

5.8 Monitoring and Research Plan

[Note to Reviewers: The text of this section of Chapter 5, including the approaches to monitoring and research described, is subject to change and revision as the Yolo NHP planning process progresses. This section, however, has been drafted and formatted to appear as it may in a draft Yolo NHP HCP/NCCP document. Although this section includes declarative statements (e.g., the Implementing Entity will...), it is nonetheless a “working draft” that will undergo further modification based on input from the Yolo NHP Steering Advisory Committee and the Permitting Agencies.]

5.8.1 Introduction

This section describes the elements of the Yolo NHP monitoring and research plan. Monitoring can be defined as the “systematic and usually repetitive collection of information typically used to track the status of a variable or system” (Atkinson et al. 2007). An HCP must incorporate monitoring of conservation measures and the response of covered species to these measures. This plan has been designed to (a) guide the collection and compilation of relevant data and information necessary to implement the Yolo NHP over time, and (b) ensure that the adaptive management decision making process described in Section 5.9, *Adaptive Management Plan*, is informed by the best available science. Thus, implementation, monitoring, research, and adaptive management are all part of a feedback loop process (Figure 5.1).

The monitoring plan component is consistent with the guidance provided by the federal Five-Point Policy for HCPs (65 FR 106, June 1, 2000) and provisions of the Natural Community Conservation Planning Act (NCCPA) (Fish and Game Code Section 2810(a)(7)). As described in the Five-Point Policy, the monitoring program of a conservation plan should generate information sufficient to guide plan implementation, particularly with respect to the following matters:

- (1) assess the implementation and effectiveness of the HCP terms and conditions (e.g., financial responsibilities and obligations, management responsibilities, and other aspects of the incidental take permit, HCP, and the IA, if applicable);
- (2) determine the level of incidental take of the covered species;
- (3) determine the biological conditions resulting from the operating conservation program (e.g., change in the species’ status or a change in the habitat conditions); and
- (4) provide any information needed to implement an adaptive management strategy, if utilized. An effective monitoring program is flexible enough to allow modifications, if necessary, to obtain the appropriate information.

(65 FR 106, June 1, 2000; 35254)

The Yolo NHP Implementing Entity may initiate research projects or studies to address specific scientific questions regarding covered species, natural communities, and ecosystem processes. These studies will increase scientific knowledge about biological resources and conditions such that conservation measures can more effectively achieve biological goals and objectives. The formal testing of hypotheses on the expected system responses or outcomes of conservation measures is an important element of adaptive management. Thus, the Implementing Entity may

1 provide funding for research on specific hypotheses important for more effective implementation
2 of the Conservation Strategy.

3 Although monitoring programs strive to produce standardized, scientific data, monitoring in
4 itself is an adaptive, “learning-by-doing” process. Especially during initial phases, the
5 Implementing Entity may be faced with decisions on monitoring techniques and cost effective
6 sampling designs. Therefore, the monitoring plan provides for methods testing and/or pilot
7 projects that allow the Implementing Entity to evaluate which monitoring protocols and sampling
8 designs produce acceptable data properties and are feasible in an applied setting and under given
9 funding constraints. For example, methods to detect presence or absence of a covered species
10 may be evaluated by comparing detection dogs, camera traps or spotlight surveys in small area
11 where foxes are known to occur; or, prior to large-scale riparian restoration, initial small-scale
12 trials with different planting methods may be conducted to learn about “what works”. Each
13 method will yield a number of observations and will have associated logistic, time and cost
14 constraints. Methods-testing allows the derivation of the most effective, and least costly
15 methods to achieve monitoring goals.

16 **5.8.1.1 Monitoring objectives**

17 The overall purpose of the Yolo NHP monitoring plan is to ensure that the biological goals and
18 objectives are achieved. More specifically, the plan will:

- 19 ▪ Establish the baseline conditions of biological resources in the Plan Area from which
20 deviations can be detected
- 21 ▪ Develop and implement scientifically valid monitoring protocols at multiple scales to to
22 ensure that data collected are relevant for the adaptive management process and integrate
23 with other monitoring efforts
- 24 ▪ Document compliance with terms and conditions of Yolo NHP permits, including limits
25 set by the permits on the incidental take of covered species;
- 26 ▪ Document and evaluate the effectiveness of conservation measures in achieving Yolo
27 NHP biological goals and objectives;
- 28 ▪ Determine the validity of the scientific hypotheses on which the assessment of effects
29 and effectiveness are based; and
- 30 ▪ Assess progress towards achieving the biological goals and objectives both specific to
31 conservation actions and throughout the Plan Area.

32 It is beyond the scope of the Yolo NHP planning process to develop a comprehensive monitoring
33 program. Rather, the goal of this chapter is to provide sufficient guidance to the Implementing
34 Entity to ensure that the monitoring program will meet regulatory standards and that the
35 monitoring program is sufficiently flexible to address monitoring protocols that turn out to be
36 infeasible or do not produce the right data to evaluate plan success. Furthermore, the exact
37 location and extent of the conservation activities and target areas for monitoring are not known at
38 this time, thus precluding the ability to establish specific monitoring requirements (including
39 protocols, thresholds, triggers, and other key variables).

1 **5.8.1.3 Scale**

2 As described in Section 5.3, *Biological Goals and Objectives*, the Yolo NHP conservation
3 strategy operates at landscape, natural community, and species-specific scales, ranging from
4 patch-level habitat components to natural communities and populations up to landscape and
5 ecosystem levels. The monitoring program also operates at multiple scales, depending whether it
6 is designed to detect change at species-level, natural community -, or landscape/ecosystem
7 scales. At the broadest spatial extent, landscape level monitoring is designed to detect large-
8 scale changes in ecosystem processes, shifts in natural community distribution or the
9 composition and integrity of landscape linkages. Community-level monitoring is designed to
10 detect changes in the composition and function of natural communities, populations of key
11 predator or prey populations, invasive species, and other important habitat factors for covered
12 species. Species-level monitoring measures the effects of management actions on covered
13 species and tracks the abundance, distribution, and other variables of covered species.

14 **5.8.2. Responsibility for the Monitoring and Research Program**

15 The Yolo NHP Implementing Entity is responsible for implementing the monitoring and research
16 plan. However, plan components may be implemented by multiple parties, including staff of the
17 Implementing Entity or, with the oversight of the Implementing Entity, other Yolo NHP
18 participants (e.g., Permit Applicants, Fish and Wildlife Agencies), academic institutions,
19 consulting firms, or other qualified entities. Monitoring conducted under existing programs
20 implemented by other entities (e.g., Central Valley Regional Water Quality Control Board,
21 USFWS, DFG) may also be used by the Implementing Entity to assess biological baseline
22 conditions or the effectiveness of conservation measures in achieving biological goals and
23 objectives. The Implementing Entity, however, is responsible for ensuring that monitoring and
24 research efforts undertaken by others on behalf of the Implementing Entity are sufficient for the
25 purposes of Yolo NHP implementation requirements.

26 The Implementing Entity will coordinate and share monitoring and other experimental results, as
27 appropriate, with other regional restoration and management programs. Such coordination
28 requires standardization of protocols, sampling design, and training of personnel, as well as
29 integrative data analyses. Programs and organizations with which the Implementing Entity
30 should coordinate include approved and developing HCPs and NCCPs that adjoin or overlap the
31 Plan Area, including the Solano County HCP, the Natomas Basin HCP, and the Bay Delta
32 Conservation Plan; DFG and USFWS monitoring programs; and with organizations conducting
33 monitoring of existing conserved lands within and adjacent to the Plan Area.

34 **5.8.3 Compliance Monitoring and Requirements**

35 The purpose of compliance monitoring is to: (1) track progress of Yolo NHP implementation in
36 accordance with the implementation schedule (see Chapter 6, *Plan Implementation*), and (2)
37 ensure compliance with terms and conditions of the Yolo NHP and its associated permits.
38 Compliance monitoring will be undertaken for all conservation measures, whether implemented
39 directly by the Implementing Entity or by other supporting entities through contracts,
40 memoranda of agreement, or other agreements with the Implementing Entity. Compliance
41 monitoring will be conducted to ensure that conservation measures are meeting specified permit
42 terms.

1 Compliance monitoring includes;

- 2 ▪ verification of incidental take of covered species in relation to authorized take levels,
- 3 ▪ recording implementation of habitat protection, enhancement, and restoration actions,
- 4 ▪ documenting implementation of avoidance and minimization measures, and
- 5 ▪ any other monitoring that may be required to document compliance terms and conditions
- 6 of Yolo NHP permits.

7 The Implementing Entity will develop specific procedures for documenting compliance with the
8 permit terms and conditions before implementing the covered activities. Results of compliance
9 monitoring may also serve the purposes of effectiveness monitoring. For example, documenting
10 the protection of a specified amount of a covered species habitat for compliance also documents
11 progress towards achieving the biological objective for protection of that species habitat.

12 Results of compliance monitoring will also be used by the Implementing Entity along with
13 results of effectiveness and system monitoring to determine if the Plan implementation should be
14 adjusted under the provisions or the Yolo NHP adaptive management plan (see Section 5.8,
15 *Adaptive Management Plan*).

16 **5.8.3.1 Construction Monitoring and Requirements**

17 Monitoring of ground disturbing activities and implementation of avoidance and minimization
18 measures will be conducted at the time specific covered activities are implemented.

19 Construction monitoring is required to ensure that avoidance and minimization measures are
20 properly implemented where specific sensitive occurrences of covered species (e.g., an active
21 nesting site for a covered bird species or a population of a highly restricted covered plant
22 species) have been identified at or adjacent to a construction site. The Implementing Entity will
23 be responsible for 1) monitoring its implementation of conservation measures to ensure that any
24 applicable avoidance and/or minimization measure are properly and effectively implemented,
25 and 2) ensure that conservation measures are implemented in accordance with specifications and
26 plans. The Implementing Entity will also provide guidance to other entities implementing
27 covered activities to ensure proper implementation of avoidance and minimization measures.

28 **5.8.4 Effectiveness Monitoring and Requirements**

29 Effectiveness monitoring is conducted for three purposes: 1) to assess the effectiveness of
30 habitat restoration, enhancement, and management techniques in achieving the desired habitat
31 conditions for covered and other native species, 2) to assess covered species responses to the
32 implementation of conservation measures, and 3) to document progress made toward achieving
33 biological goals and objectives. Effectiveness monitoring is informed by compliance and system
34 monitoring (see below) in addition to any relevant research undertaken by the Implementing
35 Entity or others. Example descriptions of effectiveness monitoring requirements for each of the
36 conservation measures described in Section 5.4, *Conservation Measures*, and for the biological
37 goals and objectives described in Section 5.3, *Biological Goals and Objectives*, are presented in
38 Tables 5.1 and 5.2, respectively.

1 Effectiveness monitoring will be used to track the effects of habitat enhancement and
2 management actions. It allows the Implementing Entity to ascertain how successful management
3 of resources is in achieving desired outcomes. Examples include quantitative data on acreage or
4 distribution of land cover types in the Plan Area, qualitative assessments of vegetative structure
5 and/or habitat quality or incidences of disturbances (fires, floods, etc). Additionally, it facilitates
6 evaluation of whether any undesirable consequences may be associated with the implementation
7 of specific conservation measures (e.g., establishment and spread of noxious weeds).

8 To assess effectiveness of conservation actions for covered species, monitoring will be
9 conducted to assess individual and population responses to conservation measures that have been
10 implemented. This includes quantitative monitoring of status or trend of covered species
11 (population size, rate of increase, survival etc). While status monitoring can occur intermittently
12 and with various methods (occurrence, abundance, distribution), trend monitoring (e.g., covered
13 species populations) must be standardized among areas and years, and replicated over multiple
14 years to be meaningful and informative. Multi-year surveys are not only important to assess
15 trends, but also to estimate temporal variation in monitored parameters. In addition, existing
16 time series or historical data can be important assets in understanding current conditions.

17 Results of effectiveness monitoring will inform the Implementing Entity as it considers
18 adjustments to implementation through the adaptive management plan (see Section 5.8, Adaptive
19 Management Plan). The effectiveness monitoring requirements for specific conservation actions
20 will be determined by the Implementing Entity prior to implementing the actions and will be
21 designed to collect information necessary to improve their effectiveness over time and to resolve
22 the uncertainties. It is anticipated that the extent of effectiveness monitoring will be reduced over
23 time as causal relationships between the implementation of conservation actions and the
24 responses of covered species and ecosystems to those measures are better understood. For
25 example, if relationships between a specific habitat enhancement action and the response of a
26 particular covered species to the action are established through monitoring, then effectiveness
27 monitoring for assessing the species response to the same action in another location may be
28 reduced or no longer required.

29 **5.8.4.1 Restored and Created Habitats**

30 Valley oak woodland, valley/foothill riparian, emergent wetland, vernal pool complex, and alkali
31 sink wetland will be restored or created over the term of the Yolo NHP. Prior to implementing
32 habitat restoration/creation actions, the Implementing Entity will develop and implement
33 monitoring plans and schedules for each type of habitat restoration/creation action and/or habitat
34 restoration/creation site (see Section 5.8.6, *Development of Monitoring*). The duration and
35 frequency of monitoring of each habitat restoration/creation site will be determined by the time
36 required for covered species habitat functions to fully develop (e.g., riparian forest habitat may
37 require the entire term of the Yolo NHP to fully develop habitat functions for covered species
38 that use mature forest) and annual variability in environmental conditions that affect habitat
39 functions (e.g., to assess the full habitat functions of restored/created vernal pools may require
40 monitoring over the course of several wet water years). The monitoring plans will describe the
41 environmental variables to be monitored (e.g., percent vegetation cover and composition and
42 hydrology over time) and variable targets that, when achieved, indicate that ecological objectives
43 of the restored/created habitat have been achieved. The selected environmental variables should

1 be those that represent measures of habitat function for associated covered and other native
2 species and that can be practicably measured. Environmental variables that should be considered
3 for each restored habitat type are described below.

4 **Restored Valley Oak Woodland**

- 5 ▪ Extent of created/restored valley oak woodland
- 6 ▪ Percent overstory vegetation cover and composition
- 7 ▪ Percent midstory vegetation cover and composition
- 8 ▪ Percent understory vegetation cover and composition
- 9 ▪ Density of elderberry shrubs
- 10 ▪ Extent and type of habitat use by valley oak woodland-associated covered and
11 other native wildlife species
- 12 ▪ Site specific factors that may affect development of environmental variables
13 (e.g., establishment and abundance of invasive plant species, effects of rodents
14 on riparian plant establishment)

15 **Restored/Created Valley/Foothill Riparian**

- 16 ▪ Extent of created/restored riparian habitat
- 17 ▪ Seasonal site hydrology (e.g., depth to ground water)
- 18 ▪ Percent overstory vegetation cover, canopy height, and composition
- 19 ▪ Percent midstory vegetation cover and composition
- 20 ▪ Percent understory vegetation cover and composition
- 21 ▪ Density of elderberry shrubs
- 22 ▪ Invertebrate production
- 23 ▪ Extent and type of habitat use by riparian-associated covered and other native
24 wildlife species
- 25 ▪ Adjacent upland vegetation cover and composition
- 26 ▪ Site specific factors that may affect development of environmental variables
27 (e.g., establishment and abundance of invasive plant species, establishment and
28 abundances of non-native predators, effects of rodents on riparian plant
29 establishment)

30 **Restored/Created Freshwater Emergent Wetland**

- 31 ▪ Extent of created/restored emergent wetland

- 1 ▪ Site hydrology (e.g., duration, season, and extent of surface ponding)
- 2 ▪ Percent emergent vegetation cover, patchiness, and composition
- 3 ▪ Percent open water area
- 4 ▪ Invertebrate production
- 5 ▪ Adjacent upland vegetation cover and composition
- 6 ▪ Extent and type of habitat use by marsh-associated covered and other native
- 7 wildlife species
- 8 ▪ Site specific factors that may affect development of environmental variables
- 9 (e.g., establishment and abundance of invasive plant species, effects of offsite
- 10 management on site hydrology)

11 **Restored Vernal Pool Complex**

- 12 ▪ Extent of wetted area and swales
- 13 ▪ Vernal pool inundation depth, duration, and extent
- 14 ▪ Water chemistry
- 15 ▪ Establishment and abundance of covered vernal pool shrimp and plant species
- 16 ▪ Extent and type of habitat use by vernal pool associated covered and other
- 17 native wildlife species
- 18 ▪ Vegetation cover and composition adjacent to and within the immediate
- 19 watershed of the restored/created vernal pools
- 20 ▪ Site specific factors that may affect development of environmental variables
- 21 (e.g., establishment and abundance of invasive plant species, grasshopper
- 22 infestations)

23 **Restored Alkali Wetland Sink**

- 24 ▪ Extent of wetted area
- 25 ▪ Establishment and abundance of covered alkali sink wetland and other native
- 26 plant species
- 27 ▪ Extent and type of habitat use by vernal pool associated covered and other
- 28 native wildlife species
- 29 ▪ Vegetation cover and composition adjacent to and within the immediate
- 30 watershed of the restored/created vernal pools

- 1 ▪ Site specific factors that may affect development of environmental variables
- 2 (e.g., establishment and abundance of invasive plant species)

3 Failure to achieve or trend towards achieving the variable targets will trigger an adaptive
4 management review by the Implementing Entity to determine if: (1) additional actions should be
5 implemented to improve the likelihood for achieving the variable targets, (2) the variable targets
6 are inappropriate based on site capability and need to be modified, and/or (3) designs of
7 subsequent restored/created habitats need to be adjusted to improve development of the desired
8 ecological conditions.

9 Habitat restoration/creation sites will also be monitored to determine their use by associated
10 covered species over time. Use of restored/created habitats by associated covered and other
11 native species is a strong indicator that the restored/created habitat has successfully developed
12 the desired habitat functions for associated covered and other native species. Failure of
13 restored/created habitat to be used by covered and other native species, however, does not
14 necessarily indicate that the restored/created habitat has failed to develop the desired habitat
15 functions. For example, if the availability of habitat is not limiting the abundance and
16 distribution of a species, that species may not use the restored/created habitat. Evaluation of
17 system monitoring data is intended to provide the Implementing Entity with additional
18 information regarding the regional status, distribution, and trends of associated covered species
19 that will help evaluate the success of restored/created habitats (see Section 5.7.7, *System*
20 *Monitoring Requirements*).

21 The intensity of monitoring required for restoration/creation of specific habitat types is expected
22 to change over the Yolo NHP implementation period as more is learned about how
23 restored/created habitats develop under various site conditions and designs. For example, initial
24 riparian habitat restoration projects will be intensively monitored until there is a clear cause and
25 effect understanding between restoration actions and the development of riparian habitat
26 attributes. As these relationships are established, the monitoring intensity of subsequent riparian
27 habitat projects would be expected to be reduced.

28 **5.8.4.2 Baseline Ecological Surveys**

29 The Implementing Entity will conduct surveys of acquired conservation lands within two years
30 of acquisition to collect information necessary to conduct a detailed assessment of baseline
31 ecological conditions. Information developed through this assessment will be used to identify
32 subsequent covered species habitat enhancement and management actions that will be
33 implemented to improve covered species' habitat conditions. The baseline survey information
34 will also provide the basis from which to measure change in ecological conditions following
35 implementation of enhancement and management actions. The degree of change will be
36 analyzed to assess the effectiveness of the actions in achieving their intended biological
37 outcomes (see Section 5.8.4.3, *Habitat Enhancement and Management Actions*).

38 **5.8.4.3 Habitat Enhancement and Management Actions**

39 As described in Section 5.4, *Conservation Measures*, the Yolo NHP includes actions to enhance
40 and manage protected habitats to maintain and increase their functions as habitat for covered and

1 other native species over time. Prior to implementing habitat enhancement and management
2 actions, the Implementing Entity will develop and implement monitoring plans and schedules for
3 each type of habitat enhancement and management action and/or each specific site to be
4 enhanced and managed (see Section 5.8.6, *Development Monitoring Plans*). The monitoring
5 plans will describe the environmental variables to be monitored (e.g., percent vegetation cover
6 and composition and hydrology over time) and variable targets that, when achieved, indicate that
7 ecological objectives of the restored/created habitat have been achieved. Baseline conditions
8 will be determined through results of baseline surveys conducted for each parcel as described in
9 Section 5.8.4.2, *Baseline Ecological Surveys*. Depending on the type of habitat enhancement and
10 management actions undertaken, the Implementing Entity may also need to collect information
11 necessary to evaluate the likely effects of historical land use practices (e.g., grazing regimes) on
12 historical and current site conditions. Environmental variables that may be appropriate for the
13 types of habitat enhancement and management actions contemplated in the conservation
14 measures for each of the natural communities are described below.

15 **Grassland**

- 16 ▪ Extent and composition of invasive grassland species
- 17 ▪ Extent and composition of covered and other native grassland-associated plant
18 species
- 19 ▪ Persistence of suitable indicator species, such as perennial bunchgrasses,
20 summer flowering native annuals, geophytes and other native herbaceous
21 perennials
- 22 ▪ Small mammal abundance
- 23 ▪ Density of ground squirrel and other burrows
- 24 ▪ Extent and type of habitat use by grassland-associated covered and other native
25 wildlife species

26 **Shrubland and Scrub**

- 27 ▪ Density and composition of shrubs
- 28 ▪ Extent and type of habitat use by shrubland and scrub-associated covered and
29 other native wildlife species

30 **Woodland and Forest**

- 31 ▪ Extent and composition of invasive grassland species
- 32 ▪ Extent of herbivory on tree seedlings/saplings
- 33 ▪ Density of tree seedlings/saplings
- 34 ▪ Density of tree snags and downed wood

- 1 ▪ Persistence of suitable indicator species, such as perennial bunchgrasses,
2 summer flowering native annuals, geophytes and other native herbaceous
3 perennials
- 4 ▪ Density and composition of shrubs
- 5 ▪ Small mammal abundance
- 6 ▪ Extent and type of habitat use by woodland and forest-associated covered and
7 other native wildlife species

8 **Valley Oak Woodland**

- 9 ▪ Extent and composition of invasive grassland species
- 10 ▪ Extent of herbivory on oak tree seedlings/saplings
- 11 ▪ Density of oak tree seedlings/saplings
- 12 ▪ Density and composition of shrubs
- 13 ▪ Small mammal abundance
- 14 ▪ Extent and type of habitat use by valley oak woodland-associated covered and
15 other native wildlife species

16 **Valley/Foothill Riparian**

- 17 ▪ Percent overstory vegetation cover, canopy height, and composition
- 18 ▪ Percent midstory vegetation cover and composition
- 19 ▪ Percent understory vegetation cover and composition
- 20 ▪ Density of elderberry shrubs
- 21 ▪ Density of native woody riparian plant seedlings/saplings
- 22 ▪ Extent and type of habitat use by riparian-associated covered and other native
23 wildlife species

24 **Alkali Sink Wetland**

- 25 ▪ Percent cover of native alkali sink wetland plant species
- 26 ▪ Density of covered alkali sink wetland plant species

27 **Vernal Pool Complex**

- 28 ▪ Extent of wetted area and swales
- 29 ▪ Vernal pool inundation depth, duration, and extent

- 1 ▪ Abundance of covered vernal pool shrimp and plant species
- 2 ▪ Extent and type of habitat use by vernal pool associated covered and other
- 3 native wildlife species
- 4 ▪ Water chemistry
- 5 ▪ Vegetation cover and composition adjacent to and within the immediate
- 6 watershed of the restored/created vernal pools

7 **Fresh Emergent Wetland**

- 8 ▪ Site hydrology (e.g., duration, season, and extent of surface ponding)
- 9 ▪ Percent emergent vegetation cover, patchiness, and composition
- 10 ▪ Percent open water habitat area
- 11 ▪ Extent and type of habitat use by marsh-associated covered and other wildlife
- 12 species

13 The effects of enhancement and management actions will be measured as the extent of change in
14 specified environmental variables for each type of enhancement/management action relative to
15 baseline conditions (i.e., pre-action) for each variable.

16 The intensity of monitoring required is expected to change over the term of Yolo NHP
17 implementation for the reasons described above for monitoring of restored/created habitats.
18 Monitoring results will be analyzed to evaluate the effectiveness of habitat
19 enhancement/management actions in achieving site-specific objectives and to provide the
20 Implementing Entity with information necessary to make project-level adaptive management
21 adjustments in the implementation of subsequent habitat enhancement and management actions.

22 **5.8.4.3 Assessing Progress towards Achieving Biological Objectives**

23 The biological objectives presented in Section 5.3, *Biological Goals and Objectives*, are
24 developed to be measurable using one or more metrics. Periodic evaluation of the progress of
25 implementing the conservation measures towards achieving the biological goals and objectives
26 provides information necessary for determining if the conservation measures need to be adjusted
27 to improve attainment of the objectives, or if the objectives require modification based on new
28 information that becomes available following Yolo NHP approvals (e.g., development of
29 information that was not available at the time the Conservation Strategy was developed that
30 indicates an original biological objective is likely unattainable or environmental conditions
31 within the Plan Area have altered beyond changes anticipated by the Conservation Strategy [e.g.,
32 effects of climate change exceed those assumed during formation of the Conservation Strategy]).
33 Within 2 years of Yolo NHP approvals, the Implementing Entity will identify and adopt metrics
34 and monitoring methods necessary to measure progress towards achieving the biological goals
35 and objectives. Monitoring metrics that will be considered by the Implementing Entity for each
36 of the Yolo NHP biological objectives are provided in Table 5.2.

5.8.5 System Monitoring and Requirements

System monitoring is intended to complement effectiveness monitoring by helping determine causality when examining a biological response, or lack thereof, to a conservation measure. It is also designed to provide a means to assess biological changes above and beyond those related to individual conservation measures. Information within the scope of system monitoring includes the overall status, distribution, and trends related to selected covered species populations and the status of the natural communities, including the ecological functions they provide for covered and other native species over the term of the Yolo NHP. Results of system monitoring will help the Implementing Entity to determine whether an observed response to a conservation action can be attributed to the implementation of the Yolo NHP or if the lack of response indicates failure of that particular conservation measure. System monitoring will be important in particular for covered wildlife species that are migratory, nomadic, or otherwise highly mobile. For these species, factors external to the Plan Area can readily obscure the type and extent of response to the implementation of the conservation measures. For example, it may be that a conservation measure intended to restore habitat for a covered species is not followed by use of that habitat by the species. The apparent lack of response, however, may be due to a population decline of the covered species caused by reduced production or increased mortality outside the Plan Area. Thus, system monitoring is important to provide context for interpretation of results of effectiveness monitoring and other monitoring and research. It also provides the Implementing Entity with information necessary to make implementation adjustments through the adaptive management process in advance of large-scale changes in the ecological conditions of the Plan Area that appear forthcoming.

5.8.5.1 Status of Natural Communities within the Plan Area

The Implementing Entity will delineate and determine the distribution and extent of each natural community within the Plan Area at least every █ years over the term of the Yolo NHP. It is anticipated that the delineations will be performed using aerial imagery taken at each analysis point for this purpose. Natural community mapping results will be used by the Implementing Entity to identify changes in the extent and distribution of natural communities and associated covered species habitats within the Plan Area over time. This information will be used by the Implementing Entity to determine if there is a need to adjust implementation to better address the conservation needs of covered and other native species if substantial and unanticipated changes in the distribution and extent of natural communities and covered species habitats are detected within the Plan Area.

5.8.5.2 Status of Covered Species within the Plan Area

The Implementing Entity will assess the status, distribution, and trends of covered species within the Plan Area at least every █ years over the term of the Yolo NHP. This assessment will be conducted based on reviews of all previous Yolo NHP monitoring results and results of relevant monitoring and research conducted by others (e.g., USFWS and DFG survey results and status and trends assessments). System monitoring for covered species will provide the Implementing Entity with information to help track long-term changes in environmental conditions attributable to any of a number of factors (e.g., covered activities, climate change, and activities of others) that may affect the status of covered species within the Plan Area. As part of system monitoring,

1 the Implementing Entity will also review relevant scientific data regarding the regional status of
2 covered species whose range and life stage distribution extends beyond the Plan Area as it
3 becomes available. This information will help inform the need for making adjustments to Yolo
4 NHP implementation through the adaptive management process (see Section 5.9, *Adaptive*
5 *Management Plan*). For birds in particular, the Breeding Bird Survey (BBS) and Christmas Bird
6 Count (CBC) programs, in addition to raptor counts along migration routes, provide readily
7 available, continuously updated data on the global and regional status of species.

8 **5.8.5.3 Status of Covered Species on Conservation Lands**

9 In addition to monitoring to assess the response of covered species to habitat restoration/creation,
10 enhancement, and management actions, the Implementing Entity will implement periodic
11 standardized surveys to determine the abundance and use of habitats on Yolo NHP conservation
12 lands over the term of the Yolo NHP. The purpose of this monitoring is to provide the
13 Implementing Entity with information necessary to detect unanticipated and undesirable changes
14 in the distribution and abundance of covered species that may warrant adjustments in Yolo NHP
15 implementation to better conserve the covered species. Monitoring requirements for periodically
16 assessing the status of covered species on conservation lands will be developed by the
17 Implementing Entity within █ years of Yolo NHP approvals. Monitoring approaches that will
18 be considered by the Implementing Entity of each of the covered species are presented in Table
19 5.3.

20 **5.8.5.4 Non-Agricultural Conservation Lands**

21 The Implementing Entity will conduct periodic ecological assessments of environmental
22 conditions present on Yolo NHP non-agricultural conservation lands at least every █ years over
23 the term of the Yolo NHP. The Implementing Entity will develop procedures for conducting
24 these assessments within █ years of Yolo NHP approvals. This assessment will be conducted
25 using the aerial imagery acquired for monitoring natural communities throughout the Plan Area
26 (see Section 5.8.5.1, *Status of Natural Communities within the Plan Area*) in combination with
27 conservation parcel-specific surveys. The frequency of assessments may be adjusted if
28 warranted by overall conditions within the Plan Area. For example, monitoring frequency may
29 be intensified if there has been a major environmental event (e.g., large fires) that has
30 substantially altered site conditions. The Implementing Entity will develop a Plan-wide
31 monitoring plan for this purpose to provide, but not be limited to, the following types of
32 information:

- 33 ▪ Delineation of the extent and distribution of vegetation types within each conservation
34 parcel;
- 35 ▪ An assessment of habitat conditions within the conservation parcel (e.g., vegetation
36 composition, cover, and structure); and
- 37 ▪ An assessment of potential threats to the extent and functions of covered species habitats
38 (e.g., adjacent land uses).

39 This monitoring may be satisfied through monitoring conducted to assess the effectiveness of
40 habitat restoration/creation, enhancement, and management actions for preserved lands on which

1 that monitoring is being conducted. Monitoring results will be evaluated to determine changes in
2 habitat conditions from baseline conditions established at the time that each conservation parcel
3 was acquired and any subsequent monitoring results. Results of this evaluation will be used by
4 the Implementing Entity to determine the need for implementation of subsequent habitat
5 enhancement or management actions to improve the habitat functions of the parcel for covered
6 and other native species through the project-level adaptive management process.

7 **5.8.4.5 Agricultural Conservation Lands**

8 The Implementing Entity will annually monitor the extent and distribution of agricultural crop
9 types within the Plan Area. Results of this monitoring will be used to determine if agricultural
10 habitat type objectives are being achieved each monitoring year and to estimate the likelihood that
11 the objectives will be achieved in the following █ years. Monitoring results will be assessed to
12 determine if the Implementing Entity will need to implement actions described in Conservation
13 Measure ~~XX~~ to ensure objectives are achieved in subsequent years. Monitoring tools will include
14 relevant information currently collected by the Yolo County Agricultural Commissioner and other
15 agencies; information regarding trends in agricultural practices from the agricultural community;
16 relevant reports by local, state, and federal agencies regarding trends in agricultural production and
17 practices; delineation of cropping patterns from aerial imagery and field reconnaissance surveys;
18 and application of the agricultural forecasting model (see Section 5.2.3, *Agricultural Forecasting*
19 *Model*) and other relevant predictive tools that may become available over the term of the Yolo
20 NHP.

21 **5.8.6 Development of Monitoring Plans**

22 The Implementing Entity will prepare detailed monitoring plans for implementing effectiveness
23 and system monitoring. These monitoring plans will be developed prior to implementation of
24 the applicable conservation measures. The plans will include monitoring and survey protocols.
25 In most instances, existing and generally accepted monitoring protocols (e.g., USFWS survey
26 protocols for listed species) will be adopted by the Implementing Entity, as appropriate. In some
27 cases, however, the Implementing Entity will need to develop specific monitoring protocols to
28 assess the effectiveness of conservation measures.

29 The contents of each specific monitoring plan may vary depending on its purpose. The
30 monitoring plans, however, will generally include the following types of information:

- 31 ▪ description of the purpose and objectives of the monitoring (e.g., assessing progress
32 towards achieving a biological objective);
- 33 ▪ description of monitoring protocols, including sampling design and justification
34 supporting the validity of monitoring methods and sampling design;
- 35 ▪ analytical methods for assessing monitoring results;
- 36 ▪ procedures for validating monitoring data and methods;
- 37 ▪ monitoring schedule, duration, and rationale;
- 38 ▪ content requirements and submission schedule for monitoring reports;

- 1 ▪ monitoring data storage procedures;
- 2 ▪ analytical methods for the assessment data and presentation of results
- 3 ▪ references, including printed references and personal communications;
- 4 ▪ provisions for documenting subsequent revisions to the monitoring plan; and
- 5 ▪ other information pertinent to specific monitoring plans.

6 Because monitoring results are a primary source of information to allow for adaptations to Yolo
7 NHP implementation to occur over time and to measure progress toward achieving the Yolo
8 NHP biological goals and objectives, monitoring plans must be based on the best available
9 information and subject to rigorous standards, including statistically sound sampling designs. To
10 ensure defensibility of the Yolo NHP monitoring plans, protocols, and sampling designs, the
11 Implementing Entity will provide for internal science-based review of these monitoring elements
12 as a routine matter; and it will provide for external science review as necessary and appropriate
13 (see Section 5.9, *Adaptive Management Plan*).

14 **5.8.7 Development of Construction Monitoring Plans**

15 The Implementing Entity will develop construction monitoring plans for habitat
16 restoration/creation projects prior to initiating restoration/creation projects. Construction
17 monitoring plans will be developed based on results of preconstruction surveys of each project
18 site. The contents of each specific construction monitoring plan will vary, depending on the
19 avoidance and minimization measures applicable to the specific project. Construction
20 monitoring plans, however, will generally include the following types of information:

- 21 ▪ A description of the project-specific avoidance and minimization measures;
- 22 ▪ A construction schedule indicating which avoidance and minimization measures are
23 applicable to each habitat restoration/creation activity;
- 24 ▪ A description of the process that will be used to notify the Implementing Entity if
25 avoidance and minimization measures cannot be or are not implemented as intended by
26 the restoration contractor; and
- 27 ▪ A description of the process for documenting the implementation avoidance and
28 minimization measures.

29 The Implementing Entity will also coordinate with the Permit Applicants to develop construction
30 monitoring plan requirements for implementation of each entities' covered activities.

31 **5.8.8 Analysis of Monitoring Data**

32 The Implementing Entity will ensure quality control of all monitoring data and will adopt
33 procedures to maintain the highest standards of quality. Steps will be instituted to maintain the
34 accuracy and functionality of any installed monitoring devices, and protocols will be established
35 to govern the collection, transcription, and storage of data. All monitoring data will be entered
36 into database software (see Section 5.8.10, *Database Development and Maintenance*) and will be
37 made readily available online once quality control analyses have been conducted.

1 The Implementing Entity will document all standardized analytical procedures and update
2 procedures as necessary. Results of the analysis of monitoring data will feed back into the Yolo
3 NHP adaptive management process to modify and refine conservation measures to maximize
4 benefits to covered species and natural communities.

5 **5.8.9 Research and Directed Studies**

6 The Implementing Entity may undertake or contract focused research to develop information
7 necessary to better inform Yolo NHP implementation. The types of research that may be
8 conducted include those related to resolving Yolo NHP-specific uncertainties such as:

- 9 ▪ technologies and methods for effectively implementing conservation measures;
- 10 ▪ the ecological requirements of covered species as they relate to effective implementation
11 of conservation measures; and
- 12 ▪ the likely response of covered species to conservation measures.

13 Results of research would also be used to help direct and prioritize subsequent implementation of
14 conservation measures. Because Yolo NHP natural communities and covered species are also
15 being addressed through adjoining regional HCPs and NCCPs, the Implementing Entity will
16 coordinate research activities and enter into cost share agreements, as appropriate, with these
17 adjoining HCP and NCCP entities to resolve uncertainties shared with those plans. It is also
18 anticipated that the Implementing Entity will also enter into cooperative partnerships with U.C.
19 Davis, other educational institutions, environmental non-profit organizations, and other
20 appropriate entities to cost effectively implement research and other studies that will provide
21 information that will further inform effective Yolo NHP implementation.

22 Potential research needs identified in the course of Yolo NHP development include conducting
23 research necessary to: *[Text to come.]*

24 Additional research needs are expected to be identified by the Implementing Entity over the term
25 of the Yolo NHP.

26 **5.8.10 Database Development and Maintenance**

27 The Implementing Entity will develop and maintain a comprehensive spatially-linked database to
28 track implementation of all aspects of the Yolo NHP. The database would be structured to be
29 “user friendly” and to allow for future expansion and integration with external databases if
30 desired (e.g., linkage to Fish and Wildlife Agency databases). The database would be structured
31 to support the following services:

- 32 • data documentation such that future users can determine why, how, and where data were
33 collected (i.e., metadata);
- 34 • quality assurance and control of the data and data entry;
- 35 • access and use the most current information for analysis and decision making; and
- 36 • evaluation of data by all users, as appropriate, and incorporation of corrections and
37 improvements in the data.

1 Major types of information expected to be maintained within the database include:

- 2 • monitoring, research, and adaptive management experiment data and results;
- 3 • Yolo NHP funding and expenditures;
- 4 • status of covered activities, including implementation and impacts;
- 5 • implementation status of conservation measures;
- 6 • implementation status of research and adaptive management experiments;
- 7 • adopted changes to Yolo NHP implementation through the adaptive management process;
- 8 and
- 9 • all reports and documents generated by the Implementing Entity and relevant data and
- 10 reports generated by other entities.

11 The Implementing Entity may choose to develop a web-linked database to facilitate controlled
12 transference of information into and out of the database by other entities. If the Yolo NHP
13 Implementing Entity chooses to allow access to the database by others, the database will
14 incorporate strict controls and monitoring to ensure the integrity of the database is maintained.

15 **5.8.11 Monitoring and Research Schedule**

16 The general schedule for implementing monitoring is presented in Table 5.4 [*to come*].
17 Following permitting of the Yolo NHP, the Implementing Entity will develop detailed
18 monitoring schedules for compliance, effectiveness, and system monitoring. In addition, site-
19 specific monitoring schedules will be developed for each conservation parcel as they are
20 acquired.

21 **5.7.12 Reporting**

22 The Implementing Entity will prepare annual implementation reports that describe survey,
23 monitoring, research, and adaptive management experiment activities and results over the term
24 of the Yolo NHP as described in Chapter 6, *Plan Implementation*. Annual implementation
25 reports will summarize the previous calendar year's activities and results and will be completed
26 within an established time frame the following year. Reports will be submitted to the Yolo NHP
27 Permitting Agencies and Permit Applicants. The process for distributing implementation reports
28 is described in Chapter 7, *Implementation Structure*. The Implementing Entity may also
29 distribute reports as appropriate to other cooperating entities and entities engaged in ecosystem
30 management and research that could benefit from sharing information. The Implementing Entity
31 will use results of compliance, effectiveness, and system monitoring, and adaptive management
32 actions to assess Yolo NHP progress towards achieving the biological goals and objectives and
33 to inform adaptive management decision making over the term of the Yolo NHP.

34 Annual implementation reports, as appropriate to Yolo NHP activities undertaken during the
35 reporting year, should include descriptions of:

- 36 ▪ implemented covered activities;
- 37 ▪ implemented conservation measures;

- 1 ▪ extent of incidental take;
- 2 ▪ implemented avoidance, minimization, and mitigation measures to address impacts of
- 3 covered activities and conservation measures on covered species and natural
- 4 communities;
- 5 ▪ compliance monitoring activities, monitoring results, and a description of implemented
- 6 remedial actions, if any;
- 7 ▪ effectiveness monitoring activities and monitoring results;
- 8 ▪ system monitoring activities and monitoring results; -
- 9 ▪ research activities and results; and
- 10 ▪ financial statements.

11 Implementation reports will also include year-to-date summaries of the extent to which
12 conservation measures have been implemented and impacts of covered activities and
13 conservation measures on covered species and natural communities.

1 **Table 5.1 Example Effectiveness Monitoring for Conservation Measures** [Table text to come following revision of draft conservation
2 *measures.*]

Example Monitoring Metric	Example Monitoring Approach
<i>Conservation Measure XX.</i>	

3

4 **Table 5.2 Example Effectiveness Monitoring for Biological Goals and Objectives**

Example Monitoring Metric	Example Monitoring Approach
<i>Goal LAND1: Protect, enhance, and restore large landscapes within the range of physical and biological attributes in the Plan Area to sustain covered species abundance and habitat and preserve native biodiversity.</i>	
Objective LAND1.1: Protect █ acres of natural communities that support covered species habitats in the Hill and Ridge Landscape Unit.	
Objective LAND1.2: Protect █ acres of natural communities that support covered species habitats in the Valley Landscape Unit.	
Objective LAND1.3: Restore █ acres of natural communities in the Hill and Ridge Landscape Unit that support habitat for the covered species.	
Objective LAND1.4: Restore █ acres of natural communities in the Valley Landscape Unit that support habitat for the covered species.	
Metric: Acres of natural communities protected	Documentation of the location of each natural community protected under the Yolo NHP.
<i>Goal LAND2: Protect environmental gradients (e.g., slope, elevation, soils) across a diversity of natural communities.</i>	
Metric: Diversity of conditions protected within each natural community	Documentation of site conditions present among each protected natural community relative to the range of conditions present within the natural community in the Plan Area.
<i>Goal LAND3: Maintain and improve connectivity among protected lands to provide for the movement of covered and other native species among habitat areas, thereby facilitating genetic exchange among populations.</i>	
Objective LAND3.1: Protect large contiguous patches of grassland, shrubland and scrub, woodland and forest, and riparian and wetland natural communities to establish an interconnected system of conserved lands that link the seven planning units within the Hill and Ridge Landscape Unit.	
Objective LAND3.2: Protect and restore or create riparian, wetland, and adjacent upland communities to establish a contiguous corridor of habitat along the length of Cache Creek.	
Objective LAND3.3: Protect and restore or create riparian, wetland, and adjacent upland communities to establish a contiguous corridor of habitat along the length of Putah Creek.	

Objective LAND3.4: Protect natural communities to maintain existing corridors of riparian, wetland, and adjacent upland communities along stream courses in the Hill and Ridge Landscape Unit.	
Objective LAND3.5: Protect natural communities to maintain existing corridors of riparian, wetland, and adjacent upland communities in the Valley Landscape Unit.	
Metric: Connectivity among protected habitat areas	Evaluation of connectivity among Yolo NHP protected natural communities relative to existing conditions for each objective.
<i>Goal LAND4: Maintain biologically important agricultural mosaics in the Valley Landscape Unit that incorporate valley floor natural communities and other habitat elements that support habitat or essential resources for covered and other native species.</i>	
Objective LAND4.1: Maintain a mix of agricultural crop types within the Plan Area in the quantities indicated in Table 5.X to support and provide for the long-term conservation of associated covered and other species.	
Metric: Distribution crop types	Annually monitor distribution and extent of crop types based on agricultural cropping data collected by governmental agencies; delineated from aerial imagery; and field reconnaissance surveys.
Metric: Quantity of crop types	
Objective LAND4.2: Protect █ acres of natural communities within the Valley Landscape Unit that support the life history requirements of covered species that use both agricultural and natural habitats.	
Metric: Acres of protected natural communities that support habitat for covered species that use agricultural and natural habitats.	Documentation of the location of each natural community protected under the Yolo NHP.
Objective LAND4.3: Restore █ acres of natural communities within the Valley Landscape Unit that support the life history requirements of covered species that use both agricultural and natural habitats.	
Metric: Acres of restored natural communities that support habitat for covered species that use agricultural and natural habitats.	Documentation of the location of each natural community restored under the Yolo NHP.
[Remaining Goals and Objectives to be added.]	

1 **Table 5.3. Proposed Monitoring Covered Species Monitoring for Yolo NHP Conservation Lands**

Covered Species	Proposed Monitoring ¹
<p>Vernal pool and alkali sink wetland species (<i>Alkali milk-vetch</i>, <i>brittlescale</i>, <i>San Joaquin spearscale</i>, <i>palmate-bracted bird's-beak</i>, <i>Heckard's peppergrass</i>, <i>Baker's navarretia</i>, <i>Colusa grass</i>, <i>Solano grass</i>, <i>Conservancy shrimp</i>, <i>vernal pool fairy shrimp</i>, <i>Midvalley fairy shrimp</i>, <i>California linderiella</i>, <i>vernal pool tadpole shrimp</i>, <i>California tiger salamander</i>, <i>western spadefoot toad</i>)</p>	<ul style="list-style-type: none"> ▪ Monitor the presence/absence of vernal pool shrimp species during the first wet year following vernal pool acquisition; if expected shrimp species are present, monitor for their presence/absence every 5 years thereafter over the term of the Yolo NHP; if expected shrimp species are not present, monitor during at least 2 subsequent wet years to confirm presence/absence. ▪ Monitor the presence/absence of vernal pool plant species and, if present, the estimated abundance of individual plants, during the first wet year following vernal pool acquisition; if expected plant species are present, monitor for their presence/absence and estimated abundance every 5 years thereafter over the term of the Yolo NHP; if expected plant species are not present, monitor during at least 2 subsequent wet years to confirm presence/absence and estimated abundance. ▪ Monitor for the presence/absence of western spadefoot toad eggs in suitable breeding vernal pool habitats during the first wet year following vernal pool acquisition; if toad eggs are located, monitor for the production of juveniles that emerge from the pool and monitor for their presence/absence every 5 years thereafter over the term of the Yolo NHP; if toad eggs are not located, monitor during at least 2 subsequent wet years to confirm presence/absence.
<p>Valley elderberry longhorn beetle</p>	<ul style="list-style-type: none"> ▪ Documentation of presence of elderberry host shrubs in riparian habitats through implementation of natural community surveys described in Section 5.8.5.4, <i>Non-Agricultural Conservation Lands</i>.
<p>California red-legged frog, foothill yellow-legged frog</p>	<ul style="list-style-type: none"> ▪ Reconnaissance-level surveys of habitat to document occurrence and habitat conditions at least every 5 years following completion of baseline surveys for each conservation parcel.
<p>Northwestern pond turtle</p>	<ul style="list-style-type: none"> ▪ Reconnaissance-level surveys of habitat to document occurrence and habitat conditions at least every 5 years following completion of baseline surveys for each conservation parcel.
<p>Giant garter snake</p>	<ul style="list-style-type: none"> ▪ Protocol-level surveys of habitat for at least 2 years following acquisition of each conservation parcel. ▪ Protocol-level surveys of habitat at least every 5 years following completion of initial 2 year survey period
<p>White-tailed kite, northern harrier, Swainson's hawk, black tern, western yellow-billed cuckoo, western burrowing owl,</p>	<ul style="list-style-type: none"> ▪ Protocol-level surveys of habitat at least every 5 years following completion of baseline surveys for each conservation parcel to document occurrence of nesting and nesting success ▪ Annual surveys in parcels where nesting or breeding behavior has been detected in previous surveys for at least 2 years following detection and subsequent monitoring at intervals to be determined by the Implementing Entity
<p>Least Bell's vireo, yellow-breasted chat</p>	<ul style="list-style-type: none"> ▪ Protocol-level surveys of habitat at least every 5 years following completion of baseline surveys for each conservation parcel to document occurrence of nesting and abundance of breeding pairs.

Covered Species	Proposed Monitoring ¹
	<ul style="list-style-type: none"> ▪ Annual surveys in conservation parcels where nesting or breeding behavior has been detected in previous surveys for at least 2 years following detection and subsequent monitoring at intervals to be determined by the Implementing Entity.
Loggerhead shrike, grasshopper sparrow	<ul style="list-style-type: none"> ▪ Reconnaissance-level surveys of habitat to document occurrence and nesting at least every 5 years following completion of baseline surveys for each conservation parcel.
Bank swallow	<ul style="list-style-type: none"> ▪ Reconnaissance-level surveys of suitable nesting substrate to document occurrence and nesting at least every 5 years following completion of baseline surveys for each conservation parcel. ▪ Review of annual DFG monitoring results for the Plan Area to determine distribution and size of nesting colonies
Purple martin	<ul style="list-style-type: none"> ▪ Annual surveys of artificial purple martin nest boxes for at least 5 years unless occupancy has been confirmed for at least 2 consecutive years. ▪ Monitor previously identified occupied nest boxes at intervals to be determined by the Implementing Entity. ▪ Monitor any newly discovered nest sites for 2 consecutive years and at subsequent intervals to be determined by the Implementing Entity.
Tricolored blackbird	<ul style="list-style-type: none"> ▪ Annual reconnaissance-level surveys of protected nesting habitats to locate nesting colonies ▪ Annual surveys of active nesting colonies to estimate colony size and nesting success
Townsend’s big-eared bat	<ul style="list-style-type: none"> ▪ Monitor roost sites detected during baseline surveys for a period of at least 2 years and at subsequent intervals to be determined by the Implementing Entity.
<p>¹Based on monitoring results, the Implementing Entity may conduct additional monitoring beyond what is indicated in this table that may be necessary to improve its understanding of monitoring results.</p>	