

Initial Environmental Checklist

For

TRPA Regional Plan, Code and Land Bank Memoranda of Understanding Amendments to Update the Excess Coverage Mitigation Program and Coverage Transfers Across Hydrologically Related Area Provisions

Prepared for
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1. INTRODUCTION

At the Tahoe Regional Planning Agency (TRPA) Governing Board annual priority setting workshop in 2013, the Board requested that TRPA staff complete a detailed review of possible improvements for land coverage transfers across Hydrologically Related Area (HRA) boundaries and excess coverage mitigation provisions. This project originated from unresolved issues studied in the Regional Plan Update Draft Environmental Impact Statement (DEIS) (TRPA, April 2012) that indicate existing TRPA Code of Ordinances limit land coverage restoration, particularly on sensitive lands, and therefore limits soil and water quality threshold gains. The Regional Plan Implementation Committee (RPIC) endorsed the formation of the Coverage Working Group to help resolve these issues and collaboratively develop recommendations.

On July 8th, 2014, the Coverage Work Group (a list of members is provided in Section 6) agreed to move forward with the recommendations provided below in Section 1.1 for amending the coverage transfer across HRA provisions of the TRPA Regional Plan and Code of Ordinances. In late 2014 and early 2015, the Coverage Work Group developed additional recommendations provided below in Sections 1.2 and 1.3 for amending and updating the Excess Coverage Mitigation (ECM) Program. The proposed Code amendments to the ECM program also require amendment of the Memoranda of Understanding (MOUs) in place between TRPA and state land banks (California Tahoe Conservancy [CTC] and the Nevada Division of State Lands [NDSL]). The proposed amendments to implement these recommendations are provided in Staff Report Attachments B (Amendments to Policy LU-2.11 of the Regional Plan and Chapter 30 of the TRPA Code of Ordinances) and C (Memoranda of Understanding between TRPA and CTC and NDSL).

1.1 Working Group Recommendation for Coverage Transfers Across HRAs

Under the Proposed Action, Regional Plan policy LU-2.11 would be amended to allow transfers of legally existing hard or soft land coverage across HRA boundaries.

LU-2.11 THE ALLOWED COVERAGE IN POLICY LU-2.10 MAY BE INCREASED BY TRANSFER OF LAND COVERAGE WITHIN HYDROLOGICALLY RELATED AREAS UP TO THE LIMITS AS SET FORTH IN THIS POLICY:

SPECIAL PROVISIONS FOR ADDITIONAL COVERAGE, SUCH AS EXCEPTIONALLY LONG DRIVEWAYS, PVIOUS COVERAGE, PUBLIC TRAILS AND ACCESS FOR THE DISABLED, MAY ALSO BE ALLOWED. ORDINANCES SHALL SPECIFICALLY LIMIT AND DEFINE THESE PROGRAMS.

LAND COVERAGE MAY BE TRANSFERRED THROUGH PROGRAMS THAT ARE FURTHER DESCRIBED IN THE IMPLEMENTATION ELEMENT. NOTWITHSTANDING THE LIMITATION STATED ABOVE, LAND COVERAGE MAY BE TRANSFERRED ACROSS HYDROLOGICALLY RELATED AREAS WHEN EXISTING HARD OR SOFT COVERAGE IS TRANSFERRED AND RETIRED FROM SENSITIVE LAND AND TRANSFERRED TO NON-SENSITIVE LAND FURTHER THAN 300 FEET FROM THE HIGH WATER LINE OF LAKE TAHOE, OR ON THE LANDWARD SIDE OF HIGHWAYS 28 OR 89 IN THE TAHOE CITY OR KINGS BEACH TOWN CENTERS.

Under the Proposed Action, TRPA Code of Ordinances Section 30.4 would be amended (including the addition of a new subsection 30.4.3.B.6 and minor Code modifications to Sections 30.4.3.B.2.A and 30.4.3.E) to implement amendments to Policy LU-2.11 to allow transfers of legally existing hard or soft land coverage across HRA boundaries (see Figure 1) where the following criteria are met:

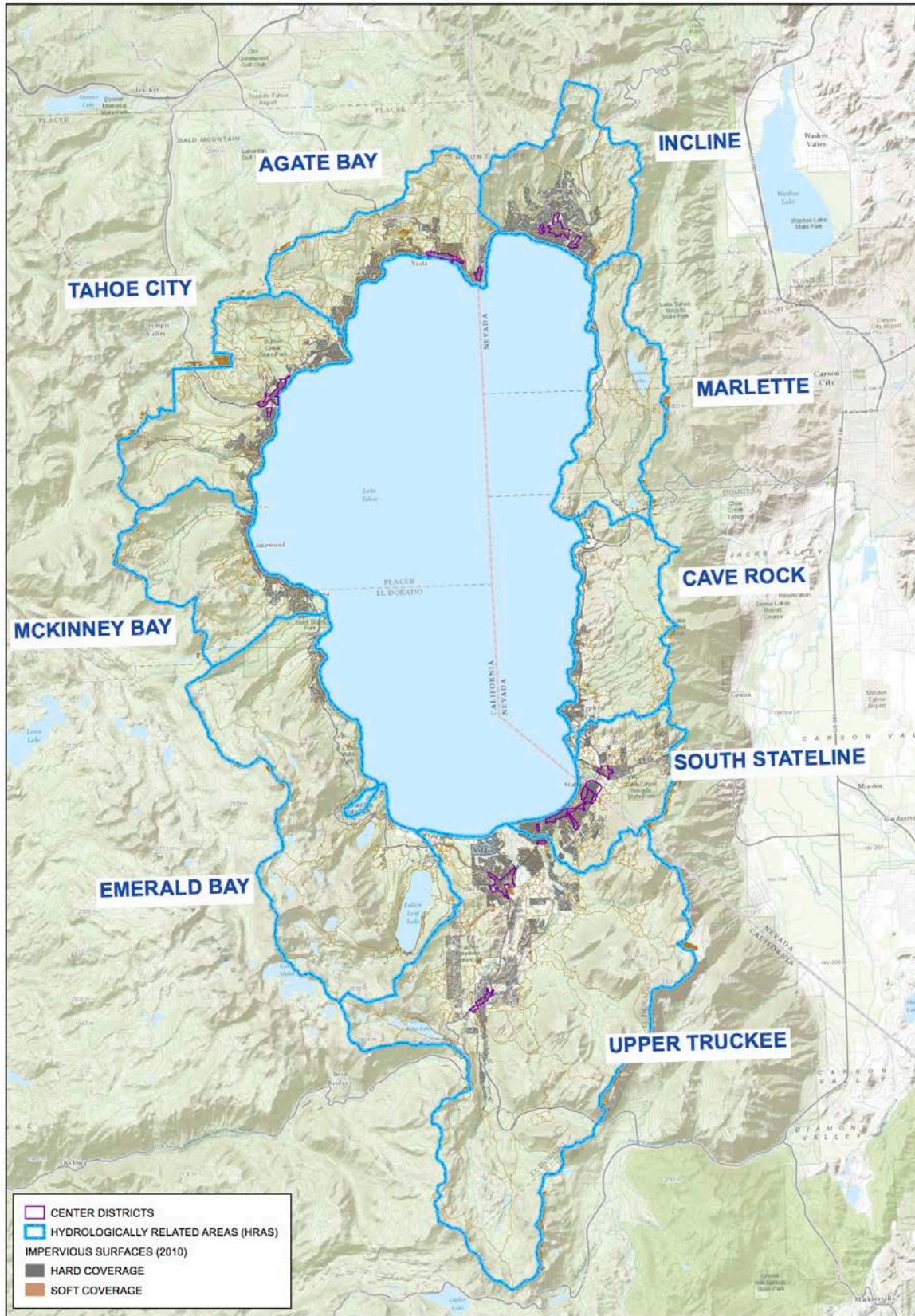
1. The sending site is sensitive land defined as lands with Individual Parcel Evaluation System (IPES) scores at or below 725, or for lands without IPES scores, those lands identified as Land Capability Districts 1a, 1b, 1c, 2, or 3. *Intent: incentivize sensitive lands restoration.*
2. The receiving site is non-sensitive land defined as lands with IPES scores above 725, or for lands without IPES scores, those lands identified as Land Capability Districts 4, 5, 6, or 7. *Intent: direct transferred coverage to high capability lands.*
3. The receiving site is further than 300 feet from the highwater mark of Lake Tahoe, or on the landward side of State Highways in the Tahoe City or Kings Beach Town Centers.¹ *Intent: prevent the use of provision on land within 300 feet of the highwater mark of Lake Tahoe.*

The proposal would permit the transfer of existing hard/soft land coverage across HRA boundaries only if the land coverage is permanently retired and restored on sensitive lands and sent to eligible non-sensitive receiving areas further than 300 feet from the highwater mark of Lake Tahoe, or on the landward side of State Highways in the Tahoe City or Kings Beach Town Centers.

Since land coverage would be transferred from sensitive lands, the land coverage transfer ratios would be 1:1 pursuant to Code Section 30.4.3.A. This means that the transfer of one square foot of land coverage to a receiving parcel shall require the retirement of one square foot of land coverage on the sensitive (e.g., low land capability) portion of a sending parcel.

¹ Pursuant Ch. 90, the definition of High Water Elevation is the established upper elevation limit of the surface of a body of water. The High Water Line elevation is 6,229.1 Feet, Lake Tahoe Datum.

Figure 1. HRA Boundaries with Impervious Surfaces (2010) and Town Centers



Project proponents transferring land coverage across HRA boundaries would still need to comply with land capability limitations and all other ordinances regulating land coverage (pursuant Code Chapter 30). The land coverage transferred from a sending area (including a portion of a parcel or parcels) shall be permanently retired as set forth in Code Section 30.4. The amount of land coverage that can be transferred to the receiving site is determined by comparing the base allowable land coverage of the parcel to the maximum land coverage allowed for the parcel as defined by Code Section 30.4.2. Exhibit A describes the methods used for calculating the area of possible land coverage transfer for each HRA.

1.2 Working Group Recommendation for Use of the Excess Coverage Mitigation Fee

Starting in August 2014, the Coverage Working Group identified ten characteristics of an ideal ECM program and brainstormed possible options for further examination. In late 2014, the Working Group reviewed and refined six alternatives for further study by TRPA staff – each alternative would modify how the ECM fee is spent and updated. In early 2015, the Coverage Working Group selected an alternative that would expand the eligible uses of the ECM funding to include SEZ restoration and enhancement, and water quality improvement projects in addition to allowing for existing coverage removal and the retirement of development potential in environmentally sensitive lands (also referred to as sensitive land acquisition). Under the Proposed Action, Memoranda of Understanding (MOUs) between the TRPA and state land banks would be amended to address the recommended ECM program modifications which include:

1. Continue the direct distribution of ECM funds to the land banks.
2. At a minimum, half of the ECM funds shall be dedicated to existing coverage acquisition and restoration. The land banks can dedicate the remaining portion of the ECM funds to Environmental Improvement Projects (EIP) or non-EIP projects proposed by the CTC or NDSL and approved by the Executive Director. All of these projects must result in Soil Conservation and Water Quality threshold gains.
3. Replace the ratio requirement to mitigate one square foot of excess coverage with one square foot of restored or retired coverage in the MOUs between TRPA and the Tahoe Area land banks (NDSL and CTC) with amended language. The language in the MOUs between TRPA and the land banks (NDSL and CTC) should be amended to clearly give preference to the use of ECM Program funds for the acquisition and restoration of existing coverage on SEZs and other environmentally sensitive lands. In addition, reporting from land banks on the use of the ECM funds should include the costs per acre by land capability type and costs for restoration to help track estimates of the land bank's cost to acquire and restore land coverage under the ECM Program. *Intent: Implement projects that have the greatest environmental benefit to the primary Soil Conservation and Water Quality thresholds affected by excess coverage, maintain a clear nexus to coverage restoration, and promote coverage removal in sensitive areas.*

4. The ECM funds should be eligible for the use of acquiring fee title or conservation easement on properties located on Land Capability 1a, 1b, and 1c (at a minimum) to retire potential coverage. Intent: incentivize environmentally sensitive land acquisition.
5. Prohibit ECM fees from being used to fund projects that are gaining TMDL credit or are required mitigation through other programs. ECM fees may be used to fund stormwater projects, but they must be in addition to what jurisdictions are doing to meet TMDL requirements. Intent: ensure ECM fees do not fund projects that are already required.
6. The land banks shall provide sufficient reporting on how the funding was spent and on how funded projects result in Soil Conservation and Water Quality threshold gains, using the existing EIP performance measures and reporting (where appropriate). Intent: ensure accountability and maintain a clear nexus to coverage restoration. These include:
 - a. Square footage and land capability of land coverage restored,
 - b. Acres of land acquired including environmentally sensitive land acreage,
 - c. Acres of SEZs restored (includes restoring SEZs that are degraded but do not have coverage),
 - d. Estimated pollutant and stormwater load reduction from stormwater projects, and
 - e. Soil Conservation and Water Quality threshold gains.

The recommendations provided above in Section 1.2 require amendments to the existing Memoranda of Understanding (MOU) between CTC and TRPA and between NDSL and TRPA. Proposed amendments to the MOU have been prepared to capture the Working Group recommendations and are included in Attachment C of the TRPA Staff Report.

1.3 Working Group Recommendation for Updating the Excess Coverage Mitigation Fee

The coverage working group also supports moving forward with the index approach for updating the ECM fee annually. The coverage working group recommends an ECM fee adjustment tool that uses the Annual Percentage Growth Rate (APGR) method and the best available information for the Tahoe Region. The intent of the ECM fee should remain in the Code language (*the ECM fee should be an estimate of the land bank's cost to acquire and restore land under this program*). Under the Proposed Action, Code of Ordinances Subsection 30.6.1.C.2 would be amended to address the following recommendations.

1. The working group approves of annual ECM fee updates. The APGR index calculation shall be calculated regularly, but no less than every 4 years.
2. The ECM fee adjustments shall be limited to increases.

2. PURPOSE AND NEED FOR THE PROJECT

At their annual priority setting workshop in 2013, the TRPA Governing Board requested that TRPA staff complete a detailed review of coverage transfers across HRA zones, including presented information from the CTC and NDSL. Attachment 5 of the Regional Plan lists this topic as a priority project. This project originated as an issue from the Regional Plan Update process and the Bi-State Consultation.

In early 2014, TRPA staff convened a Coverage Working Group (with approval of the RPIC of the TRPA Governing Board) to consider possible changes to regulations governing coverage transfers across HRAs and measures to enhance the effectiveness of excess coverage mitigation. The changes are proposed to accelerate transfers of land coverage out of environmentally sensitive lands, increase sensitive land restoration and acquisition, improve the implementation and effectiveness of the ECM program, and increase Soil Conservation and Water Quality thresholds gains.

3. BASELINE (EXISTING) CONDITIONS

Absent any action on the Proposed Action, TRPA would maintain the status quo associated with transfers of land coverage in the Lake Tahoe Region. Maintaining baseline conditions, there would be no Regional Plan or Code of Ordinance amendments to remove restrictions on land coverage transfers across HRA boundaries, nor changes to how the ECM program fees are calculated and spent.

Under the existing regulatory environment, it is assumed that land coverage needed to facilitate private development in constrained HRAs (e.g., Agate Bay NV and Emerald Bay CA) may continue to be difficult to obtain from the state land banks, limiting (re)development opportunities to those projects that can obtain transfers from private sellers located within the applicable HRA. Based on the provisions of existing Code Section 30.4.3.B, a typical land coverage transfer for a single family home would be facilitated by transferring either banked hard/soft land coverage or base (e.g., potential) land coverage from a sending parcel as environmentally sensitive or more environmentally sensitive than the receiving parcel. Since most single family residential development occurs on high capability land, the transferred land coverage usually comes from a sending site also located on high capability land. As such, under the baseline condition, it is assumed that land coverage transfers would continue within HRA boundaries but with little to no restoration of existing hard/soft land coverage on sensitive lands.

This assumption is supported by the trends reported by the Nevada Land Bank. For analysis purposes, it is assumed that land coverage transfers may continue to occur under the baseline condition using maximum allowable land coverage limits. However, based on past trends, it is unlikely that these land coverage transfers would result in the restoration of existing hard/soft land coverage located on sensitive lands. Therefore, for

the purposes of this assessment, it is assumed that the baseline regulatory condition would not accelerate transfers of land coverage out of environmentally sensitive lands.

Under existing baseline regulatory conditions, it is also assumed that the ECM Program would continue to operate with existing deficiencies described below. The ECM fee schedule has not been updated since 2007 due to difficulties with implementation, related to the requirement to conduct annual appraisals of coverage costs in each HRA. Yet the ECM fee should be updated regularly to more accurately reflect the land bank's cost to implement the program.

The main purpose of the ECM Program is to support Soil Conservation and Water Quality threshold gains particularly through the removal of existing land coverage in over-covered low capability lands; yet the past fund expenditures have not been focused for this purpose. Instead, the current MOUs require that the land banks mitigate one square foot of excess land coverage with one square foot of restored or retired land coverage, but do not specify which land capability districts the coverage reduction should occur in, nor do they differentiate between potential and existing land coverage. Consequently, the cost of land acquisition rather than the sensitivity of land available for restoration may be the deciding factor for fulfilling the excess coverage mitigation program requirements.

4. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

This section addresses environmental impacts of the proposed amendments to the TRPA Code of Ordinances and goals and policies and compares them to the baseline regulatory condition. Potential impacts of the proposed Code amendments would result from the transfer of land coverage across HRA boundaries, facilitating land coverage transfers above and beyond what would likely occur under continued implementation of the existing TRPA Code of Ordinances. Amendments to the ECM program would modify the way ECM rates are calculated and allow greater flexibility for the expenditure of ECM fees to purchase and restore existing land coverage on sensitive lands. The Code amendments are anticipated to increase the rate of retirement of land coverage on sensitive lands by: 1) allowing the transfer of land coverage across HRA boundaries where hard/soft land coverage from sensitive lands is restored and permanently retired; and 2) replacing an unattainable ratio requirement for coverage retirement with a more feasible and flexible approach, requiring preference for existing land coverage restoration on sensitive lands.

Under the Proposed Action, the amount of newly constructed land coverage would depend on the design and location of individual projects, which would be subject to existing regulations that ensure the maximum allowable land coverage is not exceeded at the project scale. Future projects would also include the removal of existing land coverage as a result of the continuation or modification of certain programs and provisions, such as existing and proposed coverage transfer requirements and excess

coverage mitigation program amendments, and the Environmental Improvement Program. The proposed amendments do not increase the total amount of land coverage that can be approved within the Lake Tahoe Region, but both provide greater flexibility to land owners and land banks with the resulting benefit of increased retirement of existing land coverage on sensitive lands.

The 2012 Regional Plan Update Draft Environmental Impact Statement (DEIS) analyzed the impacts of the 1987 HRA system and found that each HRA contains multiple watersheds and intervening zones and that Lake Tahoe is ultimately the receiving water affected by land coverage transfers within HRAs (TRPA, April 2012). Consequently, the DEIS concluded that allowing land coverage transfers across HRA boundaries would not change the receiving water currently affected by land coverage transfers. The 2012 Regional Plan Update includes a provision that allows excess land coverage to be mitigated by reducing offsite land coverage in different HRAs, provided that the restoration is completed on more sensitive land than the project area (see Code Section 30.6.1.B.2).

The 2012 Regional Plan Update DEIS also concluded that limiting land coverage transfers to within HRAs results in a fragmented market with more limited and variable supplies of land coverage available for transfers to any one site than would occur without HRA restrictions. The limited and variable supply of land coverage available for transfers results in substantial variation in the actual cost to acquire coverage between HRAs, and in many cases higher costs to acquire land coverage than would be expected if sellers of land coverage had to compete with each other region-wide. In summary, the DEIS concluded that these existing restrictions reduce land coverage restoration, particularly on sensitive lands, and curb soil and water quality threshold gains (TRPA, April 2012).

A discussion of the potential impacts of the Proposed Action is provided below along with a copy of the Initial Environmental Checklist (Section 5).

Possible Land Coverage Transfers

Using estimated development levels (possible land coverage transfers) associated with the proposed Code amendments (Code Section 30.4), the following analysis has been prepared to disclose the probable implications of the Proposed Action. The estimated environmental effects documented below are based on methods and assumptions described in Exhibits A and B and GIS analysis developed through consultation with TRPA staff.

Exhibit A describes the methods used for calculating the area of possible land coverage transfer for each HRA. In summary, each HRA boundary was queried to identify vacant privately held parcels located on high capability land and within TRPA Regional Land Uses that allow development (e.g, mixed use, residential, resort recreation, tourist), at least 300 feet from the highwater mark of Lake Tahoe. For each parcel, GIS was used to calculate the base allowable land coverage (BAC) and then used to compare the BAC with the maximum land coverage allowed on each parcel pursuant Code Section 30.4. A

parcel would be eligible for a land coverage transfer under the proposed Code amendment if the BAC is less than the maximum land coverage allowed by existing Code Section 30.4.

Tables 1 and 2 summarize the quantity of land coverage transfers that could occur using the proposed Code amendment within each HRA²³. Calculations were performed using both the original 1974 Bailey GIS layer which includes an updated SEZ overlay (Sinclair) and the revised land capability GIS data based on the NRCS 2007 Soil Survey land capability GIS datasets.⁴ The land coverage transfer calculations were conducted using GIS tools and based on the criteria outlined in the Code amendment (e.g., land coverage transfers may occur on high capability lands located further than 300 feet from the highwater mark of Lake Tahoe or on the landward side of State Highways in the Tahoe City or Kings Beach Town Centers). For parcels that meet the location and high capability criteria, there is a Lake Tahoe Region total of approximately 43 to 46 acres of land coverage transfer that could cross HRA boundaries using the provisions of the proposed Code Section 30.4 amendment. As stated above, the Code amendment would provide more flexibility to transfer land coverage – specifically, the ability to transfer existing hard/soft land coverage removed from sensitive lands across HRA boundaries to non-sensitive lands. If transferred within the HRA boundary, the calculated land coverage transfers could occur today under the existing Code provisions. Over half of the calculated land coverage transfer amount is attributed to the Upper Truckee HRA where the greatest amount of land coverage is banked and available for purchase from the state land banks. As such, it is unlikely that project proponents or developers would only utilize the proposed Code Section 30.4 amendment in the Upper Truckee HRA, given the requirement to acquire and restore land coverage on sensitive lands and its substantially greater cost related to acquiring property with building infrastructure in comparison to

² Vacant parcels were used for the GIS analysis since an assumption was made that redeveloped parcels may be over-covered or would have existing onsite land coverage available for banking and transfer which would be less expensive for a property owner than acquiring and restoring existing soft or hard land coverage on a sensitive parcel. In addition, from a technical perspective, it would be difficult to pinpoint all parcels within an HRA that could allow redevelopment (the GIS analysis would require accurate data of existing land coverage and location of the coverage to determine its land capability classification). Finally, possible land coverage transfer amounts would be smaller in a redevelopment scenario compared to a vacant lot development. The conclusions documented in the analysis that follows indicate a less than significant increase in pollutant loads for transfers to vacant receiving parcels. Water quality and soil impacts for land coverage transfers to parcels with existing development would result in even smaller load increases, and likely an overall load reduction because of the requirement to apply BMPs to existing land coverage on the redeveloped parcels and the retirement of coverage on sensitive lands.

³ Although they are similar, the calculated values for land coverage transfers across HRA boundaries is slightly higher under the Bailey-Sinclair analysis (Table 1) than it is using the 2007 Soil Survey (Table 2) because the Bailey-Sinclair data includes a greater area of sensitive land and less high capability land. The larger area of sensitive land results in a lower base allowable land coverage (BAC) value for most parcels using the Bailey-Sinclair data. When the BAC is compared to the maximum land coverage allowed under the Code (which does not change based on the land capability data set used), the result is a greater amount of possible land coverage transfer under the Bailey-Sinclair analysis.

⁴ This method is akin to the method used for the 2012 Regional Plan Update Draft Environmental Impact Statement analysis (see 3.7 Geology, Soils, Land Capability, and Coverage).

purchasing land coverage from the land bank or potential land coverage without building infrastructure from private sellers.

Table 1. Estimated Possible Land Coverage Transfers for Vacant Parcels by HRA (1974 Bailey-Sinclair GIS data which includes an updated SEZ overlay (Sinclair))

HRA Name	HRA Area (acres)	Existing Land Coverage (acres)	Estimated Land Coverage Transfer Amount (acres / % change)
Agate Bay NV	904	see below	0.1/0.006
Agate Bay CA	13,507	903.0*	5.2/0.006
Cave Rock	15,108	446.6	0.0/0.0
Emerald Bay	39,362	447.3	0.2/0.0004
Incline	14,279	1,101.6	5.9/0.005
Marlette	13,646	163.4	0.0/0.0
McKinney Bay	15,049	414.6	2.5/0.006
South Stateline NV	7,143	see below	0.3/0.005
South Stateline CA	4,058	1,258.4*	6.4/0.005
Tahoe City	19,954	866.2	2.2/0.002
Upper Truckee	65,449	2,334.8	23.6/0.01
Total	208,459	7,935.8	46.4

Source: Attachment A – Existing Coverage Data Summary (TRPA 2012) and HBA 2015

Note: * Acreage estimates are not broken out by state. Total provided for CA portion of the HRA is the total for the entire HRA.

Table 2. Estimated Possible Land Coverage Transfers for Vacant Parcels by HRA (Revised land capability GIS data based on the 2007 NRCS Soil Survey Data)

HRA Name	HRA Area (acres)	Existing Land Coverage (acres)	Estimated Land Coverage Transfer Amount (acres / % change)
Agate Bay NV	904	see below	0.1/0.005
Agate Bay CA	13,507	903.0*	4.8/0.005
Cave Rock	15,108	446.6	0.0/0.0
Emerald Bay	39,362	447.3	0.7/0.002
Incline	14,279	1,101.6	3.8/0.003
Marlette	13,646	163.4	0.0/0.0
McKinney Bay	15,049	414.6	1.3/0.003
South Stateline NV	7,143	see below	0.1/0.004
South Stateline CA	4,058	1,258.4*	5.2/0.004
Tahoe City	19,954	866.2	2.3/0.003
Upper Truckee	65,449	2,334.8	24.7/0.01
Total	208,459	7,935.8	43.0

Source: Attachment A – Existing Coverage Data Summary (TRPA 2012) and HBA 2015

Note: * Acreage estimates are not broken out by state. Total provided for CA portion of the HRA is the total for the entire HRA.

Potential Change in Pollutant Loading

The sections below summarize the methodologies used to estimate changes in pollutant loading from the possible land coverage transfers in each HRA. Results from the analyses are presented after the discussion on analysis methodologies. To simplify the discussion of results, pollutant loads are presented and discussed for fine sediment particles (FSP) in this section, which is the primary pollutant of concern for lake clarity. The results and findings presented for FSP also apply to total phosphorus and total nitrogen. A technical summary of the methodologies and detailed results (including modeling results for total nitrogen and total phosphorous) are provided in Exhibit B.

Receiving Parcel Methodology - The possible land coverage transfer amounts provided in Tables 1 and 2 were used to develop simulations in the Pollutant Load Reduction Model (PLRM) to estimate the change in stormwater pollutant loads for receiving parcels in each HRA. The analysis makes a simplifying and conservative assumption that all transferred land coverage within an HRA would be placed on vacant parcels with BMPs implemented to TRPA standards to detain and infiltrate stormwater runoff. Because BMPs are not 100 percent effective at controlling and infiltrating stormwater runoff, each receiving parcel would create a resultant pollutant load increase.

The estimate of possible load increases for receiving parcels uses the following conservative assumptions:

- Each receiving parcel is vacant and has no existing land coverage in place. Therefore, the analysis assumes there is no existing land coverage on a receiving parcel that would be mitigated with new BMPs from redevelopment. This is a conservative assumption because the application of the proposed Code Section 30.4 amendment for residential redevelopment would provide a small water quality benefit within each HRA. This conclusion was demonstrated in *Master Response #5: Effects of Concentrated Development* as part of the TRPA Regional Plan Update DEIS (TRPA, April 2012). In summary, redevelopment generates a water quality benefit because eligible parcels would be required to implement BMPs to the entire area of the parcel as part of the action for transferring coverage. Because many developed parcels do not meet water quality requirements in the existing condition, the increased amount of BMP implementation would produce a pollutant load reduction while accounting for the transfer coverage.
- All stormwater runoff (exceeding the capacity of BMPs) that flows from the receiving parcels would be directly discharged to Lake Tahoe. In reality, some portion of the receiving parcels would likely be disconnected from Lake Tahoe. In many cases, when a BMP's capacity is exceeded, the stormwater runoff discharged from the parcel would collect and infiltrate in drainage depressions and vacant lands prior to reaching Lake Tahoe.

Sending Parcel Methodology - The locations of sending parcels that would transfer land coverage under the proposed amendments will be driven by private market forces and opportunities. Consequently, there are too many uncertainties and assumptions required to identify and analyze the water quality benefits associated with removal and restoration of coverage for specific sending parcels. To provide a representative but conservative estimate of the water quality benefit from the proposed action, the following approach was used.

1. The urban area within the City of South Lake Tahoe, CA was used as the boundary for the analysis based on the assumption that sensitive lands within the City are among the strongest candidates to be sending parcels. This assumption is supported by the results of the *Coverage Demand Analysis* developed as part of the TRPA Regional Plan Update DEIS (TRPA, April 2012). In addition, materials developed for the Coverage Working Group (http://www.trpa.org/wp-content/uploads/Coverage_WG_Memo_with-Attachments.pdf) document that there are approximately seven times more acres of covered SEZs in California than Nevada, providing greater opportunity for restoration of SEZs in California than in Nevada.
2. Existing impervious area on sensitive lands, as well as the associated urban land use (single family residential, multi-family residential, and commercial), was calculated with a GIS intersection of the 2015 Lake Tahoe TMDL Land Use Layer and the 1974 Bailey-Sinclair Land Capability GIS Data layer.
3. A conceptual PLRM model was developed to estimate the load reduction associated with the removal of one acre of coverage using the generalized results of the GIS analysis, which produced an estimate of 230 lbs/year of fine sediment particles (FSP).
4. In many cases, stormwater runoff discharged from existing land coverage collects and infiltrates in drainage depressions and vacant lands prior to reaching Lake Tahoe. GIS analysis was performed to estimate how much of the total land coverage removed and restored from sending parcels in the City of South Lake Tahoe would likely be in this condition. This assumption was used to modify (lower) the load reduction benefit to 136 lbs/year of FSP per acre of land coverage removed from sensitive lands.
5. The total acreage of possible land coverage transfers presented in Tables 1 and 2 was used to estimate the water quality benefit from coverage removal from sending parcels. The Upper Truckee and South Stateline HRAs cover roughly the same amount of area within the City. The analysis assumes that half the sending parcels would be located in the Upper Truckee HRA and the other half would be located in the South Stateline CA HRA. The total acreage of land coverage estimated to be removed from sensitive lands in the Upper Truckee and South Stateline CA HRAs was multiplied by the value of 136 lb/year of FSP (per acre of coverage removed) to estimate the load reduction benefit.

Results and Discussion - The results of the PLRM analysis using the methodologies and assumptions described above are presented in Tables 3 and 4. Table 3 presents results using the 1974 Bailey-Sinclair Land Capability GIS Data layer. Table 4 presents results

using the NRCS 2007 Soil Survey land capability GIS layer. The results are summarized for each HRA as follows: 1) FSP load increases for receiving parcels; 2) FSP load reductions for sending parcels; and 3) net change in FSP loading.

The total change in FSP pollutant loading when summed for all HRAs is estimated to provide an overall load reduction. This benefit results because all receiving parcels would be required to implement and maintain BMPs for the transferred land coverage and all sending parcels would be required to permanently remove existing land coverage and implement BMPs to restore soil function. It is also assumed that a high proportion of the sending parcels do not currently have BMPs in place for existing land coverage that will be removed and restored. The average levels of BMP implementation by land use input into the model are: 18% BMP implementation for Single Family Residential (SFR); 6% BMP implementation for Multi Family Residential (MFR); and 11% BMP implementation for Commercial Institutional Communications Utilities (CICU).

As shown in Tables 3 and 4, a minor load increase is predicted in the following HRAs: Agate Bay, Emerald Bay, Incline, McKinney Bay, and Tahoe City. These load increases are considered less than significant, including for nearshore conditions, for the following reasons:

- The amendment would result in a net pollutant load reduction for the Lake Tahoe watershed when evaluated against the established Lake Tahoe TMDL pollutant load reduction standards/targets, which represent the best available science. Because the transferred land coverage would be widely distributed throughout the Lake Tahoe Watershed as well as the individual HRAs, the Lake Tahoe TMDL standards/targets are the most appropriate and best available science for evaluating potential effects from possible HRA land coverage transfers under the proposed Code Section 30.4 amendment. Furthermore, the existing science and available data for the Lake Tahoe nearshore does not provide a scientifically defensible linkage between the location of existing coverage and observed nearshore conditions (Robert Larsen, Lahontan RWQCB, personal communication, 03Nov2015). Therefore, an evaluation of potential effects on nearshore conditions for individual HRAs would be a speculative analysis.
- The predicted load increases in isolated HRAs would not contribute to non-attainment of TRPA lake-wide water quality standards/thresholds (Resolution 82-11 indicators).
- The load estimate methods and assumptions are highly conservative and represent worst-case scenarios for changes in pollutant loading. For example, the Upper Truckee HRA would likely contain very few parcels that receive transferred land coverage, which is supported by the results of the *Coverage Demand Analysis (Attachment F)* developed as part of the *TRPA Regional Plan Update DEIS (TRPA, April 2012)*. However, the pollutant loading analysis assumes that all vacant parcels with the potential to receive transferred coverage in the Upper Truckee HRA implement the Code amendment to the maximum extent possible.
- The technical approach made a simplifying assumption that all sending parcels would be located in the Upper Truckee and South Stateline CA HRAs. It is possible that some sending parcels may be located in other HRAs, such as the

California side of the Agate Bay HRA. If sending parcels are located in other HRAs, the pollutant load estimates predicted for those HRAs would decrease.

Table 3. PLRM Modeling Results for Land Coverage Transfers – HRA Watershed Totals (Bailey-Sinclair Land Capability GIS Data)

HRA Name	Change in Fine Sediment Particle (FSP) Loading (lb/yr)		
	Receiving Parcels	Sending Parcels	Net Difference
Agate Bay	354	0	354
Cave Rock	0	0	0
Emerald Bay	4	0	4
Incline	98	0	98
Marlette	0	0	0
McKinney Bay	73	0	73
South Stateline	186	-3,155	-2,969
Tahoe City	178	0	178
Upper Truckee	1,691	-3,155	-1,464
Total	2,584	-6,310	-3,726

Source: NHC, 2015

Table Notes:

- Positive values are load increases and negative values are load reductions.
- Over half of the total load increase predicted for receiving parcels is attributed to potential land coverage transfers to the Upper Truckee HRA. However, it is unlikely that the proposed Code Section 30.4 amendment would be used to transfer land coverage to the Upper Truckee HRA because the cost to acquire and restore land coverage on sensitive lands is substantially greater than the cost to purchase available land coverage from the land bank, or purchase potential land coverage from private sellers. As such, actual load increases attributed to land coverage transfers into the Upper Truckee HRA from proposed Code Section 30.4 amendment would likely be closer to 0.

Table 4. PLRM Modeling Results for Land Coverage Transfers – HRA Watershed Totals (Revised land capability GIS data based on 2007 NRCS Soil Survey Data)

HRA Name	Change in Fine Sediment Particle (FSP) Loading (lb/yr)		
	Receiving Parcels	Sending Parcels	Net Difference
Agate Bay	378	0	378
Cave Rock	0	0	0
Emerald Bay	11	0	11
Incline	86	0	86
Marlette	0	0	0
McKinney Bay	40	0	40
South Stateline	152	-2,924	-2,772
Tahoe City	287	0	287
Upper Truckee	2,155	-2,924	-769
Total	3,109	-5,848	-2,739

Source: NHC, 2015

Table Notes:

- See notes provided above for Table 3.

The following analysis provides additional observations and interpretations of the PLRM results presented in Tables 3 and 4.

- The majority of the possible load increase associated with vacant receiving parcels is shown in the Upper Truckee HRA. As mentioned previously, there is a low likelihood that the proposed Code amendment would facilitate land coverage transfers to the Upper Truckee HRA because other land coverage sources are available and at lower cost relative to acquisition and restoration of land coverage on sensitive lands.
- The analysis uses a simplifying assumption that all sending parcels will be from the Upper Truckee HRA and South Stateline HRA, as these two HRAs are the strongest candidates to transfer out large amounts of coverage in sensitive lands. The individual results by HRA should be interpreted on a relative basis, recognizing the challenges associated with predicting actual locations for sending parcels among HRAs. The following summarizes the likely water quality outcomes from the proposed Code amendment:
 - Pollutant load reductions in the South Stateline and Upper Truckee HRAs.
 - Pollutant load increases in the following HRAs: Agate Bay, Emerald Bay, Incline, McKinney Bay, and Tahoe City.
 - A net pollutant load reduction for the Lake Tahoe Watershed.

Estimated Demand for Land Coverage Transfers Across HRA Boundaries Based on Land Bank Coverage Availability and Cost

Tables 1 and 2 document the possible amount of land coverage that could be transferred onto vacant receiving parcels in each HRA under the proposed Code amendment. Since the proposed amendment requires the retirement of existing soft/hard land coverage from sensitive lands for transfer across an HRA boundary, it is likely that this provision would be used only when other less expensive sources (e.g., land banks or private parties) of land coverage are unavailable.

According to discussions with NDSL representatives, the Nevada Land Bank tends to charge less per square foot for potential land coverage than existing (banked) land coverage. However, NDSL reports that many land coverage transactions are not driven by price, they are driven by land coverage availability and the project need. Because private parties may establish their own sales price, it is not always useful to merely focus on a land bank's price for land coverage as the sole determining factor of whether there will be an increase in transfers across HRAs. A review of estimated land bank prices for land coverage shows greater cost for sensitive land coverage compared to high capability land coverage, and an even greater cost for banked land coverage on sensitive lands. Tables 5 and 6 document land bank land coverage availability as of 2014 and an estimate price range for NDSL land coverage sales based on their transactions with land coverage purchasers.

Several of the Nevada HRAs have little demand for land coverage transfers, specifically the Cave Rock and Marlette HRAs. Neither of these HRAs contain vacant parcels that meet the criteria for land coverage transfers under the proposed Code amendment. The smallest and most challenging Nevada HRA is Agate Bay. Given the criteria related to the receiving sites under the proposed Code amendment, it is unlikely that any transfers from other HRAs could occur here, simply based on the topography and land capability ratings associated with parcels in the Nevada portion of Agate Bay. Incline has a substantial supply of land coverage available from the land bank and Incline Village General Improvement District (IVGID), reducing the need for transfers from other HRAs. The Nevada portion of the South Stateline HRA may see an increase in land coverage transfers under the new provisions for transfers between HRA boundaries because of a limited supply of land coverage available from the land bank.

Table 5. Inventory of Banked Land Coverage - Nevada Division of State Lands

Land Coverage Type	HRA, Land Capability Class (if provided)	Amount of Banked Coverage (sq. ft.)	Amount of Banked Coverage (sq. ft.)	Price Range
The Nevada Land Bank (NDSL)			IVGID Inventory (NDSL)	
Potential Coverage	Incline, 1a	42,633	5,136	\$30-40
	Incline, 1b	10,000		\$30-40
	Incline, 4	7,026	13,961*	\$20-27
	Incline, 6	13,257		\$20-27
Soft Coverage	Incline, 1b	17,860		\$30-40
	Incline, 6	6,000		\$20-27
	South Stateline, 4	5,959		\$15-25.50
	South Stateline, 1a	6,800		
	Cave Rock, 1a	12,989		\$35-50
Hard Coverage	South Stateline, 1b	311		\$15-25.50
	Agate Bay, 1a	108 (600 reserved)		\$22-32
SEZ Restoration Credit	South Stateline	3,063		\$15-25.50

Source: NDSL 2014

Tables Notes:

* Value listed for class 4 is for classes 4 and 6 combined.

Based on a sample of land coverage transactions that occurred between 2006 and 2010 and within the South Stateline CA and Upper Truckee HRAs (performed by CTC), the average cost for low capability land coverage (approximately \$32/sf) in California is substantially greater than the cost for high capability land coverage (approximately \$6/sf). Table 6 demonstrates a substantial amount of banked land coverage in each of the California HRAs, with the exception of Emerald Bay. As such, it is anticipated that land coverage needed for transfers in those HRAs would be purchased from the land bank or from private sellers at prices similar to those offered by the land bank. At present, the cost to acquire and restore land coverage on sensitive lands would be more expensive than banked land coverage available within the majority of California HRAs. Within the Emerald Bay HRA, it is more likely that land coverage transfers may need coverage from private sellers or from transfers across HRA boundaries. However, the demand is low given the small amount of possible land coverage transfers derived in the analysis focusing on vacant parcels (see Tables 1 and 2). Consequently, while land coverage transfers may increase in the Emerald Bay HRA, the increase would likely be very small given the criteria required for selection of receiving parcels in the proposed Code amendment.

Table 6. Inventory of Banked Land Coverage – California Tahoe Conservancy

Land Coverage Type	HRA	Amount of Banked Coverage (sq. ft.)
Potential Coverage	South Stateline	697,106
	Upper Truckee	1,401,648
	Emerald Bay	1,200
	McKinney Bay	35,255
	Tahoe City	610,651
	Agate Bay	555,632
Soft Coverage	Upper Truckee	46,033
	Agate Bay	4,387

Source: CTC 2014

Land Coverage/Water Quality Impacts

HRA Transfer Amendment

The proposed Regional Plan and Code coverage transfer amendments would remove restrictions on the transfer of land coverage across HRA boundaries. Under the existing Code, land coverage transfers are limited to those that can be sourced from within the same HRA as the receiving site. Potential impacts from policy changes related to land coverage transfers were analyzed on a basin wide basis in Appendix H of the TRPA Regional Plan Update DEIS (TRPA, April 2012). Table 17 of DEIS Appendix H (page H-13) indicates a high likelihood for three HRAs (Marlette, Cave Rock and Agate Bay, NV) to be receiving areas under the Proposed Code Section 30.4 amendment. The GIS calculations documented in Tables 1 and 2 of this IEC demonstrate a low likelihood that these HRAs would be receiving sites for land coverage transfers based on a lack of vacant parcels that meet the criteria for transfer (e.g., high capability lands within TRPA Regional Land Uses and 300 feet from highwater mark of Lake Tahoe).

Those HRAs where land coverage would be transferred from outside sources may see an increase in pollutant loads as documented in Tables 3 and 4. The increases are calculated using the maximum land coverage transfers allowed by the Code Section 30.4 amendment and a worst case assumption for the load estimate. Even under the worst case assumptions, each of the projected load increases is a minor increase (e.g., equal to or less than 0.12 percent) when compared to the baseline loads attributed to the respective jurisdictions where the HRAs are located and would be offset by load reductions that would be realized at sending sites. The pollutant load increases and reductions each ultimately affect the Lake Tahoe watershed, so a reduction in one location would offset an increase in another as documented in Tables 3 and 4. TRPA water quality threshold standards consider total annual loads for the entirety of Lake Tahoe and are not broken out by HRA. As such, the impact of land coverage transfers across HRA boundaries and its associated water quality effects is considered to be less than significant. In fact, the reduction in pollutant loads calculated using the TMDL PLRM modeling tools show a net environmental benefit associated with the proposed Code Section 30.4 amendment.

Code Section 30.6 ECM Program Amendment and MOU Modifications

The proposed Code Section 30.6 amendment (modifications to subsection 30.6.1.C.2) would revise the method used for calculating the Mitigation Fee Land Coverage Cost Factor. The new method would use an Annual Percentage Growth Rate (APGR) calculation based on the best available residential sales information for the Tahoe Region and would be updated annually and calculated regularly, at least every 4 years. Under the existing Code, the Mitigation Fee Land Coverage Cost Factor is based on a certified real estate appraiser's estimate, but the cost factor has not been updated since 2007 due to the high cost and lack of resources available for an annual appraisal of coverage costs in each HRA and implementation difficulties. TRPA requested a peer review of the proposed APGR method from the University of Nevada, Reno Center for Regional Studies. A copy of the peer review letter is provided in Attachment E of the TRPA Staff Summary and indicates support for the proposed change. A key Working Group goal of the change is to ensure that the collected fees reflect the state land bank's cost to acquire and restore land coverage under the ECM program. The proposed Code and MOU amendments target sensitive lands restoration and primary Soil Conservation and Water Quality threshold gains and improve the effectiveness of the Excess Coverage Mitigation Program.

5. TRPA INITIAL ENVIRONMENTAL CHECKLIST

The following analysis documents the issue areas where no environmental impacts are expected, and issue areas where impacts are considered less than significant based upon the requirement to implement existing regulations or mitigation programs.

	Yes	No	No, with Mitigation	Data Insufficient	Comments
1. Land					
Will the proposal result in:					
a. Compaction or covering of the soil beyond the limits allowed in the land capability or Individual Parcel Evaluation System (IPES)?		X			The proposed Code Section 30.4 amendment would expand the number of sending parcels (sources) that may be used for land coverage transfers, permitting parcels located outside of the receiving parcels HRA. However, the amendment would not increase land coverage limits currently defined by existing land capability or IPES rules.
b. A change in the topography or ground surface relief features of site inconsistent with the natural surrounding conditions?		X			
c. Unstable soil conditions during or after completion of the proposal?		X			
d. Changes in the undisturbed soil or native geologic substructures or grading in excess of 5 feet deep?		X			
e. The continuation of or increase in wind or water erosion of soils, either on or off the site?		X			
f. Changes in deposition or erosion of beach sand, or changes in siltation, deposition or erosion, including natural littoral processes, which may modify the channel of a river or stream or the bed of a lake?		X			
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, backshore erosion, avalanches, mud slides, ground failure, or similar hazards?		X			
2. Air Quality					
Will the proposal result in:					
a. Substantial air pollutant emissions?		X			
b. Deterioration of ambient (existing) air quality?		X			
c. The creation of objectionable odors?		X			
d. Alteration of air movement, moisture or temperature, or any change in climate, either locally or		X			

	Yes	No	No, with Mitigation	Data Insufficient	Comments
regionally?					
e. Increased use of diesel fuel?		X			
3. Water Quality					
Will the proposal result in:					
a. Changes in currents, or the course or direction of water movements?		X			
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20 yr. 1 hr. storm runoff (approximately 1 inch per hour) cannot be contained on the site?		X			The proposed Code Section 30.4 amendment would allow land coverage to be transferred from one HRA to another, potentially changing absorption rates and drainage patterns should one HRA become a high receiving area. However, analysis included in Section 4 of this IEC documents the unlikelihood that any HRA will see a substantial increase in transfers from outside HRAs. Predicted load increases that may occur from land coverage transfers across HRA boundaries would be small compared to existing jurisdictional baselines and load reductions required under the Lake Tahoe TMDL. As is documented in Tables 3 and 4, load reductions from required land coverage restoration at sending sites would more than offset load increases at receiving sites and would further achievement of soil and water quality thresholds.
c. Alterations to the course or flow of 100-year flood waters?		X			
d. Change in the amount of surface water in any water body?		X			
e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?		X			
f. Alteration of the direction or rate of flow of groundwater?		X			
g. Change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?		X			
h. Substantial reduction in the amount of water otherwise available for public water supplies?		X			
i. Exposure of people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence or seiches?		X			
j. The potential discharge of contaminants to the groundwater or any alteration of groundwater quality?		X			
k. Is the project located within 600 feet of a drinking water source?		X			
4. Vegetation					
Will the proposal result in:					

	Yes	No	No, with Mitigation	Data Insufficient	Comments
a. Removal of native vegetation in excess of the area utilized for the actual development permitted by the land capability/IPES system?		X			
b. Removal of riparian vegetation or other vegetation associated with critical wildlife habitat, either through direct removal or indirect lowering of the groundwater table?		X			
c. Introduction of new vegetation that will require excessive fertilizer or water, or will provide a barrier to the normal replenishment of existing species?		X			
d. Change in the diversity or distribution of species, or number of any species of plants(including trees, shrubs, grass, crops, microflora and aquatic plants)?		X			
e. Reduction of the numbers of any unique, rare or endangered species of plants?		X			
f. Removal of streambank and/or backshore vegetation, including woody vegetation such as willows?		X			
g. Removal of any native live, dead or dying trees 30 inches or greater in diameter at breast height (dbh) within TRPA's Conservation or Recreation land use classifications?		X			
h. A change in the natural functioning of an old growth ecosystem?		X			

5. Wildlife

Will the proposal result in:

a. Change in the diversity or distribution of species, or numbers of any species of animals(birds, land animals including reptiles, fish and shellfish, benthic organisms, insects, mammals, amphibians or microfauna)?		X			
b. Reduction of the number of any unique, rare or endangered species of animals?		X			
c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?		X			
d. Deterioration of existing fish or wildlife habitat quantity or quality?		X			

6. Noise

Will the proposal result in:

a. Increases in existing Community Noise Equivalency Levels (CNEL) beyond those permitted in the applicable Plan Area Statement, Community Plan or Master Plan?		X			
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	Yes	No	No, with Mitigation	Data Insufficient	Comments
b. Exposure of people to severe noise levels?		X			
c. Single event noise levels greater than those set forth in the TRPA Noise Environmental Threshold?		X			
d. The placement of residential or tourist accommodation uses in areas where the existing CNEL exceeds 60 dBA or is otherwise incompatible?		X			
e. The placement of uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses?		X			
f. Exposure of existing structures to levels of ground vibration that could result in structural damage?		X			
7. Light and Glare					
Will the proposal:					
a. Include new or modified sources of exterior lighting?		X			
b. Create new illumination which is more substantial than other lighting, if any, within the surrounding area?		X			
c. Cause light from exterior sources to be cast off -site or onto public lands?		X			
d. Create new sources of glare through the siting of the improvements or through the use of reflective materials?		X			
8. Land Use					
Will the proposal:					
a. Include uses which are not listed as permissible uses in the applicable Plan Area Statement, adopted Community Plan, Area Plan or Master Plan?		X			
b. Expand or intensify an existing non-conforming use?		X			
9. Natural Resources					
Will the proposal result in:					
a. A substantial increase in the rate of use of any natural resources?		X			
b. Substantial depletion of any non-renewable natural resource?		X			
10. Risk of Upset					
Will the proposal:					
a. Involve a risk of an explosion or the release of hazardous substances including, but not limited to, oil, pesticides, chemicals, or radiation in the event of an accident or upset conditions?		X			
b. Involve possible interference with an emergency evacuation plan?		X			

	Yes	No	No, with Mitigation	Data Insufficient	Comments
11. Population					
Will the proposal:					
a. Alter the location, distribution, density, or growth rate of the human population planned for the Region?		X			
b. Include or result in the temporary or permanent displacement of residents?		X			
12. Housing					
Will the proposal:					
a. Affect existing housing, or create a demand for additional housing? To determine if the proposal will affect existing housing or create a demand for additional housing, please answer the following questions:					
(1) Will the proposal decrease the amount of housing in the Tahoe Region?		X			
(2) Will the proposal decrease the amount of housing in the Tahoe Region historically or currently being rented at rates affordable by lower and very-low-income households?		X			
b. Will the proposal result in the loss of housing for lower-income and very-low-income households?		X			
13. Transportation/Circulation					
Will the proposal result in:					
a. Generation of 100 or more new daily vehicle trip ends (DVTE)?		X			
b. Changes to existing parking facilities, or demand for new parking?		X			
c. Substantial impact upon existing transportation systems, including highway, transit, bicycle or pedestrian facilities?		X			
d. Alterations to present patterns of circulation or movement of people and/or goods?		X			
e. Alterations to waterborne, rail or air traffic?		X			
f. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?		X			
14. Public Services					
Will the proposal have an unplanned effect upon, or result in a need for new or altered governmental services in any of the following areas?					
a. Fire protection?		X			
b. Police protection?		X			
c. Schools?		X			
d. Parks or other recreational facilities?		X			
e. Maintenance of public facilities, including roads?		X			
f. Other governmental services?		X			

	Yes	No	No, with Mitigation	Data Insufficient	Comments
15. Energy					
Will the proposal result in:					
a. Use of substantial amounts of fuel or energy?		X			
b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?		X			
16. Utilities					
Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to the following utilities:					
a. Power or natural gas?		X			
b. Communication systems?		X			
c. Utilize additional water which amount will exceed the maximum permitted capacity of the service provider?		X			
d. Utilize additional sewage treatment capacity which amount will exceed the maximum permitted capacity of the sewage treatment provider?		X			
e. Storm water drainage?		X			
f. Solid waste and disposal?		X			
17. Human Health					
Will the proposal result in:					
a. Creation of any health hazard or potential health hazard (excluding mental health)?		X			
b. Exposure of people to potential health hazards?		X			
18. Scenic Resources/Community Design					
Will the proposal:					
a. Be visible from any state or federal highway, Pioneer Trail or from Lake Tahoe?		X			
b. Be visible from any public recreation area or TRPA designated bicycle trail?		X			
c. Block or modify an existing view of Lake Tahoe or other scenic vista seen from a public road or other public area?		X			
d. Be inconsistent with the height and design standards required by the applicable ordinance or Community Plan?		X			
e. Be inconsistent with the TRPA Scenic Quality Improvement Program (SQIP) or Design Review Guidelines?		X			
19. Recreation					
Does the proposal:					
a. Create additional demand for recreation facilities?		X			
b. Create additional recreation capacity?		X			
c. Have the potential to create		X			

	Yes	No	No, with Mitigation	Data Insufficient	Comments
conflicts between recreation uses, either existing or proposed?					
d. Result in a decrease or loss of public access to any lake, waterway, or public lands?		X			
20. Archaeological/Historical					
a. Will the proposal result in an alteration of or adverse physical or aesthetic effect to a significant archaeological or historical site, structure, object or building?		X			
b. Is the proposed project located on a property with any known cultural, historical, and/or archaeological resources, including resources on TRPA or other regulatory official maps or records?		X			
c. Is the property associated with any historically significant events and/or sites or persons?		X			
d. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?		X			
e. Will the proposal restrict historic or pre-historic religious or sacred uses within the potential impact area?		X			
21. Findings of Significance.					
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California or Nevada history or prehistory?		X			The Proposed Action would benefit Lake Tahoe Basin Watershed water quality by reducing overall fine sediment pollutant loads. Load reductions and the resultant water quality improvements would benefit fish and wildlife habitat.
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.)		X			The Proposed Action would provide a Code mechanism to achieve fine sediment load reductions associated with land coverage transfers across HRA boundaries and greater acquisition and restoration of sensitive lands under the ECM Program. The implementation of the proposed Code amendments would further the attainment of Soil and Water Quality Thresholds over the long term from required restoration and retirement of land coverage on sensitive parcels within the Lake Tahoe Region.
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate		X			The Proposed Action would permit the transfer of land coverage from one HRA to another. On an individual project basis, the beneficial impacts of transferring sensitive land coverage

	Yes	No	No, with Mitigation	Data Insufficient	Comments
resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environmental is significant?)					that is restored and retired to a high capability site in another HRA may be difficult to measure. However, as documented in Tables 3 and 4 and the supporting analysis, the restoration of land coverage on sensitive parcels required for the transfer to high capability parcels in other HRAs will result in an overall reduction in fine sediment (and total nitrogen and phosphorous) as measured for the cumulative long term condition. The result is a net environmental benefit for soils and water quality threshold attainment.
d. Does the project have environmental impacts which will cause substantial adverse effects on human beings, either directly or indirectly?		X			

6. AGENCIES AND PERSONS CONSULTED

The following agency staff and stakeholders participated as members of the Coverage Working Group.

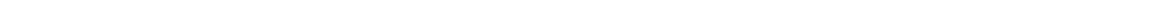
- Kevin Prior, California Tahoe Conservancy
- Dan Siegel, California Office of the Attorney General
- Charles Donohue, NV Division of State Lands
- Elyse Randles, NV Division of State Lands
- Steve Buelna, Placer County
- Eva Krause, Washoe County
- Lewis Feldman, Feldman McLaughlin Thiel LLP
- Kara Thiel, Feldman McLaughlin Thiel LLP
- Shannon Eckmeyer, League to Save Lake Tahoe
- Eoin Doherty, Environmental Incentives

The following agency staff and stakeholders participated in working group meetings and commented on the proposed action and the potential environmental impacts of the proposed Regional Plan amendments.

- Joanne Marchetta, TRPA
- John Marshall, TRPA
- John Hester, TRPA
- Adam Lewandowski, TRPA
- Brandy McMahan, TRPA
- Jennifer Cannon, TRPA
- Shay Navarro, TRPA
- Paul Nielsen, TRPA
- Lucia Maloney, TRPA
- Kim Hern, TRPA
- Bob Larson
- Jason Kuchnicki
- Clem Shute
- Steve Teshara
- Laurel Ames
- Jennifer Quashnick
- Anne Nichols
- Bob Twiss
- Jack Landy

Exhibit A

Method for Calculating Area of Possible Land Coverage Transfers



COVERAGE TRANSFERS ACROSS HRA BOUNDARIES **CODE AMENDMENTS MODELING METHOD**

The purpose of this analysis is to identify potential changes to land coverage (Soil Conservation) and model possible impacts to water quality from the proposed amendments and provide an estimate of the possible land coverage transfers that could be received in comparison to the environmental benefits anticipated with the sending site restoration that would be needed for these transfers. Overall, the goal is to better comprehend the probable implications of the proposed code amendments. The proposed changes to coverage transfer provisions could promote increased coverage transfers, especially transfers from SEZs and other sensitive lands, and transfers into non-sensitive lands. This could result in decreased development in sensitive lands.

Proposed Recommendation Application:

Projects transferring coverage across HRA boundaries would still be required to comply with land capability limitations and all other ordinances regulating coverage (see Code Chapter 30). Coverage transfer ratios would be 1:1 when coverage is transferred from sensitive lands pursuant Code Section 30.4.3.A. This means that the transfer of one square foot of land coverage to a receiving parcel shall require the retirement of one square foot of land coverage on the sending parcel. The land coverage transferred from a sending area (including a portion of a parcel or parcels) defined as sensitive lands shall be permanently retired as set forth in Code Section 30.4. With restoration and retirement of the sending sites, this proposal would permit transfer of hard and soft coverage from sensitive lands for use in high capability lands further than 300 feet from the highwater mark of Lake Tahoe, or on the landward side of State Highways in the Tahoe City or Kings Beach Town Centers.

Using GIS Analysis, Identify Potential Receiving Sites:

The purpose of this analysis is to identify potential receiving sites that could use the proposed transferred coverage provisions. As proposed, the receiving sites are required to be classified as non-sensitive or verified as being located within high land capability areas. Transferred coverage is the coverage above the base allowable coverage up to the maximum land coverage (see Code Sections 30.4.1 and 30.4.2). The receiving sites are more likely to be in areas that permit residential, commercial, and tourist land development. This analysis assumes that the receiving parcels would be vacant since they would have a greater demand for off-site coverage transfers. Redevelopment projects could have the option to use existing on-site coverage for a transfer and likely would be seeking a smaller amount of coverage in comparison to a project located on vacant land. Consequently the vacant parcels not containing existing coverage, on high capability lands, in areas eligible for development were assessed for transferred coverage potential. High capability lands were identified based on the original 1974 Bailey GIS data which includes an updated SEZ overlay (Sinclair), as well as a revised land capability GIS data based on the 2007 NRCS Soil Survey data, to provide a range of potential Region-wide land capability estimates that would account for some variation in

land capability that exists on the ground.⁵ Generally Individual Parcel Evaluation System (IPES) information supports the identification of vacant single-family parcels with high capability land. However the available information does not assess non single-family parcels, outline sub-areas within parcels that are high capability, and provide individual parcel level assessments needed to determine the base allowable coverage particularly for parcels greater than 1/3 acre.⁶ Consequently, the above-referenced land capability mapping was determined to be a more reliable, accurate data source for identifying high-capability land areas. Several exemptions and partial exemptions provided in Code Section 30.4.6 related to the American with Disability Compliance, Pervious Decks, Public Trails, and Non-Permanent Structures, for example, are not included in the land coverage calculation.

Receiving Area Analysis Outline:

1. Developable land selection pursuant Land Use and Land Capability: Using GIS, select parcels in Residential, Resort Mixed-Use, and Tourist Regional Land Uses. Remove parcels within the within 300 ft. of the High Water Line, excluding those areas landward of State Highways in Tahoe City and the Kings Beach Town Centers.
2. Non-developed land selection: Select vacant parcels not including substantial soft or hard coverage.
3. High Capability Land Selection: Then identify the parcel areas within high land capability areas (classes 4-7) pursuant Bailey-Sinclair and Land Capability 2007.
4. Determine the acreage of coverage that can be transferred, as follows:
 - A. Outside of Centers in Residential Facilities: The percent base allowable determined by Table 30.4.1 which allows 20% for land capability (lc) 4, 25% in lc 5, 30% in lc 6 and 7 should be calculated and this amount should be subtracted from the maximum allowable determined by Code Table 30.4.2-1 to obtain the amount of potential transferred coverage.
 - B. In Centers: The following needs to be calculated to determine the amount of coverage that can be transferred to high capability parcels located within Centers. The percent base allowable determined by Table 30.4.1 which allows 20% for land capability (lc) 4, 25% in lc 5, 30% in lc 6 and 7 should be calculated and this amount should be subtracted from the max allowable. The percent max allowable is 50% for the areas within 300 ft. of the High Water

⁵ This method is akin to the method used for the 2012 Regional Plan Update Draft Environmental Impact Statement analysis (see 3.7 Geology, Soils, Land Capability, and Coverage).

⁶ To complement the Bailey system, the Individual Parcel Evaluation System (IPES) provides a methodology for the evaluation of vacant single-family residential parcels, assigning each parcel with a numerical score and ranking based on suitability of development according to Code Ch. 53. IPES was created through a consensus process and applies to all new single-family residential development from May 27, 1987, onward. The ability to develop on what would be the equivalent of Land Capability Districts 1-3, or sensitive lands, is based on the determination that the local jurisdiction has met numerous other environmental criteria (e.g., the retirement of a specified percentage of sensitive parcels, installation of water quality improvements) that collectively provide enough environmental improvements to offset any impacts. IPES further differs from the Bailey System in that it examines a host of site-specific soil and parcel development criteria and can result in allowable coverage ranging from 1 to 30 percent. Although, at the individual parcel level, allowable coverage under IPES may differ from the Bailey System, the two systems are intended to be equivalent when considered in the aggregate and therefore to meet coverage threshold standard criteria (this approach is the same as was used for the 2012 Regional Plan Update Draft Environmental Impact Statement analysis).

Line (HWL) of Lake Tahoe, excluding those areas landward of State Highways in Tahoe City and the Kings Beach Town Centers and 70% for the other areas including those areas landward of State Highways in Tahoe City and the Kings Beach Town Centers. See Code Sections 30.4.2.B.1 (Facilities within Centers).

- C. Outside of Centers, not Residential: With the exception of single-family dwellings on vacant lands, all land coverage shall be regulated pursuant to Ch. 30 (reference in Code Section 30.2.1). In other words, maximum coverage allowances will be documented in Ch. 30 and if there is no codified provision in Ch. 30, then the base allowable coverage allowance will be the default allowable area of coverage.
- D. Commercial Facilities in Community Plans: Identify the Community Plan areas applicable to Code Sections 30.4.2.B.2. Maximum coverage is 70% of the project area in lc 4-7 (further than 300 ft. of HWL) and for parcels with legally existing development as of July 1, 1987, the maximum coverage is 50% of the project area in lc 4-7.
- E. Tourist Accommodation Facilities, Multi-Residential Facilities with five or more units, Public Service Facilities, and Recreation Facilities within Community Plans: Identify the Community Plan areas applicable to Code Section 30.4.2.B.3 and then calculate maximum coverage as 50% of the project area in lc 4-7.

Consider the results of the GIS analysis described above along with land and land coverage value information provided in the Coverage Demand Analysis and from land banks to determine the likelihood for coverage transfers to individual HRAs.

- Land Values (2012 RPU EIS): HRAs with higher land values would be more likely to receive coverage from HRAs with lower land values because coverage is a commodity associated with individual parcels of land. It would be more economically feasible to purchase land and transfer its coverage where land values are lower. The values for land value were derived from US Census data and current MLS real estate listings. Land value rankings for each HRA were created by obtaining the average and median values, determining the deviation between the average and median, and then setting an interval around the median equal to that deviation. Anything higher than the established interval was ranked “High,” anything within the interval was ranked “Average,” and anything below the interval was ranked “Low.”
- Existing Market Price of Coverage: The existing market price of land coverage in each HRA is affected by the demand for coverage in the HRA and the supply of coverage in that HRA available for transfer. A high market price for coverage would indicate that the HRA has a high demand for transferred land coverage and/or a limited supply of land coverage available for transfer, which would make that HRA more likely to receive coverage transferred from other HRAs. The existing market price of land coverage was based on data provided by the California Tahoe Conservancy and Nevada Division of State Lands regarding

coverage costs. Market price rankings were created by obtaining the average and median values, determining the deviation between the average and median, and then setting an interval around the median equal to that deviation. Market prices higher than the established interval were ranked “High,” prices within the interval were ranked “Average,” and prices below the interval were ranked “Low.”

- **Inventory:** If the potential land coverage supply is high in the HRA, there will be few if any transfers with the proposed amendments since potential coverage would have lower costs in comparison to the costs associated with removing coverage. A large inventory of land coverage for sale indicates that the supply of coverage available for transfer is greater than the demand for coverage in the HRA, in which case the HRA would likely transfer more coverage to other HRAs than it would receive. Conversely, a low inventory of available land coverage indicates that demand for coverage has kept up with the supply of available coverage and transfers of coverage into that HRA would be more likely. The estimate of land coverage inventory was based on land bank inventories of coverage from 2014. Coverage inventory rankings were created by obtaining the average and median values, determining the deviation between the average and median, and then setting an interval around the median equal to that deviation. HRAs with inventories higher than the established interval were ranked “High,” inventories within the interval were ranked “Average,” and inventories below the interval were ranked “Low.”

Data Source: RPU EIS Coverage Demand Analysis (RPU EIS, Vol. 1 beginning at page H-11). See Attachment F: [http://www.trpa.org/wp-content/uploads/RevAttachments ALL 7-7-14.pdf](http://www.trpa.org/wp-content/uploads/RevAttachments_ALL_7-7-14.pdf)

Exhibit B
Methods and Results for PLRM Simulations

Coverage Transfers across Hydrologically Related Areas

Exhibit B – Analysis of Potential Change in Pollutant Loading

10 September 2015 (revised 23 November 2015)

Prepared by NHC

Scope of Analysis

This document presents the technical methodologies used to estimate changes in pollutant loading from possible HRA land coverage transfers under the proposed Code Section 30.4 amendment, which is described in detail in the Initial Environmental Checklist for the Proposed Action. Detailed results from the analyses are presented after the discussion on analysis methodologies. The scope of the analysis is limited to assessing changes in potential pollutant loads to Lake Tahoe for coverage transfers to eligible vacant receiving parcels.

The scope of the analysis did not estimate potential changes in pollutant loading associated with redevelopment of existing coverage that may be triggered by the proposed Code Section 30.4 amendment. A redevelopment analysis was not conducted because *Master Response #5: Effects of Concentrated Development* within the *TRPA Regional Plan Update DEIS* (TRPA, April 2012) demonstrated that coverage transfers would provide a small water quality benefit when associated with redevelopment. The basis of this conclusion, which can be reviewed in detail in the cited reference, is that parcels with existing coverage would be required to implement BMPs to the entire area of the parcel as part of the action for transferring coverage. Because many developed parcels that would be eligible for coverage transfers do not meet water quality requirements in the existing condition, the net increase in BMP implementation on receiving parcels initiated through coverage transfers will result in an overall pollutant load reduction.

The analysis below is divided into two main components to assess the net change in pollutant loads by HRA for coverage transfers to eligible vacant parcels:

1. Receiving Parcel Analysis: estimates the change in pollutant loading for vacant parcels eligible to receive transferred coverage.
2. Sending Parcel Analysis: estimates the change in pollutant loading for parcels on sensitive lands that remove and restore existing coverage impacts as part of a coverage transfer.

After the presentation of the analyses for receiving and sending parcels, the results are combined by HRA to estimate the net change in pollutant loading.

Receiving Parcel Analysis

The Pollutant Load Reduction Model (PLRM), Version 2.1, was used to estimate the possible change in stormwater pollutant loads for receiving parcels in each HRA. This section presents the model outputs for average annual stormwater runoff (acre-feet/year) and pollutant loading (lb/year) for fine sediment particles (FSP), total phosphorous (TP), and total nitrogen (TN). The methodology described below documents the PLRM input parameters and assumptions.

Methodology to Develop PLRM Inputs

The GIS analysis used to develop the possible coverage transfer amounts presented in the Initial Environmental Checklist, see Tables 1 and 2 in the *Potential Land Coverage Transfer* section, provides the basis for developing PLRM inputs for the simulations. The GIS analysis identified vacant parcels with the potential to receive coverage, as well as the current TRPA land use designation, for each of the nine HRAs. The acreage of possible coverage transfers to vacant receiving parcels were partitioned into two general land use types derived from TRPA designations of land use: residential and commercial. Any parcel not explicitly designated as a residential land use in the TRPA land use classification system was classified as commercial. Tables B1 and B2 present the amounts of possible coverage transfers to vacant parcels for the residential and commercial land use designations for the Bailey-Sinclair and 2007 Soil Survey delineations, respectively.

Table B1. Possible land coverage transfer amounts with general land use designation, based on the Bailey-Sinclair Land Capability GIS Data.

HRA Name	Residential Area (ac)	Commercial Area (ac)
Agate Bay	3.0	2.3
Cave Rock	0.0	0.0
Emerald Bay	0.2	0.0
Incline	4.6	1.3
Marlette	0.0	0.0
McKinney Bay	2.5	0.0
South Stateline	2.6	4.1
Tahoe City	1.2	1.0
Upper Truckee	8.4	15.2
Total	22.5	23.9

Table B2. Possible land coverage transfer amounts with general land use designation, based on the 2007 NRCS Soil Survey Land Capability GIS Data.

HRA Name	Residential Area (ac)	Commercial Area (ac)
Agate Bay	2.3	2.6
Cave Rock	0.0	0.0
Emerald Bay	0.7	0.0
Incline	2.4	1.4
Marlette	0.0	0.0
McKinney Bay	1.3	0.0
South Stateline	1.9	3.4
Tahoe City	0.4	1.9
Upper Truckee	4.0	20.7
Total	13.0	30.0

There are three Lake Tahoe TMDL land uses in the PLRM associated with urban parcel development: single family residential (SFR), multi-family residential (MFR), and commercial (Commercial Institutional Communications Utilities-CICU). However, the TRPA residential land

use designations for vacant parcels are too general to distinguish between the SFR and MFR land use categories. The analysis assumes that the residential coverage transfers would be split evenly between the SFR and MFR land uses. Tables B3 and B4 tabulate the coverage modeled for each PLRM urban land use for the Bailey-Sinclair and 2007 Soil Survey land capability data and methods, respectively. All coverage was modeled in PLRM to drain to BMPs implemented to TRPA standards: detain and infiltrate 1-inch or runoff generated by the impervious area tributary to the BMPs. Pervious areas for each land use were back-calculated from the impervious areas using PLRM defaults of 30% impervious coverage on SFR parcels, 40% impervious coverage on MFR parcels, and 50% impervious coverage on CICU parcels. Defining pervious areas is necessary for the PLRM simulations, but the results of the analysis are not sensitive to this input since all impervious area is routed directly to BMPs.

Table B3. PLRM coverage inputs by land use and HRA for the Bailey-Sinclair land capability data.

HRA Name	SFR (ac)	MFR (ac)	CICU (ac)
Agate Bay	1.5	1.5	2.3
Cave Rock	0.0	0.0	0.0
Emerald Bay	0.1	0.1	0.0
Incline	2.3	2.3	1.3
Marlette	0.0	0.0	0.0
McKinney Bay	1.25	1.25	0.0
South Stateline	1.3	1.3	4.1
Tahoe City	0.6	0.6	1.0
Upper Truckee	4.2	4.2	15.2
Total	11.25	11.25	23.9

Table B4. PLRM coverage inputs by land use and HRA for the 2007 NRCS Soil Survey land capability data.

HRA Name	SFR (ac)	MFR (ac)	CICU (ac)
Agate Bay	1.15	1.15	2.6
Cave Rock	0.0	0.0	0.0
Emerald Bay	0.35	0.35	0.0
Incline	1.2	1.2	1.4
Marlette	0.0	0.0	0.0
McKinney Bay	0.65	0.65	0.0
South Stateline	0.95	0.95	3.4
Tahoe City	0.2	0.2	1.9
Upper Truckee	2.0	2.0	20.7
Total	6.5	6.5	30.0

The 2007 NRCS Soil Survey Land Capability GIS layer, which contains the soil types used in PLRM, was intersected with the Lake Tahoe TMDL Land Use Layer (NHC, 2015) to identify urban areas. By visual estimation, the two prominent soil types were selected from within each

urban area to represent the soil characteristics of the HRA. The fraction of each soil type area was also approximated, with the total area summing to 100%. The soils GIS data classifies each soil type with an ID number, and the corresponding soil description is given in PLRM. Table B5 lists the PLRM inputs for soils and the corresponding percentage of area used in each HRA. Defining soils in PLRM is necessary to estimate infiltration parameters for pervious areas, but the results of the analysis are not sensitive to this input since all impervious area is routed directly to BMPs.

Table B5. Soil types for each HRA.

HRA Name	Soil Type 1 ID	Percent Type 1	Soil Type 2 ID	Percent Type 2
Agate Bay	7161	70	7222	30
Cave Rock	n/a	n/a	n/a	n/a
Emerald Bay	7484	50	7485	50
Incline	7141	70	7142	30
Marlette	n/a	n/a	n/a	n/a
McKinney Bay	7524	60	7173	40
South Stateline	7444	60	7421	40
Tahoe City	7172	50	7182	50
Upper Truckee	7444	70	7431	30

PLRM precipitation inputs for each HRA were determined by intersecting the PLRM meteorological grid layer with the Lake Tahoe TMDL Land Use Layer (NHC, 2015) to identify urban areas. As a conservative assumption, the grid cell within the core of an urban area that generated the maximum average annual precipitation was selected to represent the HRA. This approach is conservative because the higher precipitation values will generate more runoff, which will exceed BMP capacities more often in the long-term continuous PLRM simulation. Table B6 displays the PLRM meteorological grid cells selected by HRA and the corresponding average annual precipitation.

Table B6. PLRM meteorological precipitation cell selected for each HRA.

HRA Name	Meteorological Grid Cell Number	Typical Maximum Precipitation (in)
Agate Bay	445	38
Cave Rock	n/a	n/a
Emerald Bay	304	36
Incline	819	33
Marlette	n/a	n/a
McKinney Bay	147	39
South Stateline	949	34
Tahoe City	125	43
Upper Truckee	672	30

PLRM Projects were constructed for the seven HRAs of interest. Note that the GIS analysis for the Marlette and Cave Rock HRAs did not indicate the potential for coverage transfers to receiving parcels, so these HRAs were not modeled. Each PLRM Project contained two Scenarios—one for the Bailey-Sinclair delineation and one for the 2007 NRCS Soil Survey delineation. Every scenario used a catchment slope of 5%, and 100% of the impervious area was

routed to BMPs. The SFR, MFR, and CICU land uses within each HRA were modeled as individual catchments. This allowed for easier quality assurance of the model inputs, without influencing the final results.

Summary of Results for Receiving Parcels

Tables B7 and B8 provide the estimated change (increase) in stormwater runoff and pollutant loading for each HRA for the Bailey-Sinclair and 2007 NRCS Soil Survey delineations, respectively. The tables list the results by HRA, by summing estimated SFR, MFR, and CICU pollutant loads. The tables also sum the total pollutant loads from all HRAs. Because BMPs are not 100 percent effective at controlling and infiltrating stormwater runoff, the receiving sites would create a resultant pollutant load increase.

The estimate of potential load increases for receiving parcels uses the following conservative (e.g., worst case) assumptions:

- Each receiving parcel is vacant and no existing land coverage on a receiving parcel would be mitigated with new BMPs from site redevelopment.
- All stormwater runoff exceeding the capacity of BMPs on the receiving parcels would be directly discharged to Lake Tahoe. In reality, some portion of the receiving parcels would likely be disconnected from Lake Tahoe. Meaning that in some cases when a BMP's capacity is exceeded, the stormwater runoff discharged from the parcel would collect and infiltrate in drainage depressions and vacant lands prior to reaching Lake Tahoe.

Table B7. Receiving parcels: estimated runoff and pollutant load increases (Bailey-Sinclair).

HRA Name	Volume (ac-ft/yr)	FSP (lb/yr)	TP (lb/yr)	TN (lb/yr)
Agate Bay	1.8	354	2.7	11.3
Cave Rock	0.0	0	0.0	0.0
Emerald Bay	0.0	4	0.1	0.3
Incline	0.8	98	1.1	4.7
Marlette	0.0	0	0.0	0.0
McKinney Bay	1.0	73	1.5	6.7
South Stateline	0.9	186	1.2	4.9
Tahoe City	0.9	178	1.3	5.5
Upper Truckee	7.1	1,691	10.1	42.1
Total	12.5	2,584	18.0	75.5

Table B8: Receiving parcels: estimated runoff and pollutant load increases (2007 Soil Survey).

HRA Name	Volume (ac-ft/yr)	FSP (lb/yr)	TP (lb/yr)	TN (lb/yr)
Agate Bay	1.8	378	2.5	10.5
Cave Rock	0.0	0	0.0	0.0
Emerald Bay	0.2	11	0.2	1.0
Incline	0.6	86	0.7	3.1
Marlette	0.0	0	0.0	0.0
McKinney Bay	0.6	40	0.8	3.7
South Stateline	0.6	152	0.9	3.9
Tahoe City	1.0	287	1.5	6.0
Upper Truckee	7.4	2,155	10.9	44.5
Total:	12.2	3,109	15.0	73.0

Sending Parcel Analysis

The locations of sending parcels that transfer coverage will be driven by private market forces and opportunities. Consequently, it is not possible to identify and analyze the water quality benefits associated with removal and restoration of coverage for specific sending parcels. To provide a representative estimate of the water quality benefit from this action, the approach described below was used.

Methodology to Develop PLRM Inputs

- 1) The urban area within the City of South Lake Tahoe was used as the boundary for the analysis based on the assumption that sensitive lands within the City are among the strongest candidates to be sending parcels. This assumption is supported by the results of the *Coverage Demand Analysis (Attachment F)* developed as part of the *TRPA Regional Plan Update DEIS (TRPA, April 2012)*.
- 2) Existing impervious area on sensitive lands, as well as the associated TMDL urban land use (SFR, MFR, and CICU), was calculated by a GIS intersection of the 2015 Lake Tahoe TMDL Land Use Layer and the 1974 Bailey-Sinclair Land Capability GIS Data. The GIS analysis yielded an average ratio of coverage by urban land use on sensitive lands as: 27% SFR, 14% MFR; and 59% CICU. These ratios were used as PLRM inputs describing the distribution of urban land uses that may potentially be restored.
- 3) A conceptual PLRM model was developed to estimate the load reduction associated with the removal of one acre of coverage. The average level of BMP implementation in the City by urban land use was also input into the conceptual PLRM model, which was calculated from TRPA BMP data. The average levels of BMP implementation by land use input into the model are: 18% BMP implementation for SFR; 6% BMP implementation for MFR; and 11% BMP implementation for CICU. PLRM meteorological grid cell #846 was used in the analysis, which has an average annual precipitation of roughly 21 inches per year. Note that this level of precipitation is lower than the precipitation amounts used for the receiving parcel analysis. This approach was taken to provide a conservative estimate of the benefits of coverage removal from

- sending parcels. The above assumptions yielded the following stormwater runoff and pollutant load reductions from removal of one acre of coverage:
- i) 0.6 acre-feet/year of stormwater runoff
 - ii) 230 lb/year of FSP
 - iii) 1 lb/year of TP
 - iv) 4 lb/year of TN
- 4) In many cases, stormwater runoff discharged from existing land coverage collects and infiltrates in drainage depressions and vacant lands prior to reaching Lake Tahoe. This concept is referred to as a *disconnected* drainage catchment. GIS analysis was performed to estimate how much of the total land coverage removed and restored from sending parcels in the City of South Lake Tahoe would likely be within disconnected drainage catchments. The GIS analysis used the best available catchment connectivity data presented in the City's Lake Tahoe TMDL Baseline Loading Report (NHC, 2011). In the City's report, urban drainage catchments were identified as either draining directly to Lake Tahoe or draining indirectly to Lake Tahoe (disconnected). The GIS analysis estimated that 41% of the City's urban area is within disconnected drainage catchments. Meaning that approximately 41% of the total coverage removed and restored from sending parcels would likely be in drainage areas that are disconnected from Lake Tahoe. This assumption was used to modify (lower) the load reduction benefit of coverage removal from sensitive lands as follows:
- i) The load reduction benefit was reduced by 41% assuming that coverage removal in disconnected drainage catchments would not result in any water quality benefit to Lake Tahoe.
 - (1) This is a conservative assumption as some amount of stormwater runoff from disconnected drainages would reach Lake Tahoe.
 - (2) Note that the scope of this analysis is limited to assessing the benefits of coverage removal as it relates to changes in pollutant loading to Lake Tahoe. Coverage removal/restoration on sensitive lands in disconnected drainages may not achieve notable pollutant load reductions. But this action will contribute to achievement of soil conservation objectives and other environmental gains, which are not quantified by this analysis.
 - ii) The 41% adjustment yielded the following stormwater runoff and pollutant load reductions from removal of one acre of coverage (unit area estimates):
 - (1) 0.4 acre-feet/year of stormwater runoff
 - (2) 136 lb/year of FSP
 - (3) 0.6 lb/year of TP
 - (4) 2.4 lb/year of TN
- 5) The total acreage of potential coverage transfers presented in Tables B1 and B2 were used to estimate the water quality benefit from coverage removal from sending parcels. The following assumptions were applied.
- i) The Upper Truckee and South Stateline CA HRAs cover roughly the same amount of area within the City.
 - ii) The analysis assumes that half the sending parcels would be located in the Upper Truckee HRA and the other half would be located in the South Stateline CA HRA.
 - iii) The total acreage of coverage estimated to be removed from sensitive lands in the Upper Truckee and South Stateline CA HRAs was multiplied by the unit area estimates for coverage removal to estimate the overall load reduction benefit.

Summary of Results for Sending Parcels

Tables B9 and B10 provide the estimated change (decrease) in stormwater runoff and pollutant loading for the Bailey-Sinclair and 2007 NRCS Soil Survey land capability datasets, respectively. The tables list all nine HRAs to be consistent with the presentation of results for receiving parcels, but as explained above the assumptions of the analysis constrained the removal/restoration of coverage to the Upper Truckee and South Stateline CA HRAs. The values shown in Tables B9 and B10 are presented as negative numbers, to denote the estimated reductions in stormwater runoff and pollutant loading.

Table B9. Sending parcels: estimated runoff and pollutant load reductions (Bailey-Sinclair).

HRA Name	Volume (ac-ft/yr)	FSP (lb/yr)	TP (lb/yr)	TN (lb/yr)
Agate Bay	0.0	0	0.0	0.0
Cave Rock	0.0	0	0.0	0.0
Emerald Bay	0.0	0	0.0	0.0
Incline	0.0	0	0.0	0.0
Marlette	0.0	0	0.0	0.0
McKinney Bay	0.0	0	0.0	0.0
South Stateline	-9.3	-3,155	-13.9	-55.7
Tahoe City	0	0	0.0	0.0
Upper Truckee	-9.3	-3,155	-13.9	-55.7
Total	-18.6	-6,310	-27.8	-111.4

Table B10: Sending parcels: estimated runoff and pollutant load reductions (2007 Soil Survey).

HRA Name	Volume (ac-ft/yr)	FSP (lb/yr)	TP (lb/yr)	TN (lb/yr)
Agate Bay	0.0	0	0.0	0.0
Cave Rock	0.0	0	0.0	0.0
Emerald Bay	0.0	0	0.0	0.0
Incline	0.0	0	0.0	0.0
Marlette	0.0	0	0.0	0.0
McKinney Bay	0.0	0	0.0	0.0
South Stateline	-8.6	-2,924	-12.9	-51.6
Tahoe City	0	0	0.0	0.0
Upper Truckee	-8.6	-2,924	-12.9	-51.6
Total:	-17.2	-5,848	-25.8	-103.2

Summary of Results and Discussion

The results of the PLRM analysis comparing changes in pollutant loading for receiving parcels and sending parcels for each HRA are summed in the following tables as: 1) load increases for receiving parcels; 2) load reductions for sending parcels; and 3) net change in loading. Positive values are load increases and negative values are load reductions. The summary results are only presented for the Bailey-Sinclair delineation because the 2007 NRCS Soil Survey delineation provides very similar results and therefore very similar findings. Table B11 presents the change in stormwater runoff by HRA. Table B12 presents the change in FSP loading by HRA. Table B13 presents the change in TP loading by HRA. Table B14 presents the change in TN loading by HRA.

Table B11: Stormwater runoff modeling results for coverage transfers (Bailey Sinclair Data)

HRA Name	Change in Stormwater Runoff (ac-ft/yr)		
	Receiving Parcels	Sending Parcels	Net Difference
Agate Bay	1.8	0.0	1.8
Cave Rock	0.0	0.0	0.0
Emerald Bay	0.0	0.0	0.0
Incline	0.8	0.0	0.8
Marlette	0.0	0.0	0.0
McKinney Bay	1.0	0.0	1.0
South Stateline	0.9	-9.3	-8.4
Tahoe City	0.9	0.0	0.9
Upper Truckee	7.1	-9.3	-2.2
Total	12.5	-18.6	-6.1

Table B12: FSP modeling results for coverage transfers (Bailey Sinclair Data)

HRA Name	Change in Fine Sediment Particle (FSP) Loading (lb/yr)		
	Receiving Parcels	Sending Parcels	Net Difference
Agate Bay	354	0	351
Cave Rock	0	0	0
Emerald Bay	4	0	4
Incline	98	0	102
Marlette	0	0	0
McKinney Bay	73	0	64
South Stateline	186	-3,155	-2,967
Tahoe City	178	0	178
Upper Truckee	1,691	-3,155	-1,464
Total	2,584	-6,310	-3,732

Table B13: TP modeling results for coverage transfers (Bailey Sinclair Data)

HRA Name	Change in Total Phosphorus (TP) Loading (lb/yr)		
	Receiving Parcels	Sending Parcels	Net Difference
Agate Bay	2.7	0.0	2.7
Cave Rock	0.0	0.0	0.0
Emerald Bay	0.1	0.0	0.1
Incline	1.1	0.0	1.1
Marlette	0.0	0.0	0.0
McKinney Bay	1.5	0.0	1.5
South Stateline	1.2	-13.9	-12.7
Tahoe City	1.3	0.0	1.3
Upper Truckee	10.1	-13.9	-3.8
Total	18.0	-27.8	-9.8

Table B14: TN modeling results for coverage transfers (Bailey Sinclair Data)

HRA Name	Change in Total Nitrogen (TN) Loading (lb/yr)		
	Receiving Parcels	Sending Parcels	Net Difference
Agate Bay	11.3	0.0	11.3
Cave Rock	0.0	0.0	0.0
Emerald Bay	0.3	0.0	0.3
Incline	4.7	0.0	4.7
Marlette	0.0	0.0	0.0
McKinney Bay	6.7	0.0	6.7
South Stateline	4.9	-55.7	-50.8
Tahoe City	5.5	0.0	5.5
Upper Truckee	42.1	-55.7	-13.6
Total	75.5	-111.4	-35.9

The total change in stormwater runoff and pollutant loading when summed for all HRAs is estimated to provide an overall reduction. This benefit results because all receiving parcels would be required to implement and maintain BMPs for the transferred land coverage and all sending parcels would be required to permanently remove existing land coverage and restore soil function. It is also assumed that a high proportion of the sending parcels do not currently have BMPs in place for existing land coverage that will be removed and restored.

A minor load increase is predicted in the following HRAs: Agate Bay, Emerald Bay, Incline, McKinney Bay, and Tahoe City. These load increases in individual HRAs are considered less than significant, including for nearshore conditions, for the following reasons:

- The amendment would result in a net pollutant load reduction for the Lake Tahoe watershed when evaluated against the established Lake Tahoe TMDL pollutant load reduction standards/targets, which represent the best available science. Because the

transferred land coverage would be widely distributed throughout the Lake Tahoe Watershed as well as the individual HRAs, the Lake Tahoe TMDL standards/targets are the most appropriate and best available science for evaluating potential effects from possible HRA land coverage transfers under the proposed Code Section 30.4 amendment. Furthermore, the existing science and available data for the Lake Tahoe nearshore does not provide a scientifically defensible linkage between the location of existing coverage and observed nearshore conditions (Robert Larsen, Lahontan RWQCB, personal communication, 03Nov2015). Therefore, an evaluation of potential effects on nearshore conditions for individual HRAs would be a speculative analysis.

- The predicted load increases in isolated HRAs would not contribute to non-attainment of TRPA lake-wide water quality standards/thresholds (Resolution 82-11 indicators).
- The load estimate methods and assumptions are highly conservative and represent worst-case scenarios for changes in pollutant loading. For example, the Upper Truckee HRA would likely contain very few parcels that receive transferred land coverage, which is supported by the results of the *Coverage Demand Analysis (Attachment F)* developed as part of the *TRPA Regional Plan Update DEIS (TRPA, April 2012)*. However, the pollutant loading analysis assumes that all vacant parcels with the potential to receive transferred coverage in the Upper Truckee HRA implement the Code amendment to the maximum extent possible.
- The technical approach made a simplifying assumption that all sending parcels would be located in the Upper Truckee and South Stateline CA HRAs. It is possible that some sending parcels may be located in other HRAs, such as the California side of the Agate Bay HRA. If sending parcels are located in other HRAs, the pollutant load estimates predicted for those HRAs would decrease.

Table B15: Magnitude of Load Increase for Incline Village HRA (Bailey Sinclair Data)

Pollutant of Concern	Incline Village HRA Maximum Increase in Loading (lb/year)	Washoe County Baseline Load (lb/year)	Percent Increase in Loading Relative to Baseline (%)
FSP - Fine Sediment Particles	98	208,300	0.05%
TP - Total Phosphorus	1.1	1,000	0.11%
TN - Total Nitrogen	4.7	4,240	0.11%

Table B16: Magnitude of Load Increase for Placer County HRAs (Bailey Sinclair Data)

Pollutant of Concern	Agate Bay, Tahoe City, and McKinney Bay HRAs Maximum Increase in Loading (lb/year)	Placer County Baseline Load (lb/year)	Percent Increase in Loading Relative to Baseline (%)
FSP - Fine Sediment Particles	605	516,000	0.12%
TP - Total Phosphorus	5.5	2,450	0.22%
TN - Total Nitrogen	23.5	10,220	0.23%

- Redevelopment of parcels with existing land coverage made possible under the proposed Code Section 30.4 amendment would result in a net load reduction. Therefore, the scope of the technical analyses did not evaluate redevelopment scenarios but instead focused on development of vacant parcels. For redevelopment parcels, a net load reduction would be achieved because parcels with existing land coverage would be required to implement BMPs to the entire developed area of the parcel as part of the action for transferring coverage. Because many developed parcels eligible for land coverage transfers do not meet water quality requirements in the existing condition, the net increase in BMP implementation on receiving parcels combined with the restoration of existing land coverage on sending parcels would result in a pollutant load reduction.

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