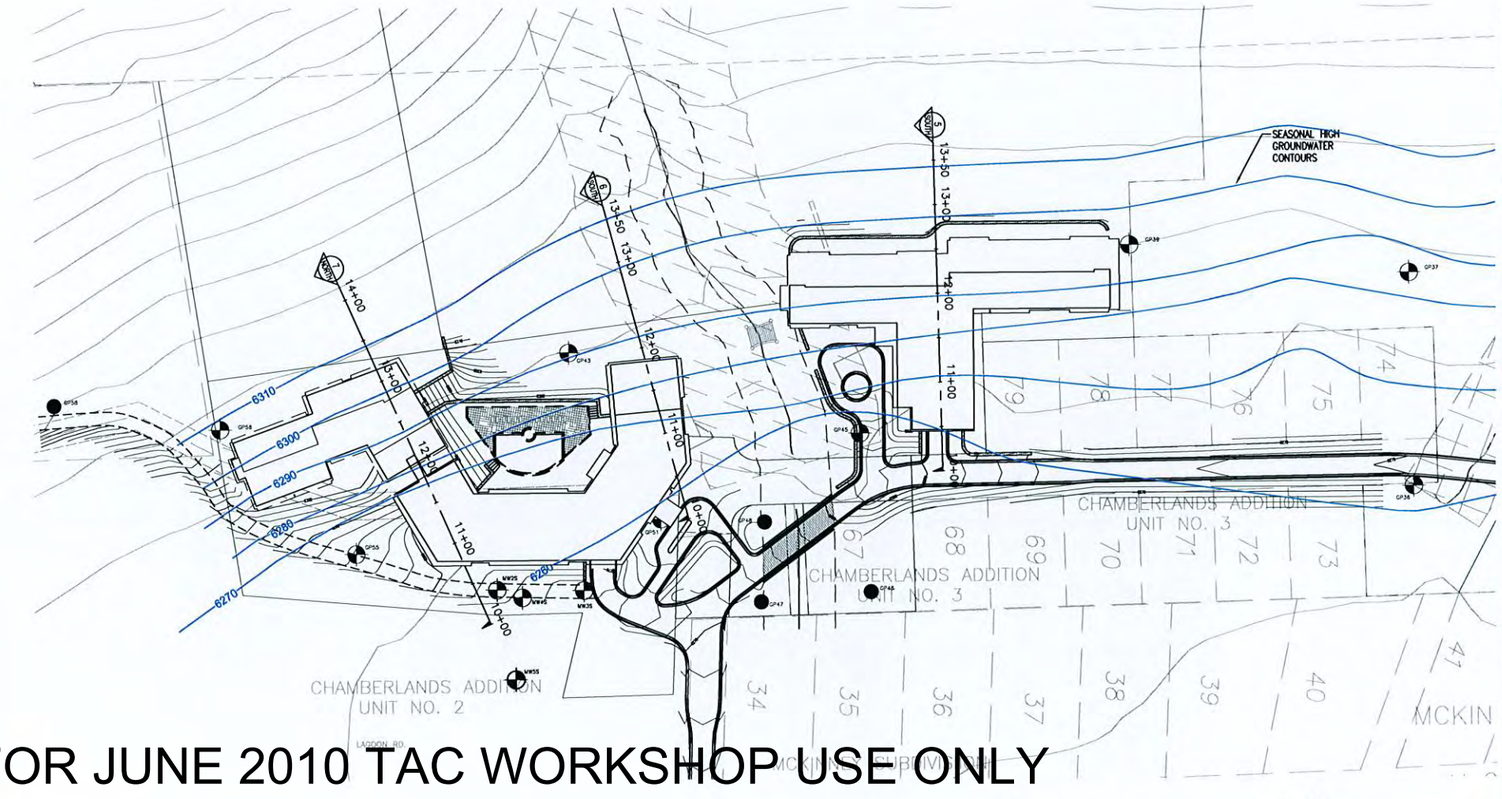

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LEGEND	
MW15	MONITORING WELL LOCATION
GP47	BORING LOCATION
—6270—	GROUNDWATER CONTOUR

80 0 80 160
SCALE IN FEET
1" = 80'-0"

REVISIONS

No.	Date		CHKD	APPD

DESIGNED: CKC
DRAWN: CKC
CHECKED:
JOB No. A514.02.14
SCALE: NTS
DATE: 01/22/2010

Nichols Consulting Engineers, Chtd.
Engineering & Environmental Services
1885 S. Arlington Ave., Suite #111
Reno, NV 89509
Ph: (775) 324-4855
Fx: (775) 329-5098

HOMEWOOD VILLAGE RESORTS, LLC

HOMEWOOD VILLAGE RESORTS, LLC
P.O. BOX 3938
TRUCKEE, CALIFORNIA 96160

SOUTH BASE
BUILDING & GROUNDWATER
SECTIONS

Know what's below. Call before you dig.

TRPA
SUBMITTAL
FOR REVIEW ONLY
DATE: 02/05/2010

REGISTERED PROFESSIONAL ENGINEER
JACK W. NORSBURG
No. 31080
CIVIL
STATE OF CALIFORNIA
DATE:

SHEET C20 OF 29

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Attachment 3

June 2010 TAC Workshop Results

- Notes prepared by Sierra Business Council
- Orange Team LID Site Plan
- Green Team LID Site Plan

Placer County LID Guidebook TAC Meeting # 2 June 9, 2010, Homewood

Technical Advisory Committee (TAC) in attendance: Kaitlin Backlund, Allen Breuch, Pat Davison, Darin Dinsmore, Keith Franke, Michael Hogan, Jeff Loux, Stefan Schuster, Ed Staniforth, Jessica Thompson, David Tirman, Robie Wilson Litchfield

Core Team in attendance: Carmel Brown, Chris Bowles, Melanie Carr, Edmund Sullivan, Jennifer Dzakowic, Bob Costa, Nancy Richards, Martini Morris (notetaker)

Introduction (Ed Sullivan, Nancy Richards)

No comments

Homewood overview (David Tirman)

See PowerPoint Presentation (Attachment 1)

Other Notes:

- Admin draft EIR-next week, public draft September
- 1100 acres, 3 watersheds
- Master plan goals:
- Elevate environmental thresholds
- Stewardship of growth
- Reestablish west shore community center
- Enhance lifestyle and property value
- Micro-hydro units In streams on site
- Solar power shingles
- Complete missing link of Tahoe bike trail
- Free use bicycles
- Pedestrian oriented neighborhood area at north base
- Day lodge up on the mountain

Site Setting and Regulatory Context (Bob Costa, Placer County)

- TRPA/Lahontan RWQCB are key regulatory agencies
- Sediment TMDL for Lake Tahoe area (on the verge – releasing this month)

Notes from Breakout Sessions

Flipchart Notes from Green Team (M Carr, Facilitator)

- Natural flows
- Drainage
- Existing vegetation
- Identifying reveg. Areas

- Restoration
- LID features
- Clustered some of the tools together in systems
- 1-dry well (from roof)
- 2-rain garden (includes snow melt)
- 3-swale (tertiary treatment)
- Two different types-smaller systems, larger systems
- Two different scales (natural/built)
- Helps with maintenance/cost, site use efficiency
- Without knowing the owner's intent –they had to make some concept decisions
- Construction phasing – constrained site
- Try to put soil back on site rather than haul it offsite
- Snow removal is an important
- Created typologies, could be low flow swale, soil amendments, infiltrail (trail with infiltration on it)
- Need interaction with architect and owners
- Maintained native vegetation,
- Also unmaintained vegetation
- Harvesting of rainwater, stormwater, potential to capture some of the water, or potentially feeding a portion of the water to make snow (snow would be storage)
- Heat transfer from sewer system, and circulate that heat to sidewalks
- Micro-hydro – visibility – indicator of how much electricity is being generated
- Added a pedestrian bridge – public education facilities, taking advantage of the resource of the creek
- Make Public art out of treatment system

Flipchart Notes from Green Team (C Brown, Facilitator)

- Goals – take advantage of existing conditions/features
- Use LID to restore natural system removed by developed
- Used hydroponic heating for snow free zones
- Used pavers for low traffic areas
- Did not do green roofs
- Tried some rainwater cistern capture from roofs- captured to make snow
- Bioswales
- Daylight SEZ stream
- Small amounts of capture areas
- Bioswale along road going north
- Porous paving

Comments on Guidebook Tools

Process Flowchart

- Step 1 – Concept project program?
- Needs to work for both audiences: large developers and mom and pop projects (use visual and written, it's important)
- Step 3 – Pre-development meeting – agency expectations, info sharing
- Is it really a flowchart if no inputs, outputs, decision nodes?
- Perhaps there is need for flowcharts at some of the steps?
- Need to put this in context with other aspects of overall site design (sw quality, buildings, flood control, etc.)
- How to illustrate/build in the iterative approach
- Simple graphic to put LID into context with the overall process
- Are the steps really in the right order?
- Need to have a dialogue between landscape architects and designers
- Need to include NEXT STEPS in the document
- Watershed context/watershed context/regulatory context
- How do we address design styles: Community Based, Iterative Approach, Top Down approach
- How do we address these various levels of engagement?
- Three process flow chart
- Applicant driven
- Community based flowchart
- EIR/EIS driven flowchart (we're not going to have that anymore hopefully)
- Old way of doing things… new way of doing things… explain it
- Lisa Wallace (per Robie Wilson) wanted more about the process than LID BMPs
- Private versus public development
- Think about the issue of scale… they need to be geared to both large scale and single residence
- (small and distributed building blocks)
- Big and small
- Sophisticated and not sophisticated
- Be sure to link the flowchart and explanations to the overall design process
- Drainage paths – we need to have a piece of paper that shows where the hydrology is
- Create a reference to a few LID sizing calculators
- CONTEXT – put the written material in context with some initial sections:
    - Issues of scale (site vs. neighborhood, mom vs. pop, major developer)
    - Watershed context
    - Regulatory context
    - Team partnership / community context
- (biochar – soil amendment)-invest long-term in carbon storage in soils

LID Planning and Design Checklist

- Reduce redundancy between steps and individual checklists
    - Combine 4a and 4b, maybe these with 2 as well?
    - And/or breakout regulatory versus site specific characteristics
- Some items on this checklist are related to overall site design and others are specific to LID… that's ok, but talk about it up front.
- Step 5b – should be up front in preamble (context) – this is a philosophy, not a step in the process
- How to build in/ allow for iterative process?
- Comingled sources – combining with onsite drainage and roadblocks from placer county

LID Selection Matrix

- Appropriate and may be appropr works for site factors, but not for project type
- Site factors – add regulatory constraints (SEZ) and existing vegetation
- Infiltration trench/dry well – more traditional BMPs leave them on list, but de emphasize (not really green techniques due to excavation and import rock)
- We need to have a reference to 4 or whatever calculators or sizing
- Careful – this might become pick and choose menu; how does this matrix support a systems approach?

LID Fact Sheets

(used the Fact Sheets from TRPA in Toronto)

- 4-fold concept works well for public counters/ displays
- Specificity to high alpine perennial streams/snowmelt, steep slopes and erosive soils?

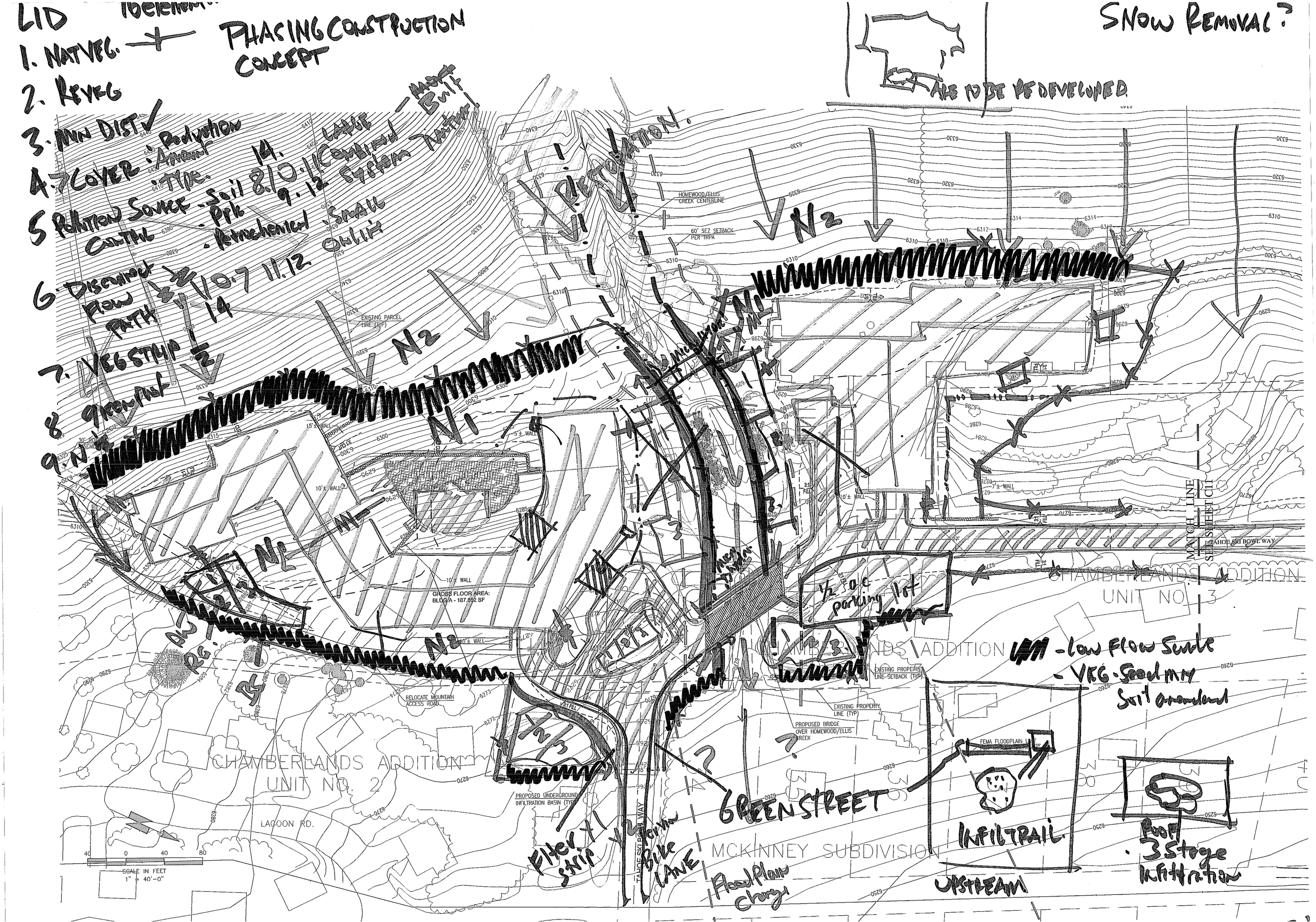
Presentations after the Team Breakout Sesssions

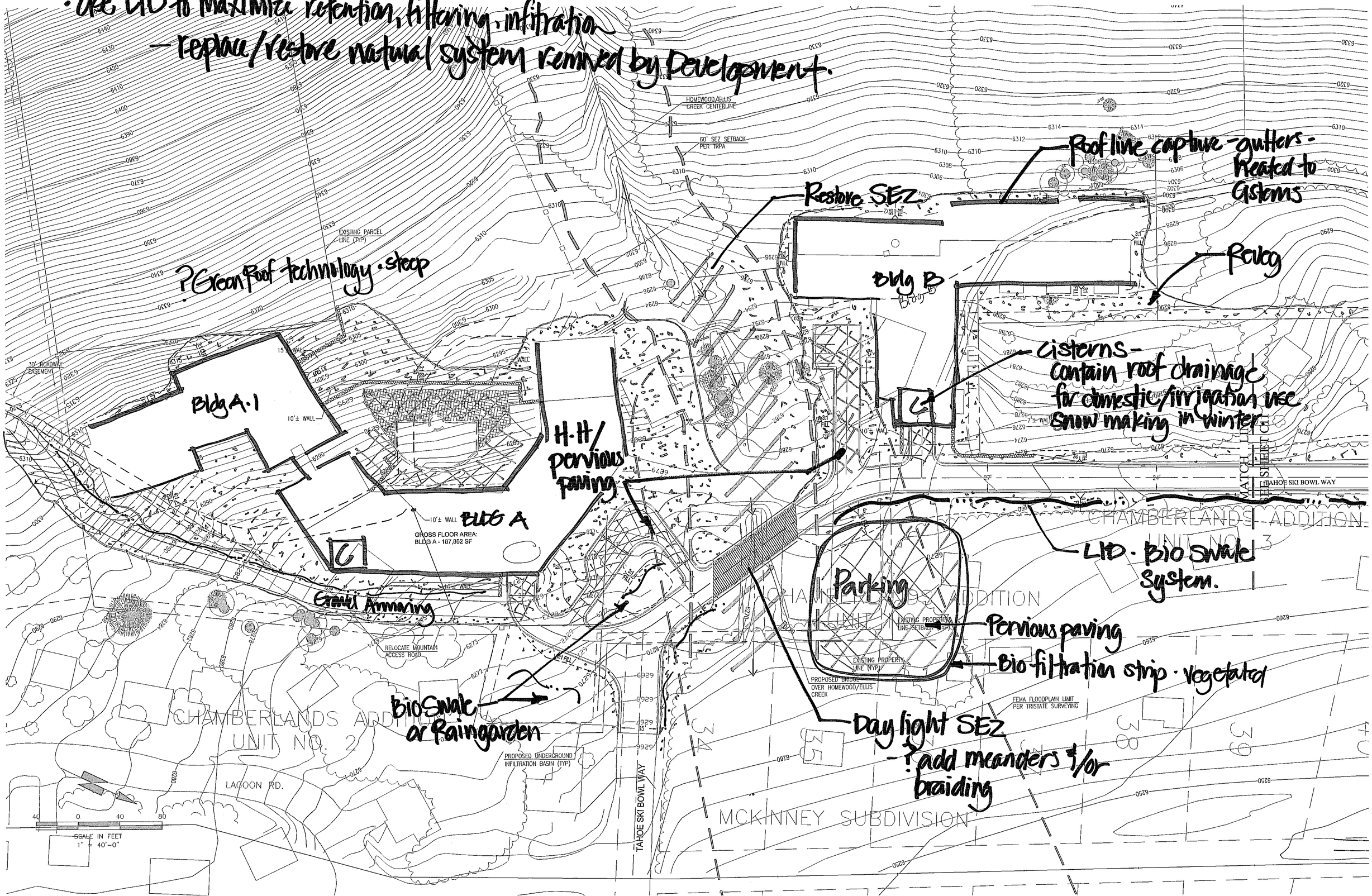
Homewood Restoration Projects (Michael Hogan)

- We started by looking at the whole entire watershed
- Needed to look at where the water is going… very important
- Putting a bunch of people in the room to develop the site plan
- The whole sense of connectivity for water
- Hydrology/ soil interface is critical to this evaluation
- Soil adaphic measures
- The more you connect all the dots between different disciplines, the better your project will be
- Big conceptual watershed scale that integrates the whole project
- Bottom up – we assume we're going to get a lot of benefit, but we need to quantify what we're getting from bioswales, etc.
- Water quality, flow attenuation, adaptive management
- What are your assumptions? What are you measuring?
- Take measurements, adapt, and revise your assumptions, then redesign
- Homewood design –infiltration galleries and cisterns
- Landscaped and non-landscaped areas will be LID
- If you think about routing, this stuff will become apparent

Closing (David Tirman, JMA)

- A year ago, they had a traditional plan
- But they brought everyone in, and developed the LID features and the more organic process
- Subsurface infiltration galleries
- Restoration planned along stream
- Culvert removal and daylighting of creek
- Relocate pedestrian path
- Cisterns will capture 1/3 of the roof runoff -cisterns are above ground and made of wood (5,000 gallons)
- County health may require treatment of any stored rainwater/snow melt


LID
1. NAT VEG.
2. REVEG
3. MIN DIST ✓
4. COVER
5 POLLUTION SOURCE CONTROL
6. DISCONNECT FLOW PATH
7. VEG STRIP
8. GREENPIT
9. N
PHASING CONSTRUCTION CONCEPT
SNOW REMOVAL?
ARE TO BE REDEVELOPED
RESTORATION.
HOMEWOOD/ELLIS CREEK CENTERLINE
60' SEZ SETBACK PER TRPA
EXISTING PARCEL LINE (TYP)
GROSS FLOOR AREA: BLDG A - 187,852 SF
RELOCATE MOUNTAIN ACCESS ROAD
PROPOSED UNDERGROUND INFILTRATION BASIN (TYP)
PROPOSED BRIDGE OVER HOMEWOOD/ELLIS CREEK
EXISTING PROPERTY LINE SETBACK (TYP)
EXISTING PROPERTY LINE (TYP)
FEMA FLOODPLAIN LINE
CHAMBERLANDS ADDITION UNIT NO. 2
CHAMBERLANDS ADDITION UNIT NO. 3
MCKINNEY SUBDIVISION
LAGOON RD.
TAHOE SKI BOWL WAY
MATCH LINE SEE SHEET C11
SCALE IN FEET 1" = 40'-0"
Filter strip
Pervious Bike LANE
Flood Plain Change
GREEN STREET
INFILTRAIL
UPSTREAM
Roof
3 Stage Infiltration
½ ac parking lot
- Low Flow Swale
- VEG. Seed mix
Soil amendment

Goals:

- take advantage of existing site conditions/features
- use LID to maximize retention, filtering, infiltration
  - replace/restore natural system removed by Development.