SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

2503 Eastbluff Dr., Suite 206
Newport Beach, California 90405

Matt Hagemann, P.G, Ch.G.
Tel: (949) 887-9013
Email: mhagemann@swape.com

April 18, 2011

Michael Lozeau
Lozeau | Drury LLP
410 12th Street, Suite 250
Oakland, CA 94607

Subject: Comments on the Homewood Mountain Resort Ski Area Draft Environmental Impact Report

Dear Mr. Lozeau:

I have reviewed the January 2011 Draft Environmental Impact Report (DEIR) for the Homewood Mountain Resort Ski Area Master Plan CEP Project (HMR-CEP) for impacts associated with stormwater quality, water supplies, groundwater quality impacts, and land coverage. The 1,253-acre project area is located on the west shore of Lake Tahoe, approximately six miles south of Tahoe City in Placer County, California. The project area is bound by State Route 89 to the east, Ellis Peak to the southwest, and Blackwood Ridge to the north. The Proposed Project includes the redevelopment of the existing ski area north base facility, the residential base area to the south, and development of a mid-mountain lodge and beginner ski area.

Proposed stormwater treatment for HMR Community Enhancement Program is ineffective in reducing fine particulates

In 1968, Lake Tahoe clarity was measured to a depth of 102.4 feet when UC Davis researchers first measured the lake. The clarity of the lake has steadily decreased and by 2009, the lake was clear to an average depth of only 68.1 feet.[1] The RWQCB has stated that Lake Tahoe's clarity problems are related to very fine sediment (<20 microns) discharge.[2] Other studies have shown that the smallest particles

[1] http://terc.ucdavis.edu/research/clarity.html
[2] http://www.google.com/url?sa=t&source=web&cd=6&ved=0CD0QFjAF&url=http%3A%2F%2Fwww.swrcb.ca.gov%2Frwqcb6%2Fwater_issues%2Fprograms%2Ftmdl%2Flake_tahoe%2Fdocs%2Fpresentations%2Ffocusteamintro09101107.ppt&rct=j&q=lake%20tahow%20clarity%20microns&ei=gl2STfqyIJHXiAKlzfXuAQ&usg=AFQjCNGxUKgw7OIcwZXA5lpznvd6lV4Nsg&sig2=i9a-VCo5Y0s4q13aUpEGgA

(less than 8 microns) have the biggest impact.[3] Up to 72% of the less than 20-micron sediment load to Lake Tahoe originates from the urban upland sources, including runoff from roadways.[4]

The DEIR outlines a HMR-CEP project to provide treatment for stormwater runoff generated from the contributing areas along SR 89 in the vicinity of the Project. The project will involve the installation of two water quality treatment basins and the installation of a Contech Stormfilter (or similar technology) for treatment of fine sediment removal. The Contech Stormfilter system uses a cartridge media filtration system.

The DEIR states that the Contech system is to serve as secondary treatment for the removal of fine sediments down to 15 microns. Our review of the Contechs literature shows that the claim of fine particulate removal is based on one lab study under controlled conditions with a discharge of 7.5 gal/min.[5] The Contechs literature states:

> Field conditions are notoriously variable with regard to TSS characteristics and sampling methods, and comparison of this experiment to field-derived data will be accordingly affected. Laboratory studies are beneficial for the evaluation of system performance potential as part of the product development or system comparison process.

The flows in the controlled Contech lab experiment are dwarfed by actual conditions predicted in the DEIR. The DEIR estimates flows to the system as follow: 10-year event = 3.54 cfs, 25-year = 4.28 cfs, 100-year = 5.39 p. 15-92). These flows equal 1,589 gal/min to 2,419 gal/min, well in excess of the 7.5 gal/min discharge in the controlled lab experiment that is cited in the DEIR.

The DEIR provides no estimates of how the Contech system will work under actual field conditions with predicted 10-, 25- and 100-year events in reducing fine particulate loading to Lake Tahoe. The DEIR should be revised to include real world examples of Contech installations, preferably in the Tahoe basin, and to provide data to demonstrate effective reduction of fine particulates.

If data cannot be provided to demonstrate reduction of fine particulates, redesign of the system should be considered in a revised DEIR. The system, as proposed, is schematically presented below.

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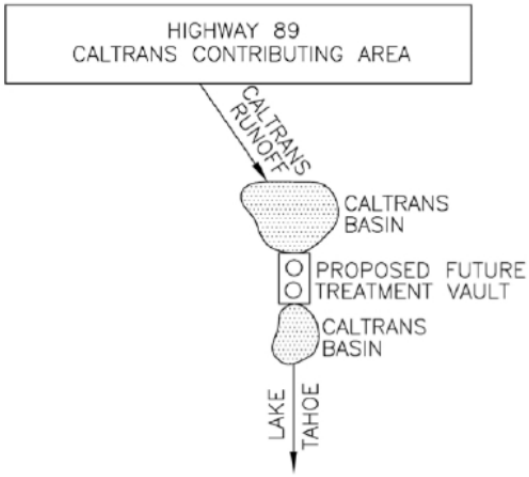
[3] http://californiaagriculture.ucanr.org/landingpage.cfm?article=ca.v060n02p49&fulltext=yes
[4] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/WigartSNPLMARound9-perliterevised.pdf
[5] http://www.contech-cpi.com/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=2821&PortalId=0&TabId=144

Figure 15-15. Off-Site EIP Project Design Schematic



To increase the HMR-CEP effectiveness, consideration should be given in a revised DEIR to routing stormwater to an infiltration gallery after treatment by the Contechs system, in a fashion similar to the treatment train that is proposed for stormwater treatment for the project. Discharge to a basin, especially during high-flow conditions will not be as effective in reducing TSS.

Water Supply Assessment is inadequate

A Water Supply Assessment was prepared for the project and included as an attachment. The Water Supply Assessment states (p. 1):

> This Assessment was not prepared to act as a formal Senate Bill (SB) 610 Water Supply Assessment, but it does comply with the requirements of a SB 610 Water Supply Assessment.

The DEIR states that as mitigation (Measure PSU-1a), a SB 610-compliant Water Supply Assessment will to be prepared, but not until after certification of the DEIR. It is our opinion that this is deferred mitigation and that the Water Supply Assessment should be included in a revised DEIR.

A SB 610 Water Supply Assessment requires the explicit identification of existing and anticipated water supply entitlements and water service contracts. The Water Supply Assessment that was attached to the DEIR does not provide any service contracts for the water or "will serve" letters. Instead the Water Supply Assessment describes very uncertain sources of water that will be needed by the project from two potential sources: the Tahoe City Public Utility District and the Madden Creek Water Company. The Water Supply Assessment provides only "hypothetical scenarios" where: (1) the Tahoe City Public Utility District would be the sole water provider for the entire project area while stating that such a scenario has not been presented to the Tahoe City Public Utility District; and (2) the Madden Creek Water Company and the Tahoe City Public Utility District would supply water to certain portions of the project (again, no documentation was provided that this proposal has had any consideration by either the Madden Creek Water Company or the Tahoe City Public Utility District). It is also important to note that no data is available on the current Madden Creek Water company supply except that they are

meeting the current demand of 160 connections that that "it can be assumed that the water supply is sufficient to produce 134 acre-feet/year" (DEIR, p. 15-27).

The mitigation that is provided (PSU-1a) is inadequate, stating only that the Project applicant shall prepare a final Water Supply Assessment to identify the quantity and source of domestic and raw water to serve the Project. The DEIR needs to be revised to include documentation of the sources of water that will be supplied to the project. The documentation should include contracts or documentation of "will serve" letters with the Madden Creek Water Company or the Tahoe City Public Utility District that provides the following information:

- the amount of the water that can be provided by the water supply companies
- the incorporation of the project demand into the water supply company planning documents
- Water rights to the water that will provided to the project
- Identification of other projects that may compete for the water.

Vertical separation is inadequate for proposed infiltration galleries and may impact water quality

The stormwater infiltration galleries, proposed as the final step for treatment of Project stormwater, are designed to maximize separation between bottom of galleries and the seasonal high water table. TRPA Code of Ordinances Section 25.5.A requires that the bottom of infiltration facilities be a minimum of 1 foot above the seasonal high water table. Additionally, in "any stormwater infiltrating areas that may have less than two (2) feet of separation to the seasonal high water table, the stormwater being infiltrated must meet TRPA Code of Ordinances Chapter 81 in regard to surface water discharge standards and/or be redesigned to provide the required two (2) feet separation." (DEIR, p. 15-97).

According to the DEIR, the stormwater infiltration galleries are designed to maintain at least 1.5 to 2 feet of separation between the bottom of the galleries and the seasonal high water table as measured in 2006, 2007 and 2008. However, the DEIR states (p. 15-80):

> because of the complexity of the North Base area and its proximity to Lake Tahoe, TRPA Soil Hydrologic approval conditions require final stormwater systems designs to maintain a minimum two (2) foot separation between bottom of galleries and the seasonal high water table.

Meeting the two foot separation will be achieved in all areas except North-1, according to the DEIR (p. p. 15-97). In this area, the TRPA Code requirements must be met for surface water discharge. Chapter 81 of the TRPA Code sets forth the following discharge limits that would be applicable to water that would be infiltrated under the project as described in the DEIR (p. 15-29):

TRPA Surface Water Discharge Limits

Parameter	Unit	Surface Runoff Limits	
		Surface Discharge	Discharges to Groundwater
Turbidity	NTU	--	200
Suspended Sediment Concentration*	mg/L	250	--
Oil and Grease	mg/L	2	40
Dissolved Inorganic Nitrogen (NO2+NO3+NH3)	mg/L	0.5	--
Total Nitrogen	mg/L	--	5
Dissolved Phosphorus	mg/L	0.1	--
Total Phosphorus	mg/L	--	1
Dissolved Iron	mg/L	0.5	--
Total Iron	mg/L	--	4

Source: TRPA Code or Ordinances Chapter 81

The DEIR has also not adequately explained how these discharge limits will be met by water that is discharged to shallow groundwater in the infiltration galleries at depths that will not meet minimum vertical separation requirement.

Furthermore, the DEIR has not done an adequate job in detailing how the vertical separation is to be achieved in areas other than "North-1" especially during times of highest groundwater. For example, high groundwater was measured in the gravel parking lot located south of Sacramento Street at approximately 0.9 to 5 feet bgs. At 0.9 feet bgs, vertical separation of 2 feet will be impossible to achieve.

Mitigation (HYDRO-2a) is proposed in the DEIR for only one infiltration gallery, North-1, where the separation of the bottom to the seasonal high water table is estimated to be 1.5 feet during non-discharge and to 0.8 feet during discharge (DEIR, p. 15-97). Measure HYDRO-2a provides only for a process to gain TRPA approval in meeting the requirements of Code of Ordinances Chapter 81 for surface water discharge standards. This is deferred mitigation and does not ensure that approval can be met. The DEIR should be revised to include TRPA approval of the treatment train as proposed in the DEIR for North-1. The DEIR should also be revised to identify other areas where the vertical separation will not be achieved and how TRPA approval is to be met in those areas.

Groundwater will be daylighted during excavation

The Project will require excavation to depths greater than five feet and will result in interception of the groundwater table during construction at the North and South Base area (DEIR, p. 14-26). TRPA Code (Chapter 64, Section 64.7.B) prohibits excavations greater than five feet in depth or when there exists a reasonable possibility of interference or interception of a water table unless conditions can be met, including preparation of a report that demonstrates that no interference or interception of groundwater will occur as a result of the excavation, that no damage occurs to mature trees and that topography is maintained. If groundwater interception will occur, an excavation can be made per the TRPA Code if

measures are included in the project to maintain groundwater flows to avoid adverse impacts to vegetation and to prevent any groundwater or subsurface flow from leaving the Project area as surface flow.

The Proposed Project (Alternative 1) and Alternatives 3, 5 and 6 will require excavations for parking structures that exceed five feet based on building cross sections for the Proposed Project (Alternative 1) (DEIR, p. 14-73). The DEIR states (p. 14-74):

> The maximum depth of excavation at the North Base area ranges from 29 to 32 feet bgs. The maximum depth of excavation will be approximately 17 feet below seasonal high groundwater levels measured in this area.

This statement contradicts the depth of seasonally high groundwater documented elsewhere in the DEIR, including (p. 14-17):

> In the North Base paved parking lots, groundwater was measured at depths of 5.44 to 10.45 feet below ground surface (bgs), and seasonal groundwater as indicated by evidence of mottled soils was noted at depths of approximately 4.3 to 8 feet bgs. Historic water levels in monitoring wells were as high as 4.65 feet bgs (Kleinfelder 2010).

If the information on p. 14-17 is correct, the excavation in the North Base parking lot will extend a maximum of 27.7 feet below the seasonally high groundwater elevation, not 17 feet as stated on p. 14-74. The DEIR provides additional contradicting information about the depth of the water table interception, stating on p. 14-74:

> The maximum depth of excavation at the South Base area ranges from 19 to 21 feet bgs. The maximum depth of excavation will be from 4 to 13 feet below seasonal high groundwater levels measured in this area. The estimated groundwater flow rates that will be intercepted by proposed retaining walls for the underground parking structures at the South Base area range from 1 to 11 gpm.

In the South Base area, the DEIR states that seasonally high groundwater was measured at depths as shallow as 0.97 feet below ground surface (p. 14-17); therefore, the maximum depth of excavation may be as great as 20.03 feet below high water levels.

Because the estimate of the maximum depth of water table interception does not consider highest water table conditions, calculations of the flow rates that would be intercepted by proposed retaining walls for the underground parking structures at the North Base and the South Base need to be recalculated and additional mitigation needs to be identified in a revised DEIR. Interception of shallow groundwater could cause discharge to surface water that would result in violations of the TRPA surface water discharge limits and which could constitute non-stormwater discharges during construction. Non-stormwater discharges are prohibited under the California General Construction Permit (Order 2009-0009-DWQ) unless authorized by the Regional Water Quality Control Board.

The mitigation is also inadequate (DEIR, p. 14-75):

> The impact, however, remains significant because 1) the excavations exceeding five feet will intercept seasonal high groundwater during construction of proposed underground parking structures and requires mitigation to assure that intercepted groundwater does not leave the Project area as surface flow and 2) Placer County considers impacts from grading and earthwork potentially significant unless standard mitigation measures are applied, ensuring compliance with codified regulations to avoid and minimize construction-related impacts to soils. Long-term impacts and mitigations for interception of groundwater during project operations are analyzed in Chapter 15, Hydrology, Water Rights, Surface Water Quality and Groundwater.

Chapter 15 states only that a final BMP plan is to be submitted for approval by TRPA Stormwater Management Program staff (DEIR, p. 15-98). This is deferred mitigation. A revised DEIR should be prepared to identify impacts of the water table interception and any mitigation that would be necessary.

Improper consideration of land coverage

The Project applicant states it will conduct removal of no less than 500,000 square feet of existing land coverage under the Proposed Project (Alternative 1) and Alternatives 3, 5 and 6 (DEIR, p. 14-52). As part of that commitment, the applicant has removed disturbed roadways and has committed to further road removal.

The DEIR states that since 2006, approximately 19,000 linear feet of dirt access roads ranging from 7 to 18 feet in width have been treated and removed from within the Project area as part of sediment source control projects that removed and restored soft land coverage and disturbance associated with dirt access roads. The total restored area is reported to be 5.5 acres (DEIR, p. 15-7) or approximately 240,000 square feet. The recently removed land coverage and disturbance have not been banked by TRPA and are preliminary until approved. Approximately 25,000 linear feet of dirt access roads ranging from 7 to 18 feet in width have been identified for potential removal and restoration (DEIR, p. 14-52).

We have examined the locations of the removed and restored land coverage as identified in Figure 14-4. All photos and maps we used to prepare our analysis are included as Attachment 1. We have compared the locations of the roads to maps and aerial photos to determine if the roads were in existence as of February 10, 1972 in order to be qualified as restored land coverage under provisions of the TRPA Code, Chapter 20, Land Coverage Standards.[6] The map we prepared, Figure 1, shows significant lengths of roadways that were not in existence as of February 10, 1972 or were not likely to be in existence as of that date. For those roads where land coverage has been removed in 2006 to 2009 (see DEIR, Figure 14-4), our analysis shows that Rainbow Ridge and Homeward Bound 0 to be nonexistent in February 1972 (Figure 1). These roadways represent approximately 4000 linear feet of coverage. According to the DEIR, Homewood Bound 0 received restoration on a total of 38,788 square feet. The DEIR doesn't state the area that received restoration for Rainbow Ridge; however the IERS report states that restoration was conducted over 48,300 square feet for Rainbow Ridge. On the basis of these figures, Homeward Bound 0 and Rainbow Ridge represent a total of 87,088 square feet of restoration, or approximately 36% of the 240,000 square foot area claimed as eligible for restoration credits. Our

[6] http://www.trpa.org/documents/docdwnlds/Ordinances/COCh20.pdf

analysis shows that these road segments would not be eligible for banking because they were not in existence on February 10, 1972.

For those roads that are proposed for removal of land coverage (see DEIR, Figure 14-5), Road 8 and Road 16 were not in existence as of February 10, 1972. These roads are a combined 2400 linear feet and represent approximately 10% of the 25,000 linear feet of roadways that are proposed for restoration. If an average roadway width of 12.5 feet is used (roadway widths range from 7 to 18 feet, according to the DEIR on p. 14-20), these roadways represent 30,000 square feet of coverage.

Additionally, our analysis shows that a number of other roadways may not have been in existence as of February 10, 1972. The uncertainty stems from the dates of the photographs and the maps and the visibility of the roadways in those maps. For those roads where land coverage has been removed, our analysis shows Homeward Bound 1 may have been nonexistent in February 1972 (Figure 1). Homeward Bound 1 is 300 feet in length and received treatment on 3,624 square feet, or about 2% of the area claimed as eligible for restoration credits. For those roads that are proposed for removal of land coverage, Road 10, Road 11, Road 15 and Road 17 may not have been in existence as of February 10, 1972. These roadways represent a combined 6600 linear feet and approximately 26% of the 25,000 linear feet of roadways identified for potential restoration.

In summary, according to our analysis, 36% of the area of the roadways where restoration has taken place is ineligible for banking because the roads were not in existence as of February 10, 1972. For those roadways that are being considered for land coverage banking, 10% were not in existence as of February 10, 1972 and 26% of the roadways identified for potential restoration may not have been in existence as of February 10, 1972. Because they were not present as of February 10, 1972, they are ineligible to be qualified as restored land coverage under provisions of the TRPA Code, Chapter 20, Land Coverage Standards.

A revised DEIR should be prepared to verify the existence of the roads of February 10, 1972 in areas already restored or in areas proposed for restoration. All roads not in existence as of that date should be eliminated from discussions regarding banking of land coverage. Instead, roads that have been restored should be included for credit for restoration of disturbed lands to meet TRPA goals.

Additionally, we have conducted an analysis of the North Base parking lot and have determined that the majority of the parking lot was not in existence as of February 10, 1972. Figure 2 shows an overlay of a map prepared on the basis of conditions that existed as of November 1971 (Attachment 2), arguably the same conditions that would have existed on February 10, 1972 given that the winter season would have prevented any further development.

Figure2 depicts two features that indicate the parking lot was not in existence in February 1972.

1. A roadway in the northern area of what is now the parking lot is shown to extend east/west to join with the highway. If the lot was in existence at the time, the roadway would be shown to empty into a parking area.

2. An area that would appear to be fenced extends west and south of the lodge toward the southern boundary of the site and to the highway to the east. This appears to be the extent of the parking area as of February 10, 1972.

The fenced area represents 29% of the area of the parking lot that was in existence as of 2005 and that is currently in existence. Therefore, 71% was not in existence as of February 10, 1972 and cannot be claimed as existing coverage.

Infiltration rates indicate areas not qualified for coverage

The TRPA Code defines coverage as "lands so used before February 10, 1972, for such uses as for the parking of cars and heavy and repeated pedestrian traffic that the soil is compacted so as to prevent substantial infiltration." We have determined that roadways that were restored had substantial infiltration rates prior to restoration and are therefore not qualified as coverage. We have also determined that infiltration rates were not appreciably increased following restoration, again indicating that restored lands are not coverage under the TRPA code.

Actual infiltration rates "before and after" restoration were measured on only one road prior to conducting any treatment work. On Road 31, infiltration rates were reported as follows:

> "Before and after treatment, approximately 56% of applied water was infiltrated." (Oct. 2008 IERS Report, p. 32.)

On Road 31, the infiltration rate was not increased by treatment. No other before and after infiltration rates are provided in the IERS report.

Instead of relying on actual before and after infiltration rates, the IERS report uses cone penetrometer data in an attempt to demonstrate increased infiltration. The IERS report claims that an average 4.3 fold increase in depths of penetration shows increased infiltration rates (IERS Report, p. 34). However, for the Road 31 site (the only site with before and after infiltration data), the measured depths of penetrometer readings at the site increased three-fold after treatment yet infiltration rates stayed the same (see above). Therefore, penetrometer depths appear to be poorly correlated to infiltration rates and should not be relied upon as a measure of infiltration capacity.

Roadways that were restored had substantial infiltration rates prior to restoration activities and therefore do not qualify as coverage. Upper and lower segments of Wedding Road were measured for infiltration prior to any restoration work. The infiltration rate for these segments was 75 percent of applied water prior to any treatment (IERS Report, p. 34). This is a high rate of infiltration that would not meet the TRPA code requirement that lands had compacted soils "so as to prevent substantial infiltration." Additionally, penetrometer data indicate refusal at less than 2 inches (IERS Report, p. 36) which does not correlate to the high infiltration rate that was measured.

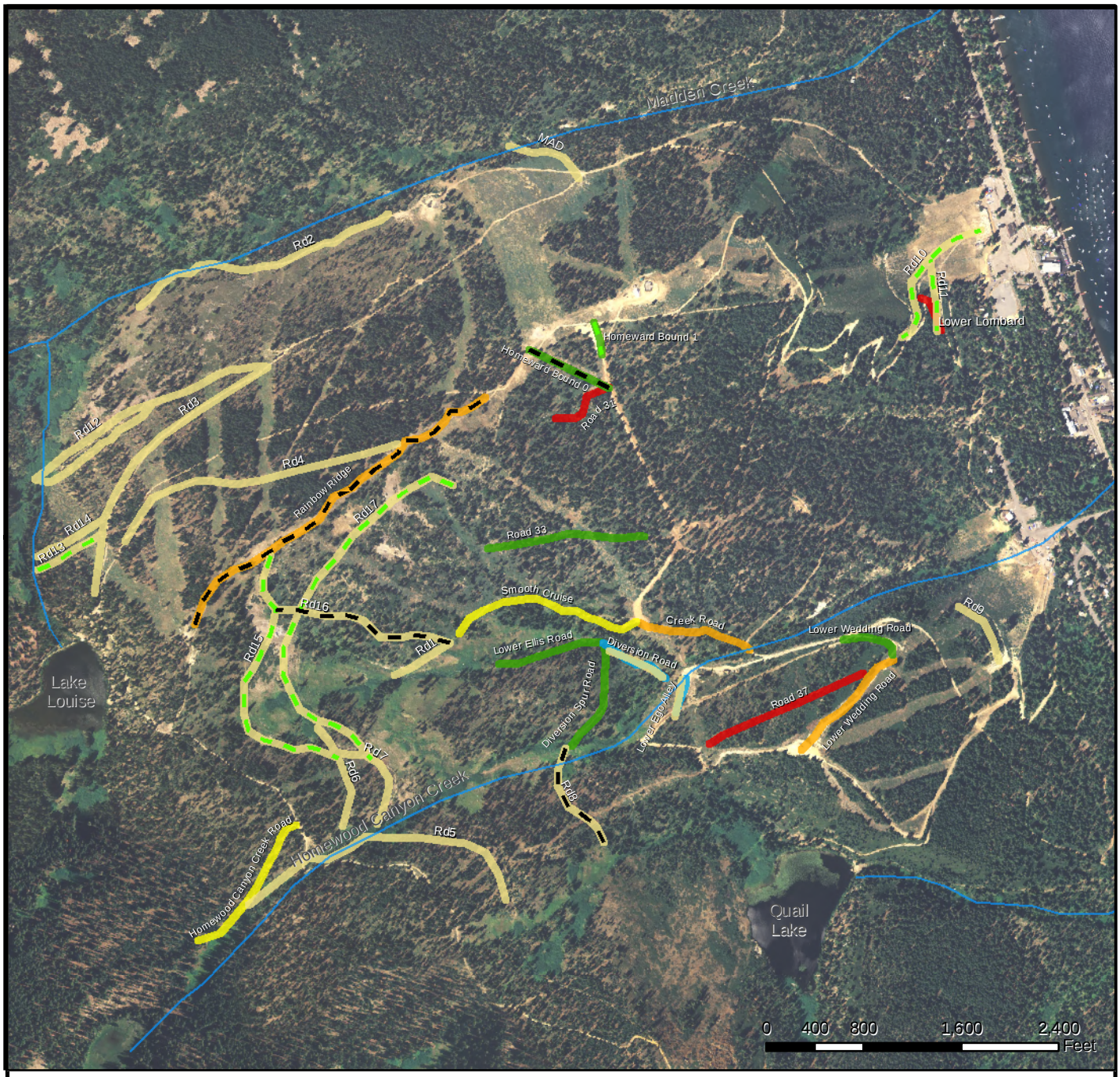
The roadways that were restored appeared to readily infiltrate water prior to any restoration activities. According to the TRPA Code, these areas would not be eligible for restoration because substantial infiltration was occurring on these roadways at the time of restoration. Therefore, all roadways claimed

as coverage should be eliminated because the applicant has provided no data to show that infiltration was not substantially impaired prior to restoration.

Finally, the use of a penetrometer to correlate to infiltration rates does not appear to be warranted on the basis of the data in the IERS report. A revised DEIR should be prepared to identify actual infiltration rates of all roadways that are currently proposed for restoration. The revised DEIR should identify road segments where infiltration is not substantial on the basis of actual infiltration data as areas that would be qualified for coverage and eliminate those areas where infiltration is substantial.

Sincerely,

Matt Hagemann, P.G., C.Hg.



LEGEND

- Streams
- Not Existing in 1972
- Potentially Existing in 1972

Proposed Sediment Source Control Roads

- Roads

Sediment Source Control Projects

Treatment Status

- Permitted
- Treated 2006
- Treated 2007
- Treated 2008
- Treated 2009

NOTES:

1. All locations are approximate.
2. 2005 DOQQ Orthographic Imagery obtained from CaSIL (the California Spatial Information Library).
3. Spatial data obtained from the Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package.
4. Road locations obtained from Figure 14-4 and Figure 14-5, Homewood Mountain Resort Ski Area Master Plan EIR/EIS.

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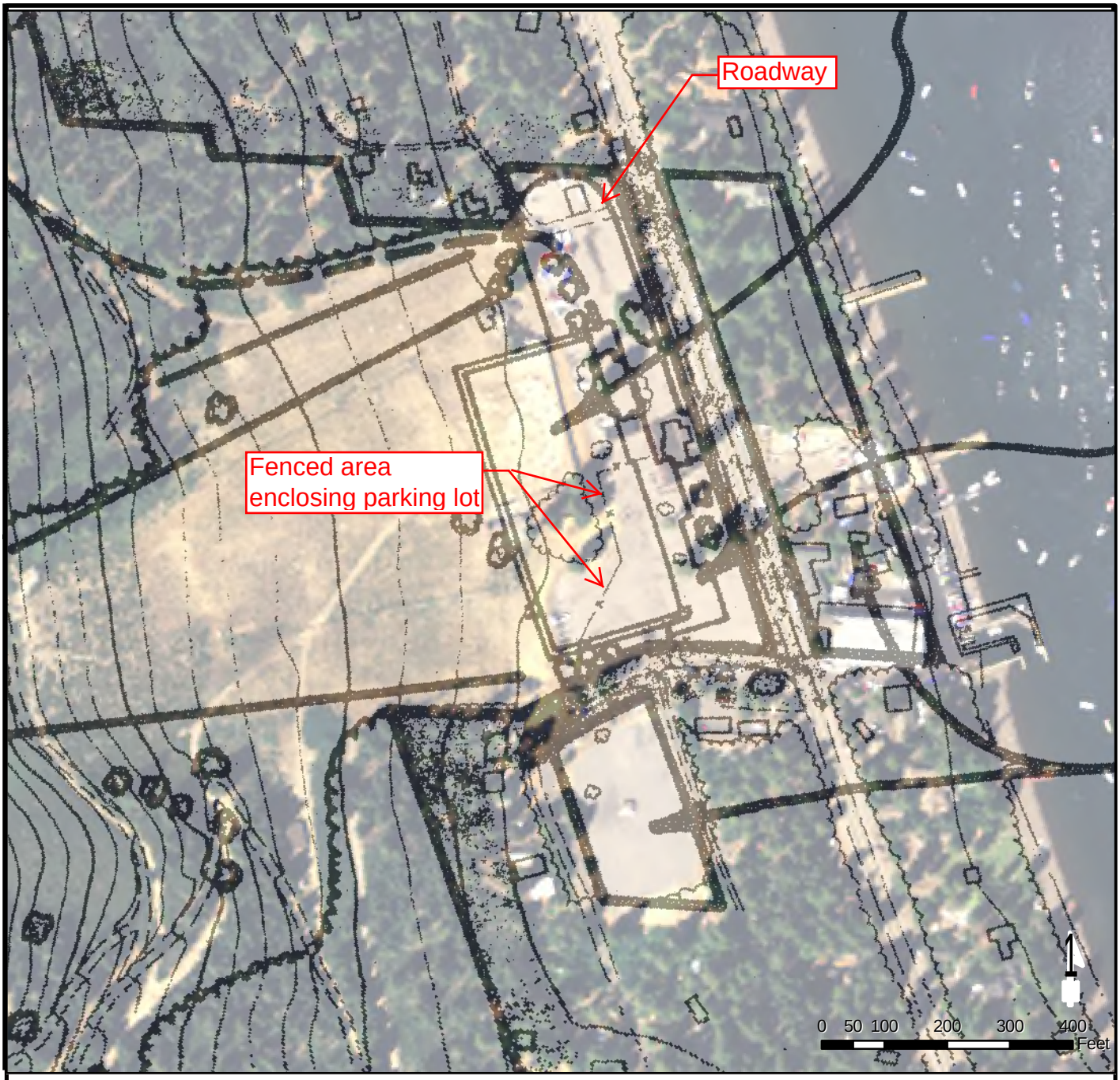
Project No.: Homewood Ski Resort			
Title: Map of Road Status as of 1972			
	Project No.: 438	Drawn By: JAC	Figure: 1
	Approved: MH	Date: 04.06.2011	



NOTES:

1. All locations are approximate.
2. 2005 DOQQ Orthographic Imagery obtained from CaSIL (the California Spatial Information Library).
3. Spatial data obtained from the Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package.
4. 1969 USGS Aerial Imagery obtained from Google Earth.

Project No.: **Homewood Ski Resort**			
Title: **2005 Orthographic Imagery and 1970-1971 Detailed Site Investigations Map, North Parking Lot**			
	Project No.: **438**	Drawn By: **JAC**	Figure: **2**
	Approved: **MH**	Date: **04.13.2011**	

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

Attachment 1

Dec 1969

Homewood, Lake Tahoe, CA

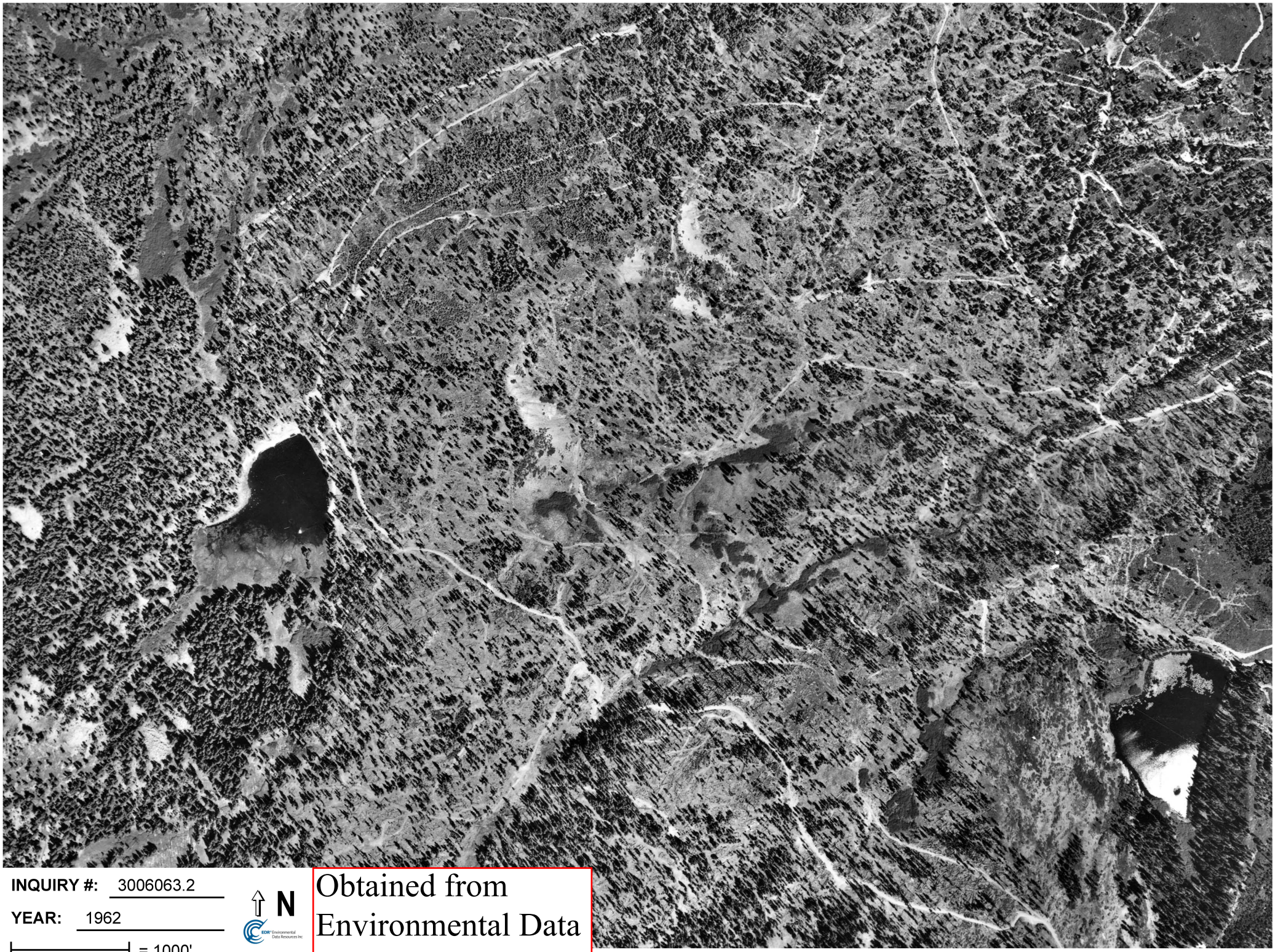
N

1969 Photo
Obtained from
Google Earth

Image U.S. Geological Survey

©2010 Google

Imagery Date: Jan 1, 1969 10 S 744490.67 m E 4329272.01 m N elev 7138 ft Eye alt 15509 ft



INQUIRY #: 3006063.2

YEAR: 1962

= 1000'

N

Obtained from Environmental Data Resources, Inc.

INQUIRY #: 3006063.2

YEAR: 1962

= 1000'

N

Obtained from Environmental Data Resources, Inc.

AS MODIFIED BY
DETAILED SITE
INVESTIGATIONS
AUG, 1970 - NOV, 1971

LEGEND

VILLAGE SITES
Impervious Areas = 60% Max.
Cleared, Planted = 40% Min.

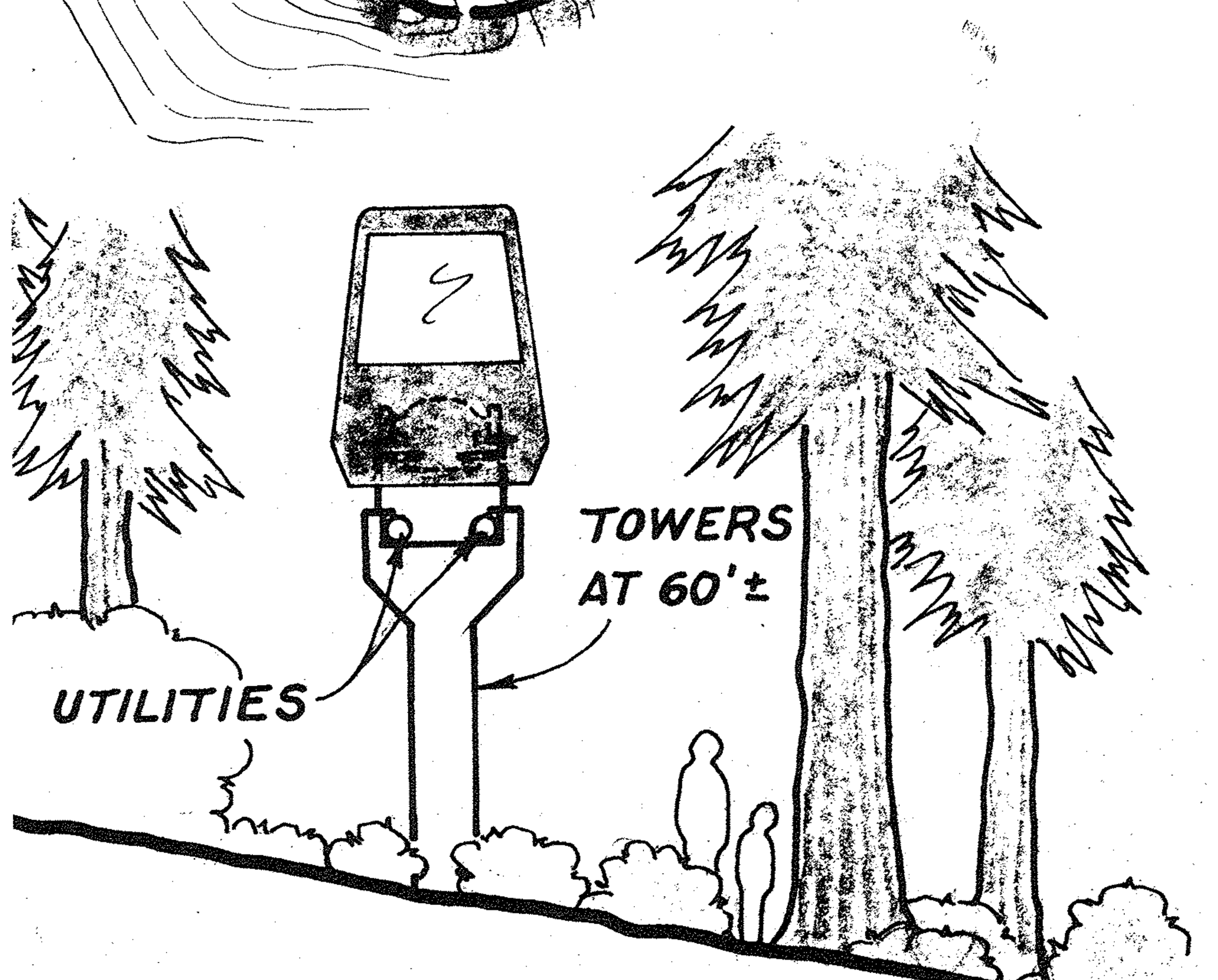
MONORAIL
Required Clear Width = 15 Ft.

SKI RUNS

EXISTING SKI LIFTS

PLANNED SKI LIFTS

OPEN - NATIVE



ELEVATED
MONORAIL - ELECTRIC

LAND USE

USE	AREA: WITHIN PROJECT OWNERSHIP – ACRES	% TOTAL	AREA: WITHIN MADDEN WATERSHED – ACRES	% TOTAL
IMPERVIOUS				
Residential	10.5	1.0%	9.0	0.7%
Parking, Commercial	4.5	0.5	0	0
Subtotal	15.0	1.5%	9.0	0.7%
CLEARED, PLANTED				
Existing Runs	88.0	8.8%	88.0	6.7%
Planned Runs	57.0	5.7	57.0	4.3
Monorail	2.0	0.2	2.0	1.5
Subtotal	147.0	14.7%	147.0	12.5%
OPEN SPACE	838.0 ±	83.8%	1,162.0	86.8%
TOTAL	1,000.0 ±	100.0%	1,318.0	100.0%

EARL G. HAGADORN
CONSULTING CIVIL E

RAYMOND VAIL & ASS
ENGINEERS, PLANNI

VICTOR L. WRIGHT
CONSULTING ENGINE

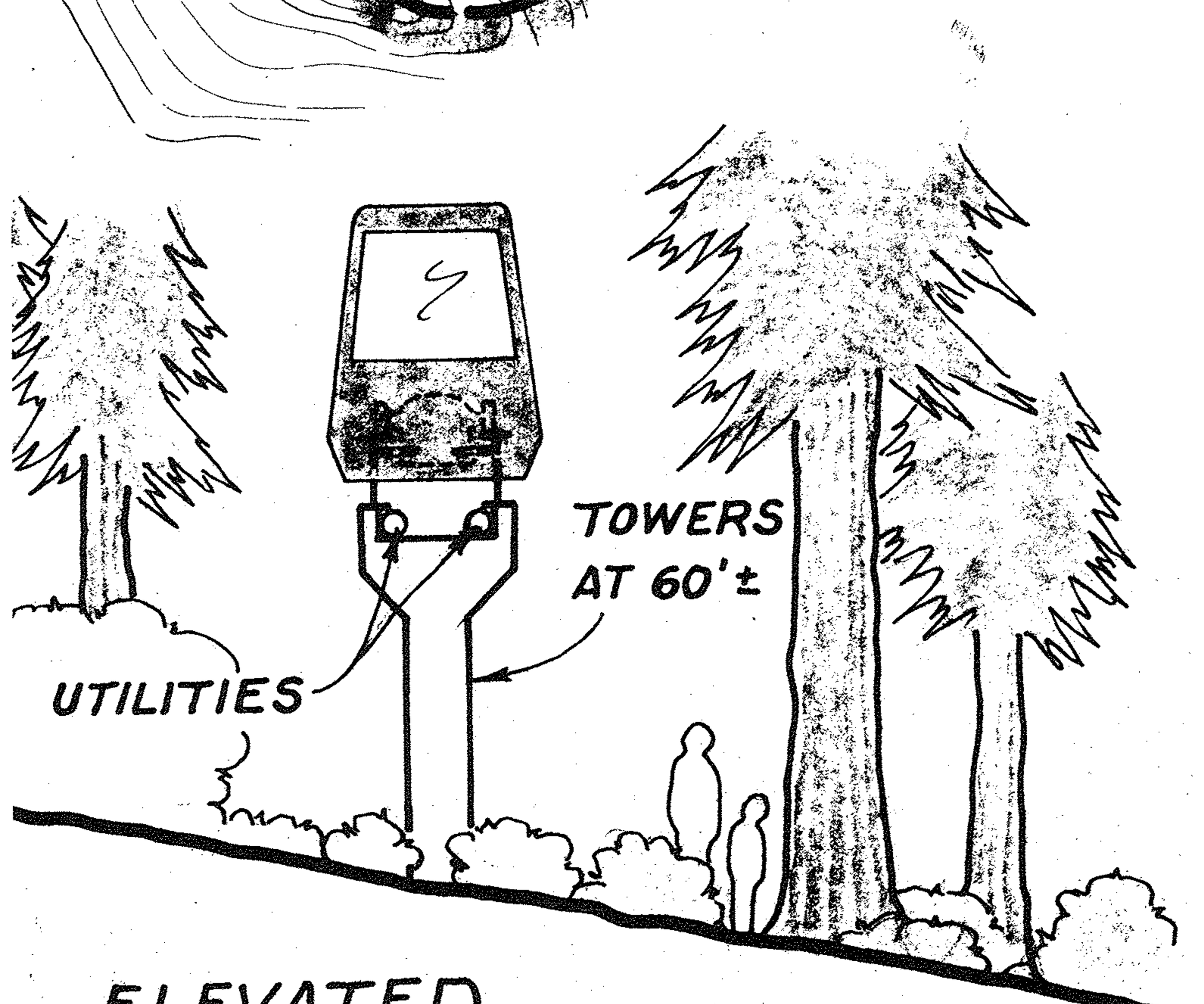
ERNEST WERTHEIM
LANDSCAPE ARCHIT

Attachment 2

AS MODIFIED BY
DETAILED SITE
INVESTIGATIONS
AUG, 1970 - NOV, 1971

LEGEND

- VILLAGE SITES
  Impervious Areas = 60% Max.
  Cleared, Planted = 40% Min.
- MONORAIL
  Required Clear Width = 15 Ft.
- SKI RUNS
- EXISTING SKI LIFTS
- PLANNED SKI LIFTS
- OPEN - NATIVE



ELEVATED
MONORAIL - ELECTRIC

LAND USE

USE	AREA: WITHIN PROJECT OWNERSHIP ACRES	AREA: WITHIN PROJECT OWNERSHIP % TOTAL	AREA: WITHIN MADDEN WATERSHED ACRES	AREA: WITHIN MADDEN WATERSHED % TOTAL
IMPERVIOUS				
Residential	10.5	1.0%	9.0	0.7%
Parking, Commercial	4.5	0.5	0	0
Subtotal	15.0	1.5%	9.0	0.7%
CLEARED, PLANTED				
Existing Runs	88.0	8.8%	88.0	6.7%
Planned Runs	57.0	5.7	57.0	4.3
Monorail	2.0	0.2	2.0	1.5
Subtotal	147.0	14.7%	147.0	12.5%
OPEN SPACE	838.0 ±	83.8%	1,162.0	86.8%
TOTAL	1000.0 ±	100.0%	1,318.0	100.0%

EARL G. HAGADORN
CONSULTING CIVIL E

RAYMOND VAIL & ASS
ENGINEERS, PLANN

VICTOR L. WRIGHT
CONSULTING ENGINE

ERNEST WERTHEIM
LANDSCAPE ARCHIT