Restoration Plan Requirements	Completed	Corrections
Title Page – Project Name, Project Number, Permit Number, APNs, Applicant Name and Contact Info, Name and Affiliation of preparer, Biologist contact info, Date. For revisions and supplements to the report add the date of the revision to the title page.		
Document(s) need to include materials for a Survey Description similar to Biological Assessment and a Restoration Plan		
I.INTRODUCTION (may refer to figures in document)		
A.Project name, type of report, address of project.		
B.County application identification numbers including APNs.		
C.Applicant name and contact information.		
D.Responsible parties for implementation of restoration and contact information 1.Biological Assessment and Impact 1.Restoration plan report preparation 2.Restoration execution 3.Monitoring reports and restoration guidance		
E.Brief description of location		
F.Outline of Impact: Topics that must be included: Species diversity, vegetation cover, appropriateness of restoration, and ecological function. Ecological function must be addressed including specific and relevant aspects of direct impact to habitat quality, edge effects, drainage and hydrology (groundwater recharge, percolation, water quality, erosion), wildlife and plant		

population connectivity to natural areas and protected natural areas, carbon sequestration, greenhouse gas emission, filtration of pollutants in air and runoff, modulation of climate, species diversity, recreation.		
G. Outline description of restoration – key features		
H. Brief description of restoration goals with respect to return to preexisting conditions, performance, and ecological function		
I.Description of timeline, completion criterion See LIP§22.44.1920.L. 1. Initial period of 5 years; 2. Completion is achievement of performance standards for 2 years with no maintenance except weeding (no irrigation) 3. Completion may occur before term of 5 years with County DRP biologist and director concurrence. 4. At 5 years if performance is not achieved, then restoration is to be extended for 5 years (total 10 years) At this time (end of first 5-year term) any new 5-year plan proposed must be approved by County DRP biologist and director. 5. At the end of 10 years if performance has still not been met, a remedial plan is needed or extension for another 5-yr. period is proposed.		
J.Funding – Responsibility with respect to timeline of restoration		
II.PROJECT LOCATION		
A.Project Background		
1. Parcel and acreage information. Total, direct impact acreage, restoration acreage onsite, restoration acreage offsite. Historical information and figures may be relevant.		
2.Location Specifics		

a. Maps of regional features showing project location(s), including watershed boundaries, proximity to public lands, streams, drainages, and roads in region. Label these features.		
b. Color aerial photograph(s) showing regional context of project, project parcel(s), existing development, open space, etc.		
c. Description of major natural features. 1) Landforms and geomorphology. 2) Drainage and wetland features. [Jurisdictional delineation if appropriate] 3) Soils		
III.PROJECT HABITAT ASSESSMENT		
A.METHODS: Describe methodology for 1. Literature survey: use 9-quad CNDDB lists of species, 9-quad CNPS lists of species, data from other sources (List all species from these sources, including those no longer sensitive.) List possible birds in the LACo Sensitive Birds that could use the habitats of the site. 2. Site survey of plant alliances. Give dates, times of day, personnel, method. 3. Site survey for sensitive species. Give dates, times of day, personnel, method 4. Mapping procedure methods 5. Detailed survey methods for determining impact areas, restoration areas (Restoration areas are usually the same as impact areas, but may include offsite areas if added mitigation is needed for development.) • Refer to maps of impact and restoration on impact parcels showing parcel boundaries, topography, existing plant alliances, habitat categories, areas of restoration.		

• Refer to similar map(s) of offsite restoration areas. 6. Detailed survey methods for determining reference areas and reference values. • In many instances of broad scale vegetation removal, transects will be needed. (For other kinds of restoration, use quantitative methods to address the main concerns of restoring species diversity, coverage, and ecological function, returning to preexisting conditions.) • Natural alliance areas, presumed to be the alliance of impact and near the restoration areas, should be used. Refer to a map showing reference transects (location with respect to restoration area, length, orientation). If multiple plant alliances are to be restored, show plant alliances on the map. 7. Describe Reference transect methodology. Refer to a map of transects showing location, orientation, plant alliances. • Reference transects should be pre-located and oriented before sampling. Transects should be in natural area with plant alliance to be restored. Use gridding and random numbers so that all areas within a reference plant alliance area have an equal chance to be on a reference transect. Areas where edge effects due to human activities may affect the data should be avoided (not included in the grid or orientation of transect.) • Reference transects must be multiple, at least 2, and 3 preferred, in each plant alliance for restoration. • Reference transects should measure continuous data and be objective. Do NOT		

use interval sampling. Do NOT use inspection estimates of percent cover. Continuous data transect method: • Use a map of alliances of the same kind as the alliance to be used in the restoration areas (probable pre-existing alliance before development) • Use random numbers to choose transect location and orientation (in the office before site visit) by gridding (avoid edge areas influenced by development or human use of trails) • Use multiple transects in an alliance, at least 2, preferably 3; • For shrublands, 50 m is a good length giving about 10 species and 40 intervals. • Use continuous records of the top dominant under each cm. (In shrublands, you will record only where a new species starts. The interval between start of a species 1 and start of a new species 2 is the area covered by species 1.) • Analyze for absolute cover of each cover category (species, rock with lichens, and non-plant categories such as dirt, rocks, duff, , etc.)		
8. **Analysis of Reference Data** for restoration areas and derivation of performance values. Needed data are restoration alliance species list and absolute cover for each species and non-plant category of cover on the transects. The raw data and data of analysis should be in an appendix referred to by method description. • Show raw data of all transects. • Show consolidation of data for each species of alliance and non-plant categories.		
9. Performance Values Derivation of performance values		

• Describe rationale for application of reference data to format performance values and restoration sites. • Appropriate locally native species need to be substituted for coverage values of non-native plant cover and rare native species that should not have seeds collected from the wild. Show original data and indicate substitutions for restoration and performance.		
B.PLANT ALLIANCE MAP		
1.Maps of vegetation communities [alliances], specifying system used (the use of Sawyer et al. 2009 is recommended) and data of impact. a) Show parcel lines. b) Show mapped habitat categories (HI, H2, H2 "High Scrutiny", H3 Habitat) from the LUP c) Show area of impact. d) Provide a table of acreages of impact with respect to probable plant alliances of impact and habitat category. Separate acreages by plant alliance. Show total acreage summary values.		
C.MAP OF TREES, NATIVE AND NON-NATIVE, within 100-ft. of impact area. Show impact area. Show key to table for each tree. Map trunk location and canopy extent. Table of species identification, largest trunks' diameter, canopy extent. (Trees have trunks 6-in. or more DBH or 2 trunks summing to 8-in. DBH or more. Map oaks of 5-in. and greater DBH.) -Project should provide mitigation table for impacts to protected native trees' Tree Protected Zones (TPZ), §22.44.1920.K		
D. TABLE OF POSSIBLE SENSITIVE SPECIES AND POSSIBLE SENSITIVE VEGETATION, including brief description of potential impacts to any		

sensitive species. [Include all species on CNDDB & CNPS 9-quad list in table, distinguishing observed from possible and unlikely; include observed plant alliances with Natural Heritage sensitivity ratings. Include possible LACounty Sensitive Birds, refer to http://losangelesaudubon.org/images/stories/pdf/vol.%2075%20no.%2003%20january%20february%202009,%20color%20web%20version.pdf]		
E.MAPS OF OCCURRENCE FOR SENSITIVE SPECIES observed. Show parcel lines and areas of impact.		
F.LISTS of OBSERVED PLANT AND ANIMAL SPECIES		
G.PHOTOS OF PLANT ALLIANCES and PHOTO KEY		
IV. REFERENCE DATA FOR RESTORATION AREAS - ANALYSIS OF REFERENCE DATA		
Reference data for restoration areas. Needed data are restoration alliance species list and absolute cover. Raw data is presented and analysis presented in an appendix. A.Show the actual transect data of species and intitial cm start of each species, 3 transects for each plant alliance. Coverage for A is cm between start of species A and start of species B. B.Show consolidation of data for species and percentage cover of that species for each transect of alliance. C.Show data for all species on three transects of alliance and average coverage of the species on the transects of the alliance. This is the basic data of species list and absolute coverage for the species in that alliance. Rock outcrop with lichen & bryophytes is a plant category. Non-plant		

category coverage is included such as dirt, duff, bare rock, etc.		
V.Apply reference data to FORMAT PERFORMANCE VALUES FOR RESTORATION SITE PLANTINGS. The goal as stated in LIP is restoration of the impacted/graded area to preexisting conditions of habitat and ecological function. **A**.Show how performance values were derived from reference transect values. Items to consider are • Substitution of similar native plant form of local area for invasive and non-native plants observed on reference transects • Fire safety considerations of flammable plants if near structures B.Explain how the values relate to restoration of ecological function. C. Show the performance values for each plant alliance of restoration.		
VI. IMPACTS AND MITIGATION SUMMARY **This table should be final section of Restoration Plan also. Use same table in both reports.** 1. List Impacts from Introduction in greater specific detail. • List grading impact volumes and any needed restoration grading volumes. • Often ratio of (mitigation acreage : impact acreage) will be 1:1. However, if development remains, mitigation must follow LIP recommendation based on sensitivity of habitats impacted. See §22.44.1950.C. • Ecological functions must include specific and relevant aspects of direct impact to habitat quality, edge effects, drainage and		

hydrology (groundwater recharge, percolation, water quality, erosion), wildlife and plant population connectivity to natural areas and protected natural areas, carbon sequestration, greenhouse gas emission, filtration of pollutants in air and runoff, modulation of climate, species diversity, recreation. • Note specific plant alliances, and sensitivity. 2. Incorporate Best Management Practices in the mitigation actions.		
VII. Bibliography and Appendices (for separate Biological Assessment document)		
VIII. RESTORATION PLAN		
A. Introduction summary of Impacts, Goals, Restoration Plan		
For separate Biological Assessment and RESTORATION PLANS, a recapitulation of relevant data from Biological Assessment is needed in the Restoration Plan. 1.Introduction, all of it. See I.Introduction above) Include specific impacts due to grading/dumping. Include statement of goals. 2.Any maps referred to in Introduction. 3. Habitat maps: a. Habitat category map b. Plant alliance map c. Tree map d. Maps of sensitive species e. Table of acreages by plant alliance, Habitat category, impact & restoration acreages 4.Project site plan, to scale showing: parcel boundaries, topography, existing alliance types,		

all areas of impact, all areas of restoration, LUP habitat categories, H1,H2, and H2 high scrutiny. • When multiple methods of restoration will be used, indicate where each method will be used • When multiple alliances will be restored, indicate where each alliance will be restored. • Multiple maps may be needed. 5.Reference transect map 6.Narrative outline of Reference Transect methods, analysis of transect data, and formulation of performance values from transect data. • Methods for Reference Transects • Transect Data Analysis, a. absolute coverage values b. final analysis of coverage c. final species and coverage for restoration d. final species and coverage for performance • Performance Values Derivation • In an appendix, show a. Summary transect data analysis (original absolute values) for each alliance of restoration b. Performance values for each alliance.		
B. INTRODUCTION CONTENT CHECKLIST: Identification of Impact and Restoration Goals §22.44.1920.L.1		
1.**Statement of Impact to habitat quality and function** for direct impact area and extension of impact in terms of ecological function. Include edge effects on surrounding area outside of direct impact area. Include analysis of effects on drainage and hydrology (groundwater recharge, percolation, water quality, erosion) and ridgelines. Include impact to wildlife		

connectivity to natural areas and protected natural areas in the vicinity. Include carbon sequestration, greenhouse gas emission, filtration of pollutants on the ground and in the air, modulation of temperature, species diversity, recreation.		
2.**Statement of Impact details** • Probable impacted vegetation alliances, plant species for each alliance and coverage of each species in the alliance. Refer to both table of impact acreages and data from reference transects. Refer to data of any special interest species of the area. • Include grading impact volumes and any needed restoration grading volumes. • Mitigation needs to be appropriate for sensitivity of the resource that is impacted and follow the LIP recommendations on this. Sensitive resource impacts that will remain as development should have higher mitigation:impact ratios than 1:1. A ratio of 1:1 is acceptable for strict restoration and no remaining development. (See §22.44.1950.C.)		
3.**Statement of goals of project** including how restoration addresses habitat function, species diversity, and appropriate plant cover for restoration. For habitat function address aspects listed in I.F. that the project affects. Include whether restoration is in same sub-drainage or same watershed. Address contribution to hydrology and water quality. Address the shape of restored area. The known best configurations for preserving biological diversity and integrity are circular or rectangular preserved natural areas with large interior spaces and minimized		

peripheries. Address habitat and wildlife populations and connectivity. Address enhancement of recreation.		
4.Project methods for establishing performance criteria		
5.Performance criteria		
6.Project plan		
C.Plan Content Check		
1.Plan addresses existing habitat quality, surrounding area, and any degraded area		
2.Plan addresses habitat function		
3.Plan addresses species diversity		
4.Plan addresses vegetation cover		
5.Plan addresses appropriateness of restoration		
6.Plan gives clear statement of performance standards		
7.Plan incorporates Best Management Practices	OK	
8.Plan incorporates adaptive management	Yes	
9.Plan has timeline of at least 5 years of monitoring following revegetation		
10.Plan has a contingency plan with extension for a second 5-year period for the case of not meeting performance standards within 5 years.		
11.Plan recognizes that an alternative may be needed for cases that do not meet performance after 10 years. §22.44.1920.L.2		
D. Methodology of restoration		
1. Project site plan for restoration, to scale, showing parcel boundaries, topography, existing habitat types, impact area, restoration areas. Details to show are: a.size and location of restoration areas b. alliance for restoration in cases where various alliances will be used.		

c.When several methods of restoration are to be used, then map should show the allocation of methodology.		
2.Cover table of impacted alliance acreage and habitat category, restoration alliance acreage with reference to the project site plan in table. Separate and then summarize for different methodologies. Separate and then summarize for different restoration areas.		
3.Description of **methodology of restoration** a. Methods to be used and where they will be applied. Refer to map of restoration methods. Preconstruction standard wildlife care. b. Equipment preparation and drip containment—removal of invasive plant propagules; drip pans and removal of spills c. Containment of contamination from equipment--fluid leak containment d. Species to be used, specifications on any seed mix, species and specifications on container plants e.Quality control to specify plant stock of the SMM f.Methods for soil preparation; seeding; and container planting g.Methods for erosion control h.Methods for post-installation maintenance i.Methods for achieving diversity of ages; i. Outline of statistical test(s) to be used for evaluation j.Timeline for plant installation, maintenance, and monitoring. Schedule should observe best seasons and timing for actions.		
4. Discussion of Best Management Practices used. Standards to include: a.. No herbicides/chemicals are to be used.		

b. No rodenticides are to be used. Instead use trapping, fumigation, or another non-pervasive method, c. Cleaning of equipment undercarriage, encrusted dirt, and plant parts before transport to site. (Avoid introduction of invasive plant propagules.) d. Describe weeding execution methods (may involve solarization, should involve hand tools, removal of roots.) e. Transport of excavated invasive plant parts to a landfill in closed containers. f. Use of native plants for any needed mulch. g. Overturned boulders should be righted to original position. h. Limit of site access and control of access i. Erosion control measures and maintenance. j. Runoff control measures and maintenance. k. Organic constituents of restoration (such as wattles) should be specified weed free and composed of native material to the SMM if possible. l.Irrigation plan and schedules; removal of irrigation if not needed for fire safety. m. Adaptive management implementation		
5. Plan for Contingencies. Discuss how project will respond to coping with irregularities of climate and rainfall; coping with problems of herbivory, fire, flood; lack of species diversity; lack of coverage.		
6. At the end of 10 years, for failure to meet performance, the restoration is to have alternative restoration. This requirement is to be acknowledged, and responsible parties for funds and execution should be named. §22.44.1920.L.2		

C.Methodology of Monitoring and Reporting		
1.Performance standards a. Methods for determining performance standards: appropriate alliance, species diversity, and appropriate coverage. Refer to reference area results in appendix tables of absolute coverage. b.Refer to map of reference survey transect locations used for the restoration areas, and show any quadrat locations for qualitative data. c. Performance standards must be given for each alliance in terms of species list, and absolute coverage for each species. d.Map of area of installation for the alliances; reference to tables of species list and absolute coverage for the species in each alliance of restoration e. Statistical test to be used for test of monitored values' comparison to performance standards f. Timetable listing performance standards and expected progress towards achievement in a 5-year plan. Restoration is judged completed when performance values are evaluated as complete for a period of 2 years with no maintenance other than weeding (no irrigation). Restoration can be completed in less than 5 years if this criterion is met.		
2. Annual monitoring a.Quantitative sampling must be used to judge approach to performance values and completion of restoration task. b. Quantitative monitoring should be distributed over the restoration site(s), not use fixed points. • Multiple, randomly placed, 50-m, continuous transects in each alliance prior to weeding are		

recommended. Record the top dominant plant or cover category under each cm. • Random placement should enable all parts of restoration alliances to be sampled • Do not use intervals or visual inspection for transect data—these methods are very susceptible to biased results. • Monitoring should measure restoration for each alliance and area with differing conditions. At least 2 replicate random samples are needed for each different situation. Three (3) gives the best power of the test in terms of effort expended. c.Qualitative methods may also be used such as photographic documentation at fixed points or fixed quadrats, providing data on changes in parts of alliance sites. d.Specify dates for maintenance, monitoring, reports. • For vegetation, monitoring and weeding should be twice a year: in spring coincident with a good time for observation of annuals but before weeding before weeds set seed. In September for check on any reseeding needed, planting needed, or other corrective action to be applied in early fall. e.Specify recipients of reports • Copies of report on 2 visits for year (spring and Sept.) are to be sent to owner, DRP biologist, and CDFW (if required by LSAA) in October. The report should address any corrective action needed to try to remain on the timeline for completion in 5 years. • Specify completion as given in LIP. Restoration completion occurs when the		

o samples show performance values for species list and cover o for 2 years with no maintenance other than weeding. o within 90% of specified values		
3. Monitoring Report Contents a. Project Name, Project Number, Permit Number, APNs, Applicant Name and Contact Info, Name and Affiliation of preparer, Biologist contact info, Date. b. Identify parties for action on monitoring-reporting. c. Brief summary of previous work on project and results. Reference to tables of accomplishment may be used. d.Date(s) of survey(s) covered by this report, Biologist names who conducted the surveys. e. Outline of methodology used. f.Data analysis of quantitative measures for each area with different alliance, method or other differing condition. Raw data of transects and analysis referred to will be in an appendix. g.Data analysis of qualitative measures f. Results: Statistical comparison to performance standard for timeline progression and for overall progression; 90% confidence level shall be used. g. Analysis of progress towards performance h. Recommendations for corrective action and adaptive management (change in methodology		

4.Remedies for failure to reach performance a.Each year b.At end of 5 years without performance, an extension to 10 years or a new 5 year plan is required. c.At end of 10 years: continuation of restoration if completion is imminent, or a remedial plan		
D. IMPACTS AND MITIGATION SUMMARY 1. List Impacts from Introduction in greater specific detail. • List grading impact volumes and any needed restoration grading volumes. • Often ratio of (mitigation acreage : impact acreage) will be 1:1. However, if development remains, mitigation must follow LIP recommendation based on sensitivity of habitats impacted. See §22.44.1950.C. • Ecological functions must include specific and relevant aspects of direct impact to habitat quality, edge effects, drainage and hydrology (groundwater recharge, percolation, water quality, erosion), wildlife and plant population connectivity to natural areas and protected natural areas, carbon sequestration, greenhouse gas emission, filtration of pollutants in air and runoff, modulation of climate, species diversity, recreation. • Note specific plant alliances, and sensitivity. 2.Incorporate Best Management Practices in the mitigation actions. 3. For most projects: • Refer to sensitive species observed and any potential for impact. Describe avoidance.		

• Describe wildlife community and any potential for impact. Describe remediation. • Pre-action survey and relocation may be appropriate. • For birds, include pre-action nesting survey, any time of year in SMM • Describe any other wildlife protective measures needed. • For plants describe any protective measures needed.		
E. Bibliography - Bibliography of references cited in text	Yes	
F. Appendices		
1. Site photographs of plant alliances (color) [with photo key] (reference photos)		
2.Raw data and analysis of reference transects and/or other data used to form performance values, such as quad photos		
3.Analysis of reference transects		
4.Performance values, each alliance of restoration		
5.Qualifications of biologists and other contributors	OK	

Summary: