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December 1, 2010
File: 98510.01

Ms. Heather Beckman
Tahoe Regional Planning Agency
P. O. Box 5310
Stateline, NV 89449

SUBJECT: Submittal of Revised Soils/Hydrologic Exhibits
Homewood Mountain Resort
5145 West Lake Boulevard
Homewood, California 96141

References: Second Revised Soils/Hydrologic Scoping and Final Report, Homewood Mountain Resort, 5145 West Lake Boulevard, Homewood, California 96141, by Kleinfelder, dated October 7, 2010.

Revised Soils/Hydrologic Scoping and Final Report, Homewood Mountain Resort, 5145 West Lake Boulevard, Homewood, California 96141, by Kleinfelder, dated April 1, 2010.

Soils/Hydrologic Scoping and Final Report, Homewood Mountain Resort, Homewood, California, by Kleinfelder, Inc., dated February 18, 2010.

Updated Groundwater Evaluation Report, Homewood Mountain Resort, Homewood, California, by Kleinfelder, Inc., dated July 14, 2008.

Groundwater Evaluation Report, Homewood Mountain Resort, Homewood, California, by Kleinfelder, Inc., dated October 31, 2007.

Dear Heather:

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Kleinfelder West, Inc. has prepared this submittal to accompany the Revised Soils/Hydrologic Exhibits for the North Base (Sheets 1 and 2) and South Base (Sheet 3) prepared by Nichols Consulting Engineers (NCE), Chtd., dated December 1, 2010, for the Homewood Ski Area Master Plan.

Plan views of the North Base and South Base areas (Sheets 1 and 3, respectively) contain the proposed structures, proposed drainage system for groundwater and stormwater, the proposed groundwater and stormwater infiltration galleries, and the estimated radius of influence of groundwater and stormwater infiltration. Cross Sections of the North Base and South Base areas are presented on Sheets 1, 2, & 3 respectively. These sections reference the finished floor (FF) elevations for all structures. The base of foundations are assumed to be two feet lower than the FF elevations.

These exhibits indicate that the parking garages at the North and South Base areas are projected to intercept the seasonal high groundwater surface. All other structures including foundations, pools, and elevator shafts are projected to be above the seasonal high groundwater.

Groundwater infiltration and stormwater infiltration are estimated to raise the groundwater level 0.8 feet and 0.7 feet, respectively, under the groundwater and stormwater infiltration galleries with a radius of influence of 20 to 45 feet. All structures with the exception of the parking garages, including foundations, pools, and elevator shafts, are projected to be above the groundwater level within the sphere of influence of infiltration galleries.

Bioretention areas were not utilized in primary stormwater infiltration gallery design. Any stormwater applied to bioretention areas will reduce the flow rate into the infiltration galleries. Therefore, the amount of groundwater rise under the stormwater galleries should not exceed the design condition of 0.7 feet.

Groundwater

Table 1 presents the seasonal high groundwater levels used to estimate the groundwater contours on Sheets 1 and 3. As shown in Sheet 1, groundwater flows across the North Base area to the north, northeast, and east towards Lake Tahoe. As shown in Sheet 3, groundwater flows across the South Base area to the east towards Lake Tahoe.

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Estimated groundwater flow rates intercepted by proposed retaining walls at the North Base area range from 15 to 37 gallons per minute (gpm) and at the South Base area range from 4 to 11 gpm as shown in Table 2. The estimated groundwater flow rates were calculated using the length and depth of wall, depth of groundwater interception, and groundwater gradient derived from Sheets 1 and 3. Two hydraulic conductivity values were used to estimate the range of flows, 1×10^{-3} centimeters per second (cm/sec) and 4×10^{-4} cm/sec. These values are typical for silty sand and silty sand with gravel materials that were logged in test pits and borings in the areas of the retaining walls.

Groundwater will be routed around the retaining walls to underground infiltration galleries at the North Base (North-5 and North-6) and South Base (South-3 and South-4). Infiltration galleries have been designed using an infiltration rate of 4 inches per hour and the maximum groundwater flow rates of 37 gpm for the North Base and 11 gpm for the South Base.

An analytical groundwater flow model was used to estimate the height and radius of the rise in groundwater levels created by groundwater infiltration. Hydraulic conductivity and thickness of the alluvial aquifer underlying the underground infiltration galleries was derived using results of a 7-day aquifer test of Homewood Well #2, located in the gravel parking lot. The thickness of the aquifer was 200 feet and the hydraulic conductivity was 16.7 feet per day yielding a transmissivity of 3,340 feet^2/day.

Our estimate is based on applying groundwater at the rate of 4 inches per hour per square foot of infiltration gallery derived from the Tahoe Regional Planning Agency (TRPA) spreadsheet. Assuming a 30 day rate of application, a rise in groundwater levels of approximately 0.8 feet was estimated under the galleries. The radius of influence of a 0.5 foot-rise in groundwater levels was estimated to be approximately 45 feet.

This radius is shown at the edges of infiltration galleries North-5, North-6, South-3, and South-4 in Sheets 1 and 3.

Calculations of infiltration gallery volume, elevations, seasonal high groundwater elevations, feet of groundwater clearance, and gallery dimensions are also listed in Sheets 1 and 3. The bottom of the groundwater infiltration galleries have a minimum of 0.1 feet of groundwater clearance.

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Stormwater

Stormwater flow rates have been calculated by NCE as shown in Table 3. Calculations of infiltration gallery volume, elevations, seasonal high groundwater elevations, feet of groundwater clearance, and gallery dimensions are also listed in Sheets 1 and 3. The bottom of the stormwater infiltration galleries have a minimum of 1.5 feet of groundwater clearance.

Stormwater was applied at the rate of 4 inches per hour per square foot of infiltration gallery derived from the TRPA spreadsheet.. Assuming a 7 day rate of application, a rise in groundwater levels of approximately 0.7 feet was estimated under the galleries. The radius of influence of a 0.5 foot-rise in groundwater levels was calculated at approximately 20 feet.

This radius is shown at the edges of infiltration galleries North-1, North-2, North-3, North-4, South-1, and South-2 on Sheets 1 and 3.

Limitations

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This letter may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the letter.

Should you have any questions regarding this submittal, please contact David Herzog at 775-689-7800.

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Sincerely,

KLEINFELDER WEST, INC.

REGISTERED CERTIFIED ENGINEERING GEOLOGIST
DAVID J. HERZOG
No. 1295
Exp. 3/31/12
STATE OF CALIFORNIA

David J. Herzog, RG, CEG
Senior Engineering Geologist

Joshua P. Fortmann
Science and Engineering Manager

cc: David Tirman, Homewood Mountain Resort

TABLES

Table 1	Seasonal High Groundwater Levels (Kleinfelder)
Table 2	Retaining Wall Data (Kleinfelder)
Table 3	Stormwater Calculations (NCE)

SHEETS

1 North Base, TRPA Soils-Hydro Exhibit – Plan View & Sections (NCE)
2 North Base, TRPA Soils-Hydro Exhibit – Sections (NCE)
3 South Base, TRPA Soils-Hydro Exhibit – Plan View & Sections (NCE)

TABLES

Table 1
Seasonal or Measured High Groundwater Levels
Homewood Mountain Resort
Homewood, California

Well ID	Survey Elevation (feet msl)	Measured High Groundwater Depth[1] (feet bgs)	Date of Occurrence[2]	Seasonal High Groundwater Depth[3] (feet bgs)	Seasonal High or Measured High Groundwater Elevation[4] (feet msl)
GP-1	6237.02	7.72	5/3/07	5.00	6232.02
GP-2	6236.20	NA		5.50	6230.70
GP-3	NM	NA		4.50	NM
GP-4	6237.85	NA		11.00	6226.85*
GP-5	6237.26	NA		6.50	6230.76
GP-6	6236.72	7.22	4/27/07	8.41	6229.50
GP-7	6238.00	9.00	4/13/07	8.00	6230.00
GP-8	6237.88	8.37	5/3/07	4.30	6233.58
GP-9	6236.14	NA		2.75	6233.39
GP-10	6236.86	NA		> 2.0	<6234.86
GP-11	6236.74	5.18	5/3/07	1.17	6235.57
GP-12	6238.18	4.61	4/29/08	3.50	6234.68
GP-13	6238.21	1.99	5/3/07	2.00	6236.22
GP-14	6238.49	0.89	5/3/07	2.00	6237.60
GP-15	6253.48	17.42	4/28/08	NA	6236.06
GP-16	NM	NA		> 3.0	NM
GP-17	6241.52	11.92	4/11/07	NA	6229.60*
GP-18	6243.01	NA		>8.0	<6235.01
GP-19	6287.72	>18.30		NA	<6270.07
GP-20	6285.40	17.78	4/18/08	NA	6267.62
GP-21	6312.65	NA		> 3.0	<6309.65
GP-25	6302.18	10.90	5/1/08	NA	6291.28
GP-26	6301.56	10.84	5/5/08	NA	6290.72
GP-27	6328.66	17.67	1/4/08	NA	6310.99
GP-29	6342.53	>19.82		NA	<6322.71
GP-31	6309.96	9.18	5/5/08	NA	6300.78
GP-32	6294.56	13.39	5/12/08	NA	6281.17
GP-33	6274.39	>11.50		>7.5	<6262.89
GP-34	NM	NA		> 2.0	NM
GP-35	6272.79	NA		> 8.0	<6264.79
GP-36	6264.18	1.75	5/12/08	13.58	6262.43
GP-37	6297.37	11.75	4/29/08	NA	6285.62
GP-39	6300.64	0.97	4/14/08	NA	6299.67
GP-41	6302.24	3.17	4/28/08	NA	6299.07
GP-43	6298.44	6.83	1/4/08	NA	6291.61
GP-45	6279.93	>18.95		NA	<6260.98
GP-46	6272.93	NA		> 10.0	<6262.93
GP-47	NM	NA		>12.0	NM
GP-48	NM	NA		>2.0	NM
GP-51[5]	6276.61	>19.00		4.00	6257.61[(6)]
GP-52[5]	6285.48	>18.90		5.00	6266.58[(6)]
GP-55[5]	6285.56	19.50	1/4/08	5.00	6266.06[(6)]
GP-56	6313.76	8.09	5/12/08	NA	6305.67
GP-58	NM	NA		> 10.5	NM
MW-1 N	NM	NA	6/26/00	4.56	NM
MW-2-N	6235.19	5.44	6/7/99	4.65	6230.54
MW-3 N	6235.81	6.53	6/7/99	5.11	6230.70
MW-4 N	NM	NA	6/7/99	5.79	NM
MW-1 S	NM	NA	6/3/98	17.65	NM
MW-2 S	NM	NA	6/3/98	15.72	NM
MW-3 S	NM	NA	6/3/98	16.38	NM
MW-4 S	NM	NA	6/7/99	16.15	NM
MW-5 S	NM	NA	6/3/98	15.63	NM

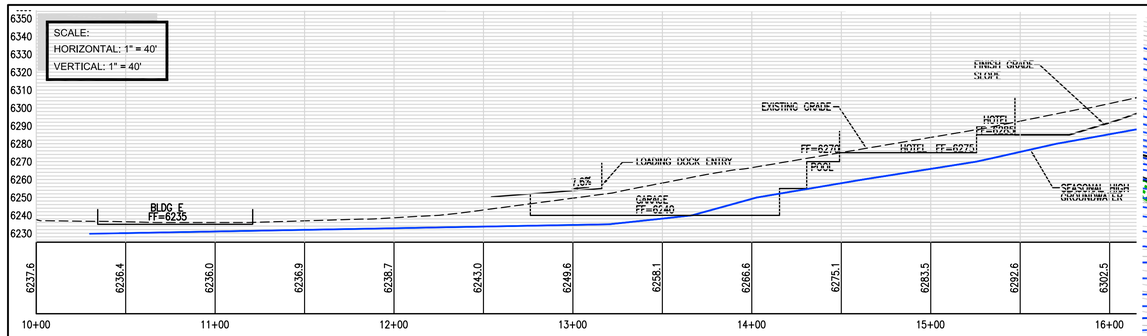
1- Measured Spring 2007 and Spring 2008
2- Date of measured high groundwater depth measurement
3- Based on soil core samples from Geoprobe borings
4- Based on highest elevation from either measured groundwater or soil core samples
5- Soil oxidation at depths of 4 to 5 feet is inconsistent with measured groundwater levels greater than 19 feet
6- Measured high groundwater depth from 2007/2008 monitoring used
*- Elevation considered unreliable and not used for groundwater contours
NA = Not available
NM = Not measured
msl = above mean sea level
bgs = below ground surface

Table 2
Retaining Wall Data
Homewood Mountain Resort
Homewood, California

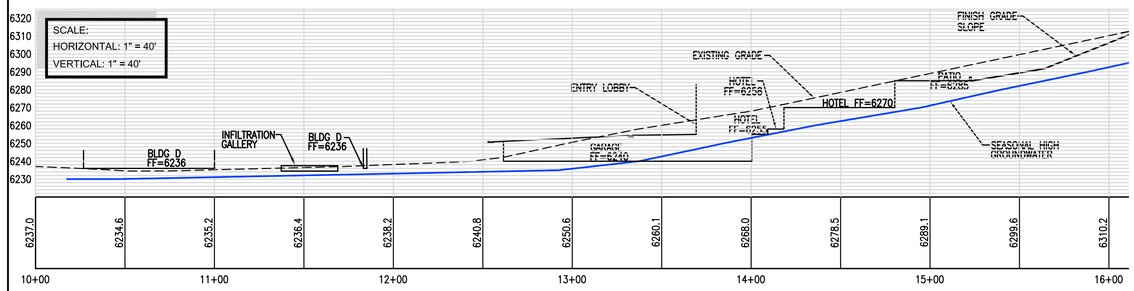
Location	Finished Floor Elevation	Length of Wall	Depth of Wall	Groundwater Interception	Groundwater Gradient	Flow Rate-k=0.0004 cm/sec	Flow Rate-k=0.001 cm/sec
	feet msl	feet	feet	feet	ft/ft	gpm	gpm
North Base							
Parking Garage (Sections 1 through 4)	6,240	878	29 to 32	17	0.17	15	37
North Base Total						**15**	**37**
South Base							
North Building Parking (Section 5)	6,280	376	19	13	0.12	3	9
South Building Parking (Section 6)	6,270	100	19	4	0.2	0.5	1
South Building Parking-Section 7	6,270	110	21	4	0.2	1	1
South Base Total						4	11
Mid-Mountain							
Section 8 Walls	7,285		14				
	7,323		8				
	7,327		11.5				
Section 10 Cuts for Tanks	7,480		20.5				

Note: North Base Sections refer to Cross Sections 1 through 4 on Sheet 1 (Nichols Consulting Engineers, Chtd. 12/1/10)
Note: South Base Sections refer to Cross Sections 5 through 7 on Sheet 3 (Nichols Consulting Engineers, Chtd. 12/1/10)
k= hydraulic conductivity
msl = above mean sea level
ft/ft = feet per foot
gpm = gallons per minute
cm/sec = centimeters per second

SHEETS 1 THROUGH 3
NICHOLS CIVIL ENGINEERS, CHTD.



NORTH BASE CROSS SECTION 1



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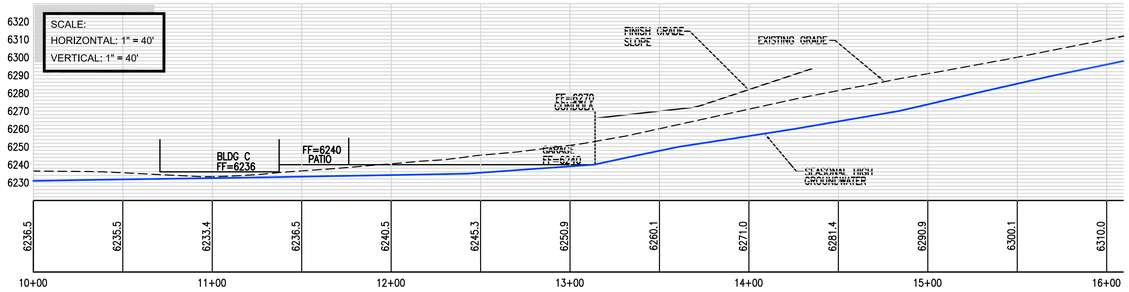

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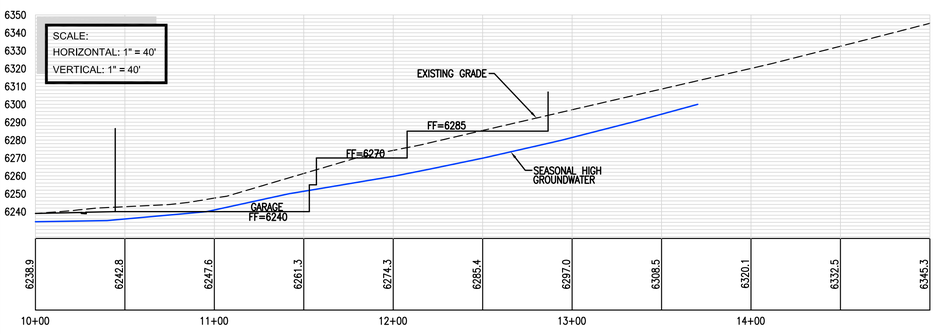

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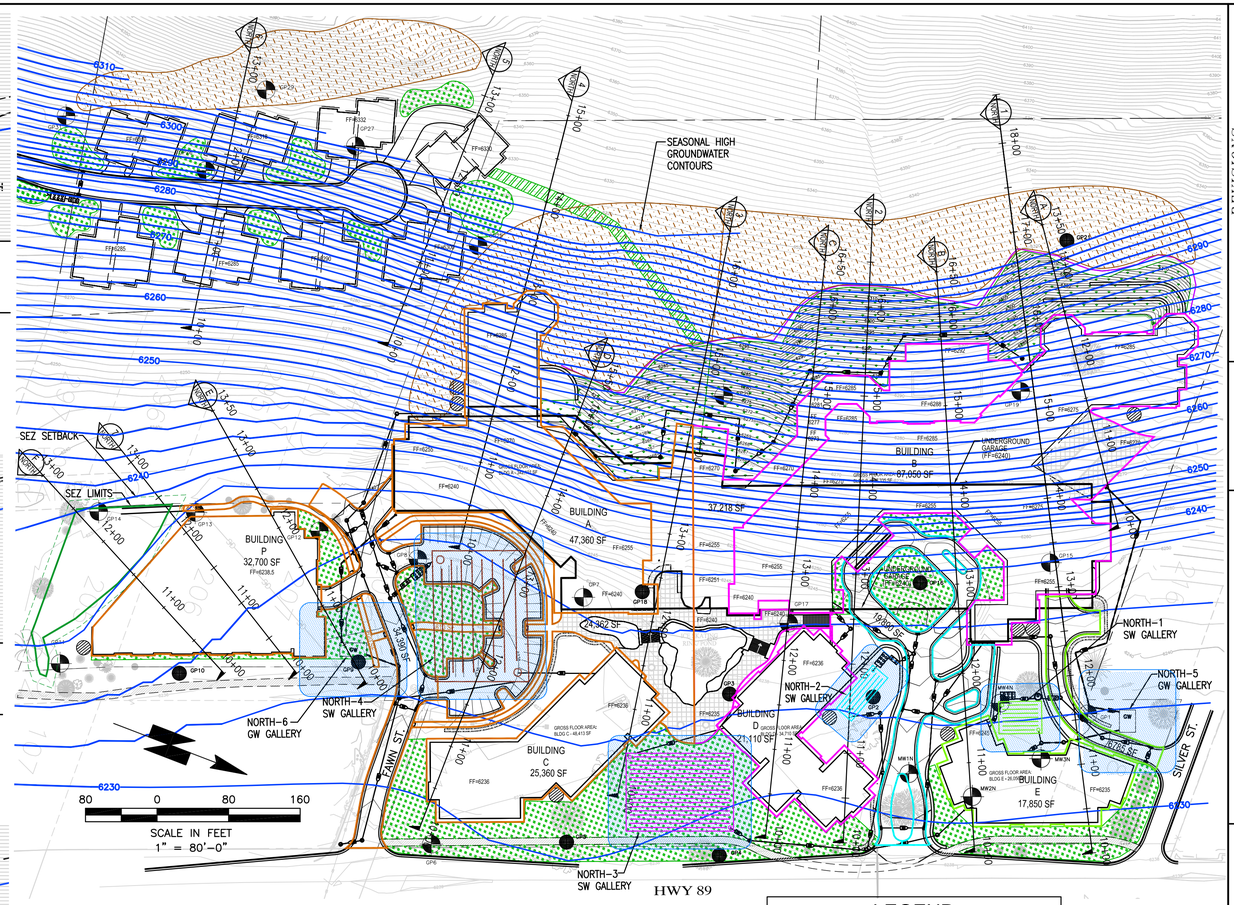

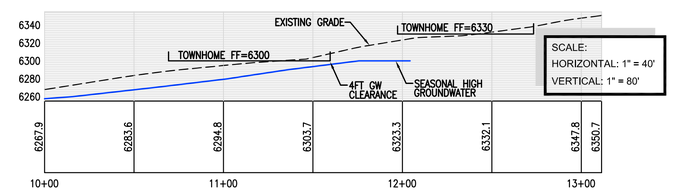

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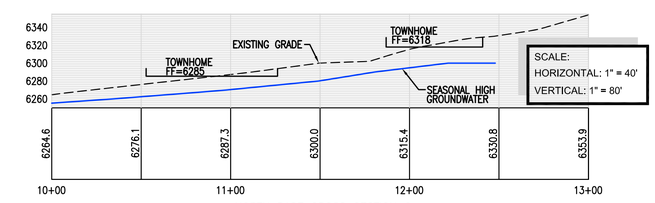

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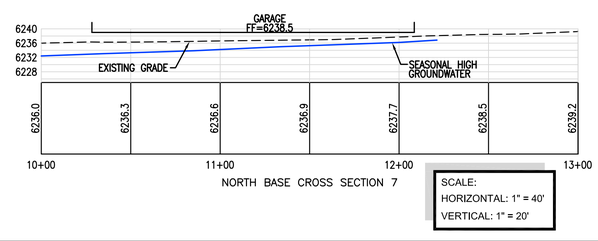

NORTH BASE CROSS SECTION 7

LEGEND

- PARCEL BOUNDARY
- STORM DRAIN PIPE
- GROUNDWATER DRAIN PIPE
- MW1S MONITORING WELL LOCATION
- GP47 BORING LOCATION
- 6270 GROUNDWATER CONTOUR (PER KLEINFELDER)
- STORM DRAIN MANHOLE
- STORM DRAIN DROP INLET
- STORMWATER TREATMENT VAULTS
- STORMWATER UNDERGROUND INFILTRATION GALLERY
- GW SEASONAL HIGH GROUND WATER UG COLLECTION GALLERY
- CISTERN
- TYPE A REVEGETATION DEPTH=12"
- TYPE B REVEGETATION DEPTH=12"
- TYPE H REVEGETATION ACCESS ROAD RESTORATION
- BIORETENTION INFILTRATION & TREATMENT AREA, DEPTH=18"
- UNDERGROUND GALLERY SPHERE OF INFLUENCE

PRELIMINARY
FOR REVIEW
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DATE: 12-01-10

REVISIONS

No.	Date

DESIGNED: CKC
DRAWN: CKC
CHECKED:
JOB No: 4514.02.14
SCALE: NTS
DATE: 12/01/2010

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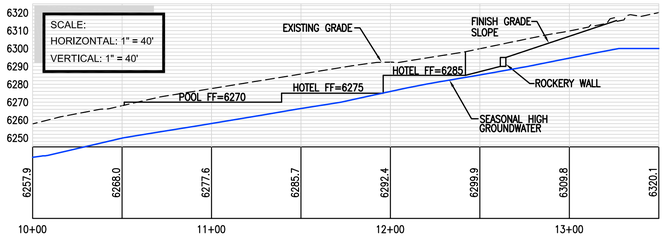
TRUCKEE, CALIFORNIA 96160

NORTH BASE
TRPA SOILS-HYDRO EXHIBIT
PLAN VIEW AND SECTIONS (1-7)

SHEET
1



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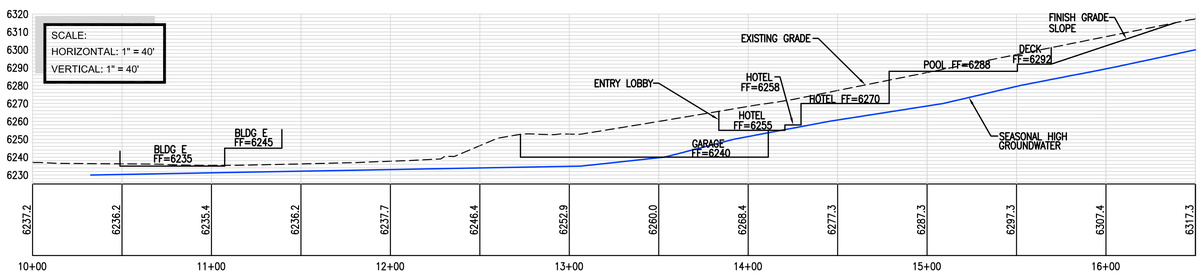

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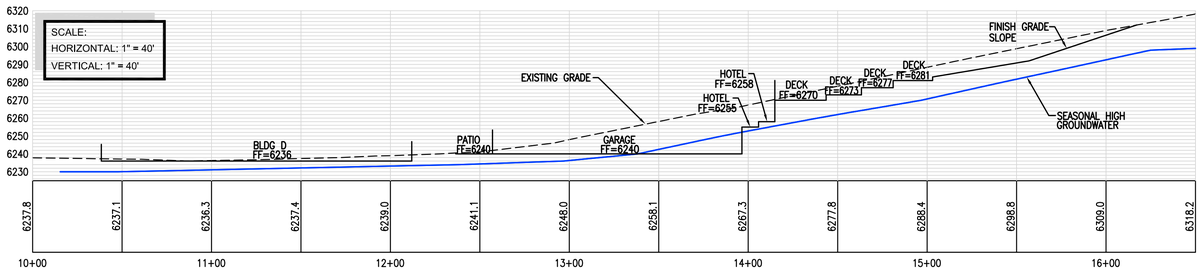

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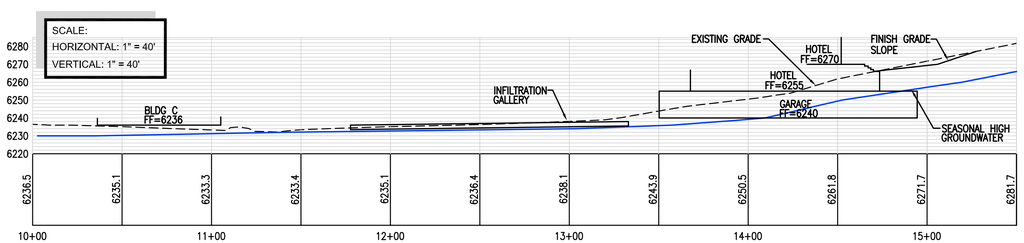

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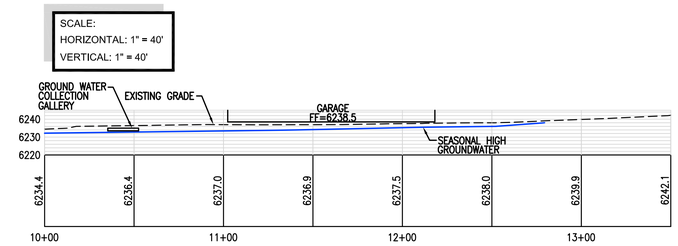

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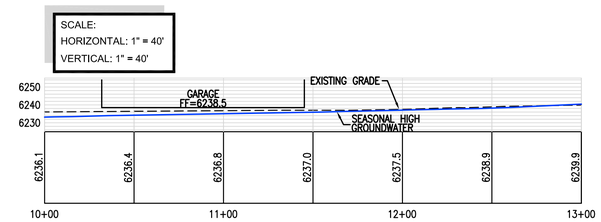

NORTH BASE CROSS SECTION F

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DATE: 12-01-10

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No.	Date

DESIGNED: CKC
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SCALE: NTS
DATE: 12/01/2010

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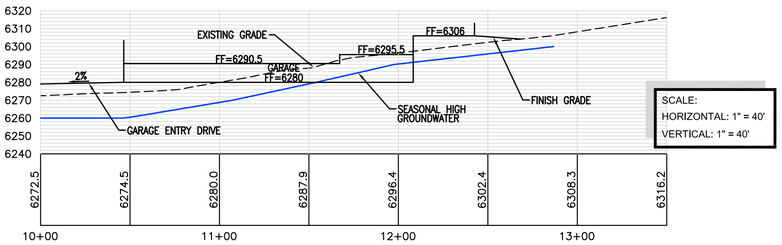
NORTH BASE
TRPA SOILS-HYDRO EXHIBIT
SECTIONS (A-F)

SHEET
2



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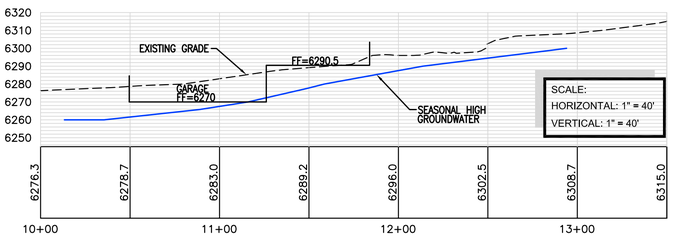
VERTICAL: 1" = 40'

SOUTH BASE CROSS SECTION 5



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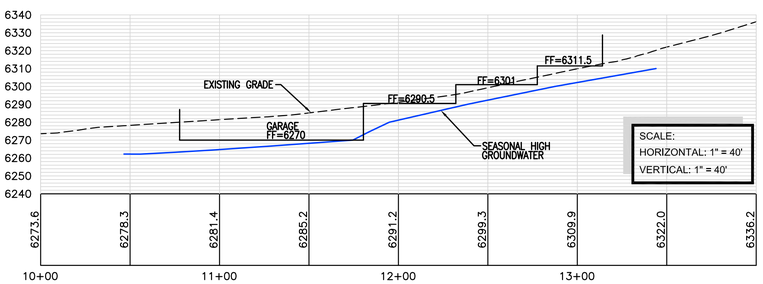
SOUTH BASE CROSS SECTION 6



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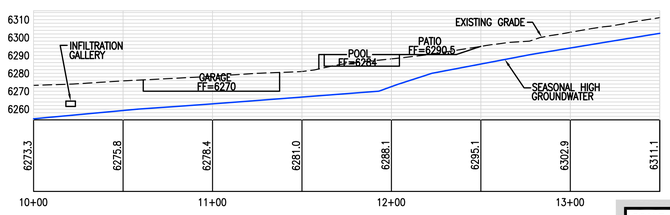
VERTICAL: 1" = 40'

SOUTH BASE CROSS SECTION 7



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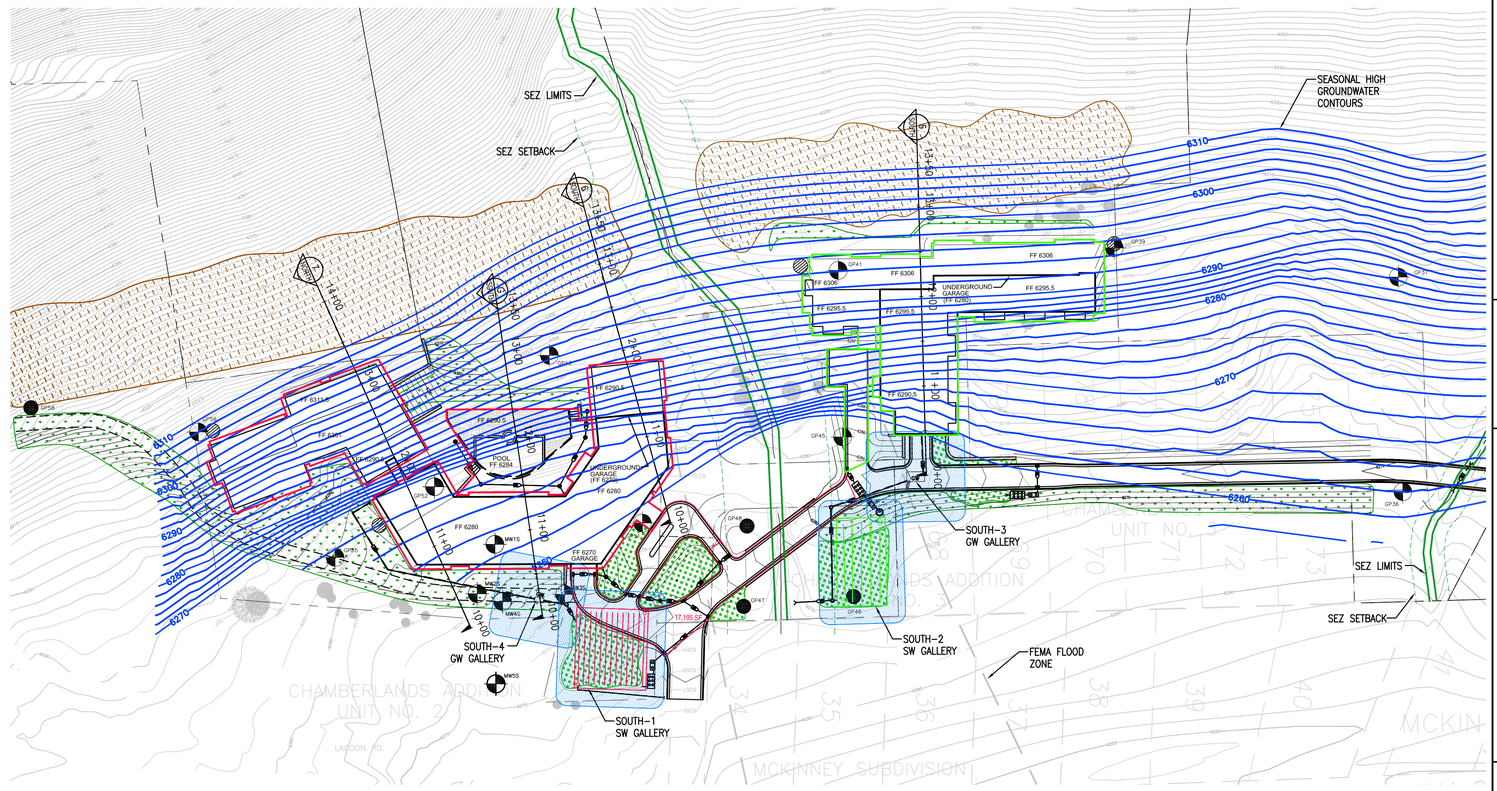
VERTICAL: 1" = 40'

SOUTH BASE CROSS SECTION G



	Underground Infiltration Galleries									
	North-1	North-2	North-3	North-4	North- 5	North- 6	South-1	South-2	South-3	South-4
Type	SW	SW	SW	SW	GW Intercept.	GW Intercept.	SW	SW	GW Intercept.	GW Intercept.
Total Impervious Area (sf)	24,635	19,890	145,378	174,587	-	-	89,307	44,527	-	-
Gallery volume (cf)	2,681	2,167	15,904	23,441	900	900	9,650	8,040	660	150
Finish Grade (ft)	6237	6237.5	6239	6240	6236	6236	6272	6272	6280	6276
Bottom Elev. of Gallery (ft)	6232.5	6233	6234.5	6235.5	6232.5	6233.5	6268	6267.5	6271.5	6261.5
SHGW (ft)	6231	6231	6232.5	6233.5	6232	6233.39	6256.5	6262.93	6260.98	6256.5
GW Clearance (ft)	1.5	2	2	2	0.5	0.11	11.5	4.5	10.5	5
Adjacent GW Monitoring Well Data (well#, SHGW)	MW3N, 6230.7	GP2, 6230.7	GP5, 6230.76	GP8, 6233.58	GP-1	GP-9	MW3S, 6256.5	GP46	GP-45	MW3S
Infil. Gallery Dimensions (ft)	48x36x3	63x22x3	120x86x3	145x105x3	25X18	30X15	90x80x2.5	100x52x3	20x11x3	10x5x3

Legend:
SW= stormwater
GW= groundwater
MW= monitoring well
GP= monitoring well

PRELIMINARY
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NOT FOR
CONSTRUCTION
DATE: 12-01-10

LEGEND

- PARCEL BOUNDARY
- STORM DRAIN PIPE
- GROUNDWATER DRAIN PIPE
- MW1S — MONITORING WELL LOCATION
- GP47 — BORING LOCATION
- 6270 — GROUNDWATER CONTOUR (PER KLEINFELDER)
- STORM DRAIN MANHOLE
- STORM DRAIN DROP INLET
- STORMWATER TREATMENT VAULTS
- STORMWATER UNDERGROUND INFILTRATION GALLERY
- GW — SEASONAL HIGH GROUND WATER UG COLLECTION GALLERY
- CISTERN
- TYPE A REVEGETATION DEPTH=12"
- TYPE B REVEGETATION DEPTH=12"
- TYPE H REVEGETATION ACCESS ROAD RESTORATION
- BIORETENTION INFILTRATION & TREATMENT AREA, DEPTH=18"
- UNDERGROUND GALLERY SPHERE OF INFLUENCE

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

REVISIONS

No.	Date

DESIGNED: CKC
DRAWN: CKC
CHECKED:
JOB No: 4514.02.14
SCALE: NTS
DATE: 12/01/2010

Nichols Consulting Engineers, Chtd.
Engineering & Environmental Services
1885 S. Arlington Ave., Suite #111
Reno, NV 89509
Ph: (775) 329-4955
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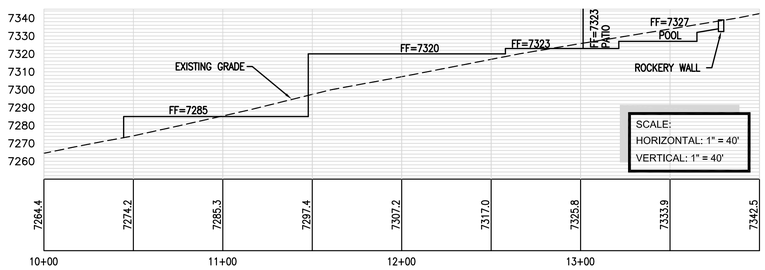
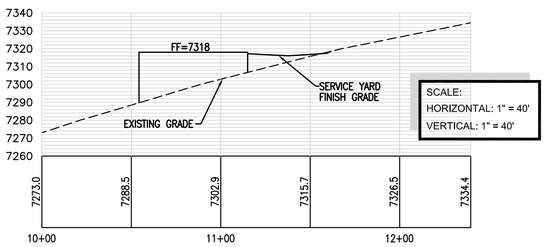
HOMEWOOD MOUNTAIN RESORTS, LLC
HOMEWOOD MOUNTAIN RESORTS, LLC
P.O. BOX 3938
TRUCKEE, CALIFORNIA 96160

SOUTH BASE
TRPA SOILS-HYDRO EXHIBIT
PLAN VIEW AND SECTIONS (5-7 & G)

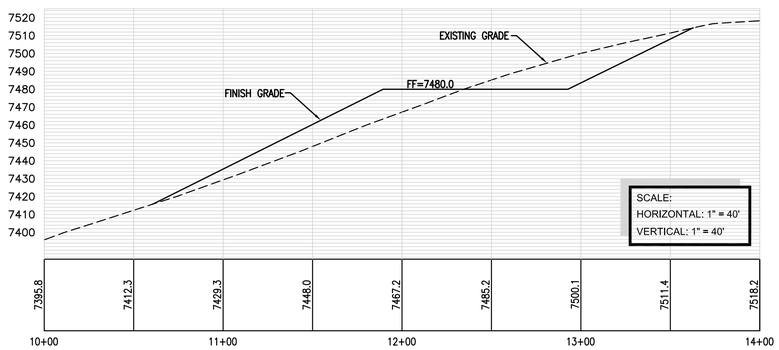
SHEET
3



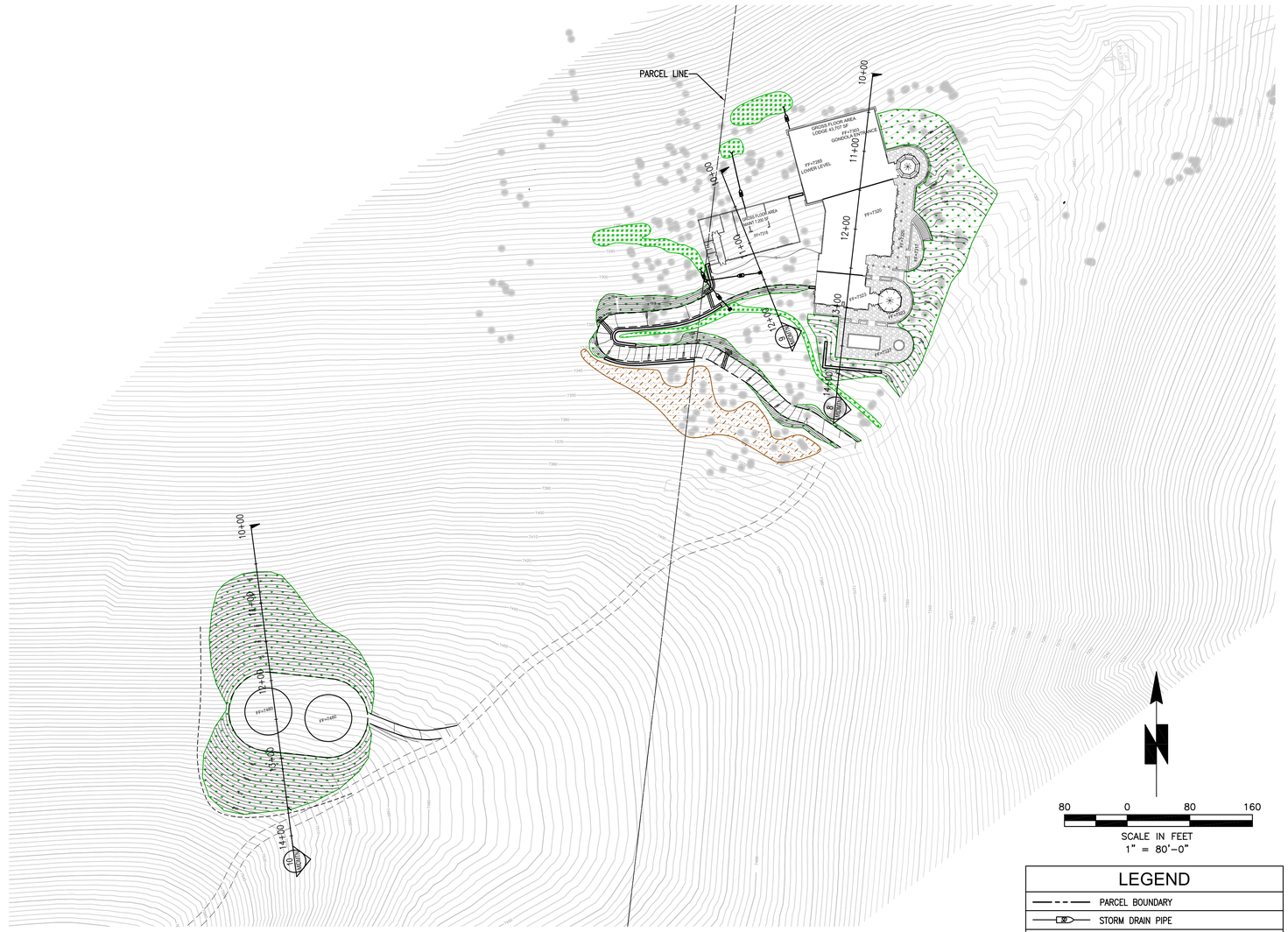
MID MOUNTAIN CROSS SECTION 8



MID MOUNTAIN CROSS SECTION 9



MID MOUNTAIN TANK CROSS SECTION 10



LEGEND

	PARCEL BOUNDARY
SD	STORM DRAIN PIPE
	GROUNDWATER DRAIN PIPE
MW15	MONITORING WELL LOCATION
DP47	BORING LOCATION
6270	GROUNDWATER CONTOUR (PER KLEINFELDER)
	STORM DRAIN MANHOLE
	STORM DRAIN DROP INLET
	STORMWATER TREATMENT VAULTS
	STORMWATER UNDERGROUND INFILTRATION GALLERY
GW	SEASONAL HIGH GROUND WATER UG COLLECTION GALLERY
	CISTERN
	TYPE A REVEGETATION DEPTH=12"
	TYPE B REVEGETATION DEPTH=12"
	TYPE H REVEGETATION ACCESS ROAD RESTORATION
	BIORETENTION INFILTRATION & TREATMENT AREA, DEPTH=18"

PRELIMINARY
FOR REVIEW
NOT FOR
CONSTRUCTION
DATE: 12-01-10

NOTE:
GROUNDWATER NOT OBSERVED DURING GEOTECHNICAL EXPLORATION OF MID-MOUNTAIN AREA. (REFERENCE "GEOTECHNICAL ENGINEERING REPORT FOR MID-MOUNTAIN LODGE, HOMEWOOD MOUNTAIN RESORT" PREPARED BY HOLDREGE & KULL, JANUARY 12, 2010).

REVISIONS

No.	Date	CHKD	APPD

DESIGNED: CKC
DRAWN: CKC
CHECKED:
JOB No: 4514.02.14
SCALE: NTS
DATE: 12/01/2010

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MID-MOUNTAIN
TRPA SOILS-HYDRO EXHIBIT

SHEET
4