Special-Status Plant Species Surveys for the Decommissioning of the Kilarc-Cow Creek Hydroelectric Project, FERC Project No. 606

PREPARED FOR: Pacific Gas and Electric Company under contract to CH2M Hill

PREPARED BY: North State Resources, Inc.

DATE: May 23, 2008

This technical memorandum provides the results of botanical surveys performed for special-status plant species by North State Resources, Inc. (NSR) in support of Pacific Gas and Electric Company's (PG&E's) planned decommissioning of the Cow Creek portion of Kilarc-Cow Creek, FERC Project No. 606. The botanical surveys were performed to determine the presence or absence of special-status plant species. Botanical surveys planned for the Kilarc portion of the Kilarc-Cow Creek project were not performed because of access issues.

This memorandum is organized as follows:

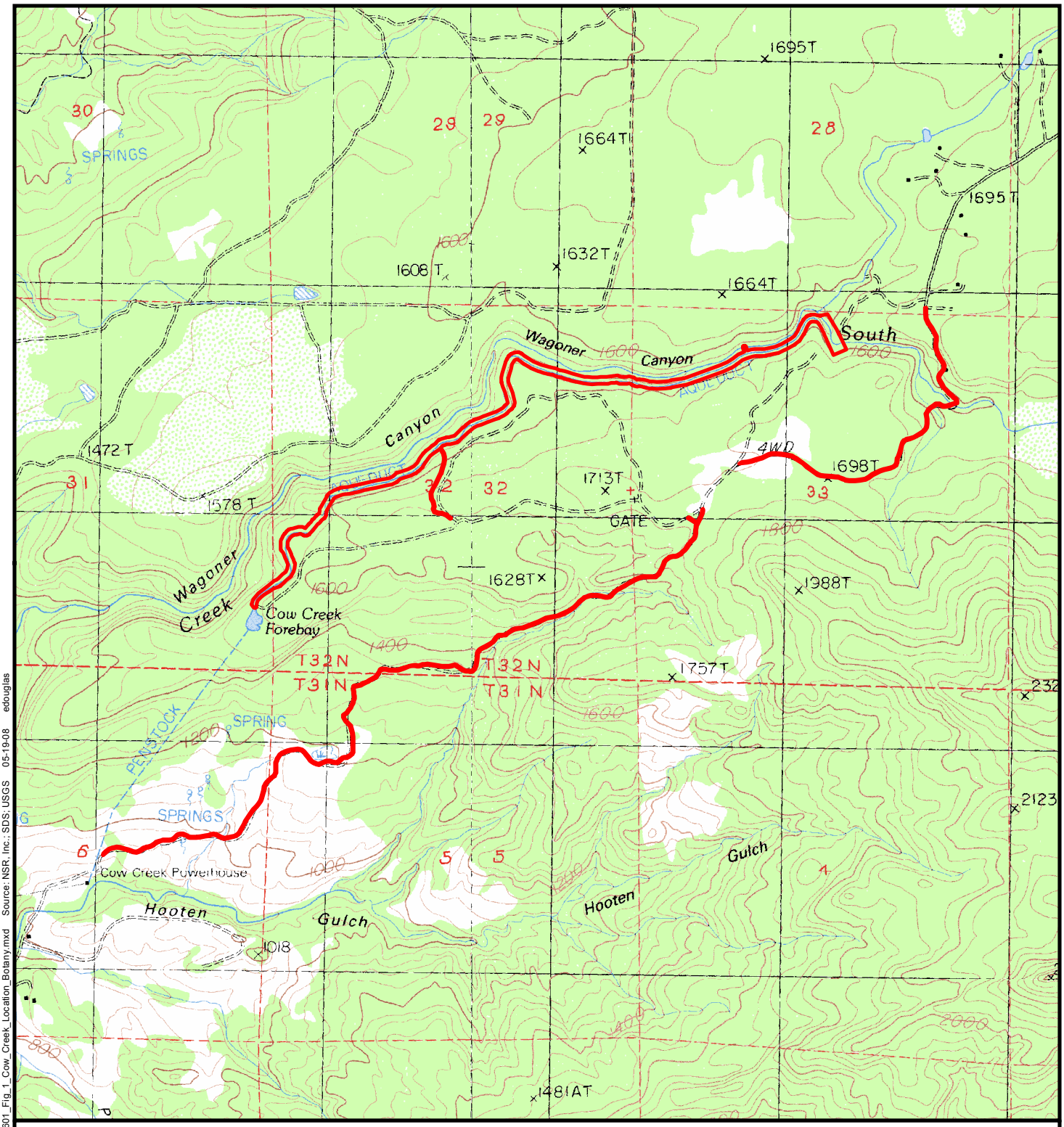
- Introduction
- Background
- Methods
- Results and Discussion
- References

Introduction

NSR prepared this Draft Technical Memorandum to supplement the previously prepared biological resources report (ENTRIX 2007). This technical memorandum presents the results of botanical data collected during field surveys at the Cow Creek development in April 2008. Botanical data presented herein will be used to assist PG&E in determining potential impacts to the environment associated with future decommissioning activities.

Background

Upon PG&E's approval of NSR's Botanical Survey Plan, NSR conducted botanical surveys for the planned decommissioning of the Cow Creek portion of Kilarc-Cow Creek, FERC Project No. 606. This task consisted of performing one-visit botanical surveys on the Cow Creek development located in central southern Shasta County, California. Specifically, NSR conducted botanical surveys on the main canal within the FERC project boundary and four existing roads outside the FERC project boundary at the Cow Creek development on April 18 and April 22, 2008 (see Figure 1).



Study Area

Public Land Survey:
Township: 32N Range: 1W Section: 28
Township: 32N Range: 1W Sections: 31, 32 & 33
Township: 31N Range: 1W Section: 5 & 6
Meridian: MDB&M

USGS 7.5 Minute Quad:
Clough Gulch - 1985
Inwood - 1985

N

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Feet

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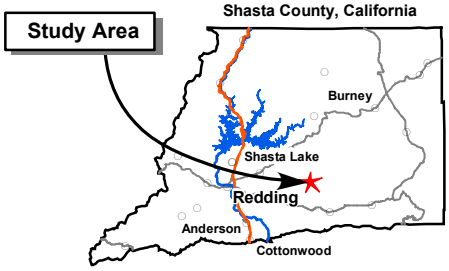

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North State Resources, Inc.

Kilarc-Cow Creek Hydroelectric Project
Decommissioning FERC Project No. 606

Figure 1
Study Area and Vicinity

Methods

Pre-Survey Reconnaissance

A pre-survey field reconnaissance was conducted on April 1, 2008. The locations of access roads, locked gates, and private properties were noted. It was determined that the roads required to access parts of the study area were accessible with PG&E gate keys. Gate access reduced the amount of foot travel required to perform the botanical surveys.

Pre-Survey Planning

For the purposes of this project, special-status plant species are defined as vascular plants that are: (1) designated as rare by the state or federal governments; (2) listed as threatened or endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (i.e., listed species); (3) proposed for listing as threatened or endangered under the ESA; and/or (4) candidates for listing as threatened or endangered under the ESA. Other special-status plants are those included on the California Native Plant Society's (CNPS's) List 1A, 1B, 2, 3 or 4.

A target list of special-status plants developed by ENTRIX in 2007 was used by all surveyors in the field; the target list is provided as Exhibit A. Through project planning meetings with CH2M Hill, ENTRIX, and PG&E, NSR understood that the primary focal species was Butte County fritillary (*Fritillaria eastwoodiae*) at the Cow Creek development. However, NSR also understood that other special-status plant taxa not currently known to occur in the project vicinity could be present in the form of a disjunct population, range extension, or simply a new occurrence for the region. Therefore, botanists with expertise in the special-status plants and their habitats that could occur in the region were used to perform the surveys.

Prior to the botanical surveys, an NSR botanist queried the California Natural Diversity Database (CNDDB) for records of special-status plants known to occur in the *Inwood, California*, *Miller Mountain, California*, and surrounding U.S. Geological Survey (USGS) quadrangles (California Department of Fish and Game 2003). The CNDDB is a database consisting of reported observations of special-status plant species, wildlife species, and special plant communities. Consequently, it is limited to reported sightings and is not a comprehensive list of special-status plant species that could occur in a particular area. The query results are presented in Exhibit B.

NSR also performed a search of the CNPS Electronic Inventory, which allows users to query the Inventory of Rare and Endangered Vascular Plants of California using a specified set of search criteria (California Native Plant Society 2008). For this project, a query was performed for all known special-status plant occurrences in the *Inwood, California*, *Miller Mountain, California*, and surrounding USGS quadrangles. The search results are presented in Exhibit B.

The target list developed by ENTRIX and the results of the CNDDB and CNPS queries were combined to formulate a more robust list of special-status plant species with a potential to occur in the Cow Creek development study area. Special-status plant taxa with known occurrences within the two quadrangles that include the Kilarc-Cow Creek Hydroelectric Project and surrounding quadrangles at elevations greater than 1,000 feet above the highest elevation at the Kilarc development were excluded from the list.

NSR generated field maps that were used by all surveyors in the field. The field maps were generated using the project boundary shapefiles provided by PG&E's project team. Digital color aerial imagery and a contour data layer were acquired from the National Agriculture Imagery Program and USGS, respectively. The field maps were used to aid surveyors in navigating to and within the Cow Creek development.

Field Surveys

NSR coordinated scheduling for the field surveys with CH2M Hill staff at least five business days in advance of planned survey activities; the scheduling included completion and submittal of the Power Generation Field Work Notification form to CH2M Hill. NSR botanists notified the PG&E Pit 3 switching center daily upon entry to and exit from the project area by cell phone. Tailboard meetings were held each morning prior to initiating field surveys, at which time items identified in the pre-task safety plan [PTSP (see Exhibit C)] were discussed. The PTSP was signed by all surveyors at the end of each tailboard meeting and faxed to CH2M Hill at the end of each day. A job hazard analysis (JHA) was also submitted to CH2M Hill to ensure the safety of the team completing the botanical surveys (see Exhibit C).

NSR botanists Ms. Merissa Hanisko and Mr. Chris Riddle conducted one-visit botanical surveys to document all vascular plant taxa encountered within the project area described above. The surveys were floristic and included documentation of all vascular plant taxa encountered. Taxonomic nomenclature was applied to vascular plants in accordance with *The Jepson Manual* (Hickman 1993). Survey methodology employed was in general accordance with the specifications presented in *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (California Department of Fish and Game 2000).

The botanical surveys were limited to the South Cow Creek Canal (i.e., the main canal at the Cow Creek development) within the FERC project boundary, as shown on Preliminary Field Maps C-1 through C-3 dated March 20, 2008, and the footprint established for new access roads at the Cow Creek development.

Botanical field data collected during the survey included a comprehensive list of all vascular plant species detected and a description of each special-status plant occurrence. For the special-status plant occurrences, the following data were also recorded: date of visit; visit number; surveyor's name; occurrence identifier; associated species and plant community; soil type; disturbance type (if present) and historic/recent determination; estimate of individuals; size in square feet or acres; and phenological stage(s). The location of each special-status plant occurrence was recorded in the form of UTM coordinates with the use of a Garmin GPS unit.

Results and Discussion

Table 1 presents NSR's target list of special-status plant species with potential to occur at the Cow Creek development. Table D-1 presents a list of all vascular plant species detected in the Cow Creek development study area (see Exhibit D).

Table 1. Special-Status Plant Species With Potential to Occur in the Kilarc-Cow Creek Hydroelectric Project Area

Common Name *Scientific Name*	Status FED/ST/CNPS	General Habitat	Identification Period
Henderson's bent grass *Agrostis hendersonii*	—/—/3.2	Valley and foothill grassland (mesic), vernal pools; elevation 70-305 meters	April-May

Table 1. Special-Status Plant Species With Potential to Occur in the Kilarc-Cow Creek Hydroelectric Project Area

Common Name *Scientific Name*	Status FED/ST/CNPS	General Habitat	Identification Period
Scalloped moonwort *Botrychium crenulatum*	—/—/2.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps (freshwater); elevation 1268-3280 meters	June-July
Rattlesnake fern *Botrychium virginianum*	—/—/2.2	Bogs and fens, lower montane coniferous forest (mesic), meadows and seeps, riparian forest/streams; elevation 728-1300 meters	June-September
Long-haired star-tulip *Calochortus longebarbatus* var. *longebarbatus*	—/—/1B.2	Great Basin scrub, lower montane coniferous forest (openings and drainages), meadows and seeps, vernal pools/clay, mesic; elevation 1005-1900 meters	June-August
Callahan's mariposa lily *Calochortus syntrophus*	—/—/3.1	Cismontane woodland, lower montane coniferous forest, valley and foothill grassland (vernally mesic); elevation 525-886 meters	May-June
Butte County morning-glory *Calystegia atriplicifolia* ssp. *buttensis*	—/—/1B.2	Chaparral, lower montane coniferous forest/rocky, sometimes roadside; elevation 600-1524 meters	May-July
Fox sedge *Carex vulpinoidea*	—/—/2.2	Marshes and swamps (freshwater), riparian woodland; elevation 30-1200 meters	May-June

Table 1. Special-Status Plant Species With Potential to Occur in the Kilarc-Cow Creek Hydroelectric Project Area

Common Name *Scientific Name*	Status FED/ST/CNPS	General Habitat	Identification Period
Shasta clarkia *Clarkia borealis* ssp. *arida*	—/—/1B.1	Cismontane woodland, lower montane coniferous forest (openings); elevation 490-595 meters	June-August
Northern clarkia *Clarkia borealis* ssp. *borealis*	—/—/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest; elevation 400-1340 meters	June-September
Silky cryptantha *Cryptantha crinita*	—/—/1B.2	Cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, valley and foothill grassland/ gravelly streambeds; elevation 61-1215 meters	April-May
Mountain lady's-slipper *Cypripedium montanum*	—/—/4.2	Broadleafed upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest; elevation 185-2225 meters	March-August
Butte County fritillary *Fritillaria eastwoodiae*	—/—/3.2	Chaparral, cismontane woodland, lower montane coniferous forest (openings)/ sometimes serpentinite; elevation 50-1500 meters	March-June
Boggs Lake hedge-hyssop *Gratiola heterosepala*	—/E/1B.2	Marshes and swamps (lake margins), vernal pools/clay; elevation 10-2375 meters	April-August

Table 1. Special-Status Plant Species With Potential to Occur in the Kilarc-Cow Creek Hydroelectric Project Area

Common Name *Scientific Name*	Status FED/ST/CNPS	General Habitat	Identification Period
Baker's globe mallow *Lliamna bakeri*	—/—/4.2	Chaparral, Great Basin scrub, lower montane coniferous forest (openings), pinyon and juniper woodland/ volcanic, often burned areas; elevation 1000-2500 meters	June-September
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	—/—/1B.1	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools/ vernally mesic; elevation 35-1020 meters	March-May
Bellinger's meadowfoam *Limnanthes floccosa* ssp. *bellingeriana*	—/—/1B.2	Cismontane woodland, meadows and seeps/mesic; elevation 290-1100 meters	April-June
Shasta snow-wreath *Neviusia cliftonii*	—/—/1B.2	Cismontane woodland, lower montane coniferous forest, riparian woodland/often streamsides; sometimes carbonate, volcanic, or metavolcanic; elevation 300-500 meters	April-June
Slender Orcutt grass *Orcuttia tenuis*	T/E/1B.1	Vernal pools; elevation 35-1760 meters	May-October
Ahart's paronychia *Paronychia ahartii*	—/—/1B.1	Cismontane woodland, valley and foothill grassland, vernal pools; elevation 30-510 meters	March-June
Newberry's cinquefoil *Potentilla newberryi*	—/—/2.3	Marshes and swamps (drying margins), vernal pools; elevation 1300-2200 meters	May-August

Table 1. Special-Status Plant Species With Potential to Occur in the Kilarc-Cow Creek Hydroelectric Project Area

Common Name *Scientific Name*	Status FED/ST/CNPS	General Habitat	Identification Period
Brownish beaked-rush *Rhynchospora capitellata*	—/—/2.2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest/mesic; elevation 455-2000 meters	July-August
Sanford's arrowhead *Sagittaria sanfordii*	—/—/1B.2	Marshes and swamps (assorted shallow freshwater); elevation 0-650 meters	May-October
Long-stiped campion *Silene occidentalis* ssp. *longistipitata*	—/—/1B.2	Chaparral, lower montane coniferous forest, upper montane coniferous forest; elevation 1000-2000 meters	June-August
English Peak greenbriar *Smilax jamesii*	—/—/1B.3	Broadleaved upland forest, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest/streambanks and lake margins; elevation 580-2500 meters	May-August
Marsh hedge nettle *Stachys palustris* ssp. *pilosa*	—/—/2.3	Great Basin scrub (mesic); meadows and seeps; elevation 1200-1770 meters	June-August
Siskiyou clover *Trifolium siskiyouense*	—/—/3.2	Meadows and seeps/ mesic; elevation 880-1500 meters	June-July
Oval-leaved viburnum *Viburnum ellipticum*	—/—/2.3	Chaparral, cismontane woodland, lower montane coniferous forest; elevation 215-1400 meters	May-June

NSR biologists Mr. Colby J. Boggs and Ms. Heather Kelly detected a single occurrence of big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), and NSR botanists Ms. Merissa Hanisko and Mr. Chris Riddle confirmed the detection. Big-scale balsamroot is a perennial, herbaceous plant in the sunflower family (Asteraceae); this taxon is not listed under either the federal or California endangered species acts, but it is listed on CNPS List 1B. Big-scale balsamroot is endemic to California and was previously only known to occur between Tehama and Santa Clara counties in the foothills of the inner Coast Ranges and between Butte and Mariposa counties in the foothills of the Sierra Nevada (California Native Plant Society 2008).

The big-scale balsamroot occurrence consisted of 23 individual plants located adjacent to an existing road outside the FERC project boundary between the Cow Creek Powerhouse and the Cow Creek Forebay. Ecological parameters of the big-scale balsamroot occurrence were documented on NSR's Special-Status Plant Occurrence Discovery Record (see Exhibit E); representative photographs for this taxon are also presented in Exhibit E. The location of the big-scale balsamroot occurrence is shown on Figure 2.

The detection of big-scale balsamroot at the Cow Creek development is the first reported occurrence of this taxon in Shasta County. The nearest known occurrence of big-scale balsamroot is located approximately 36.5 miles to the southwest within the *Rosewood, California* USGS quadrangle in Tehama County (California Department of Fish and Game 2003); however, this occurrence has not been relocated since the original collection of this taxon was made in 1899. Two other known occurrences are located in Tehama County; both are located within the *Riley Ridge, California* USGS quadrangle and occur more than 55 miles from the big-scale balsamroot occurrence at the Cow Creek development. All other known occurrences for big-scale balsamroot are located more than 70 miles to the south. Therefore, the big-scale balsamroot occurrence at the Cow Creek development represents a significant range extension for this taxon.

References

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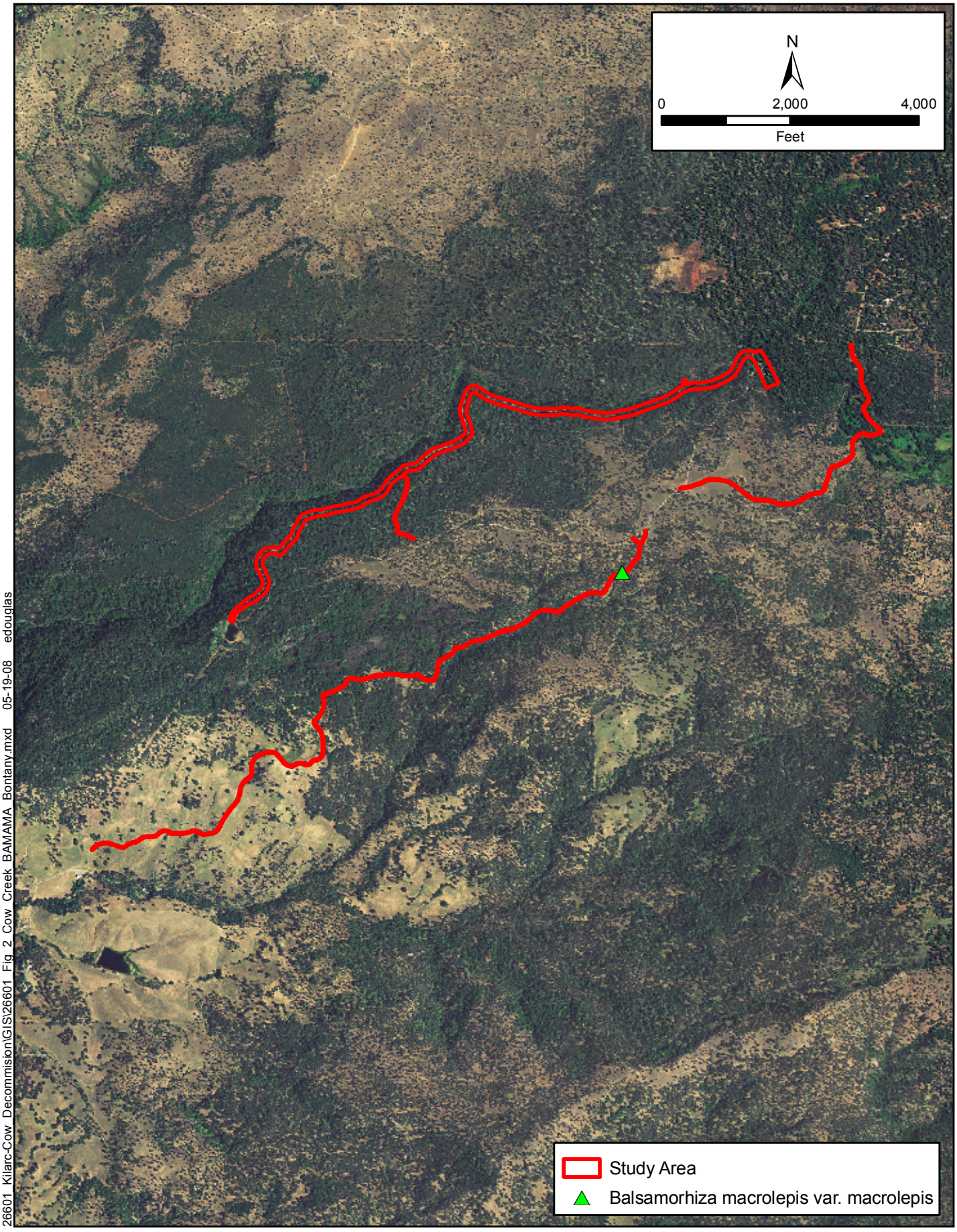

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North State Resources, Inc.

Kilarc-Cow Creek Hydroelectric Project
Decommissioning FERC Project No. 606

Figure 2
Location of Special-Status Plant Species

EXHIBIT A

ENTRIX Special-Status Plant Species Target List

Table 2: Special-Status Plant Taxa Potentially Present in the Kilarc-Cow Project Vicinity

Scientific Name	Status	Flowering Period	Life Form
Bogg's Lake hedge-hyssop *Gratiola heterosepala*	CE, CNPS 1B	Apr-Jun	Annual herb
Butte County fritillary *Fritillaeria eastwoodiae*	CNPS 3	Mar-May	Perennial herb (bulbiferous)
Shasta clarkia *Clarkia borealis* ssp. *arida*;	CNPS 1B	Jun-Aug	Annual herb
Ahart's paronychia *Paronychia ahartii*	CNPS 1B	Mar-Jun	Annual herb
Shasta snow wreath *Neviusia cliftonii*	CNPS 1B	May-Jun	Shrub (deciduous)

CE = listed by California as Endangered.

CNPS = California Native Plant Society

1B = rare, threatened or endangered in California and elsewhere.

3 = need more information

Status and flowering period information from CNDDB (CDFG 2003a) and CNPS data base (CNPS, 2000).

EXHIBIT B

CNDDB Query Results
CNPS Search Results

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Portrait
Cow Creek Development
Inwood and Eight Surrounding Quadrangles

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	Agrostis hendersonii Henderson's bent grass	PMPOA040K0			G1Q	S1.1	3.2
2	Botrychium crenulatum scalloped moonwort	PPOPH010L0			G3	S2.2	2.2
3	Botrychium virginianum rattlesnake fern	PPOPH010H0			G5	S1.2	2.2
4	Carex vulpinoidea brown fox sedge	PMCYP03EN0			G5	S2.2	2.2
5	Clarkia borealis ssp. arida Shasta clarkia	PDONA05061			G3T1	S1.2	1B.1
6	Cryptantha crinita silky cryptantha	PDBOR0A0Q0			G1	S1.1	1B.2
7	Fritillaria eastwoodiae Butte County fritillary	PMLIL0V060			G3Q	S3.2	3.2
8	Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060		Endangered	G3	S3.1	1B.2
9	Iliamna bakeri Baker's globe mallow	PDMAL0K010			G4	S3.2	4.2
10	Juncus leiospermus var. leiospermus Red Bluff dwarf rush	PMJUN011L2			G2T2	S2.2	1B.1
11	Limnanthes floccosa ssp. bellingeriana Bellinger's meadowfoam	PDLIM02041			G4T2	S1.1	1B.2
12	Orcuttia tenuis slender orcutt grass	PMPOA4G050	Threatened	Endangered	G3	S3.1	1B.1
13	Paronychia ahartii Ahart's paronychia	PDCAR0L0V0			G2	S2.1	1B.1
14	Rhynchospora capitellata brownish beaked-rush	PMCYP0N080			G5	S2S3	2.2

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Portrait
Kilarc Development
Miller Mtn and Eight Surrounding Quadrangles

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	Botrychium crenulatum scalloped moonwort	PPOPH010L0			G3	S2.2	2.2
2	Botrychium virginianum rattlesnake fern	PPOPH010H0			G5	S1.2	2.2
3	Calochortus longebarbatus var. longebarbatus long-haired star-tulip	PMLIL0D0R1			G4T4	S3.2	1B.2
4	Calystegia atriplicifolia ssp. buttensis Butte County morning-glory	PDCON04012			G5T3	S3.2	1B.2
5	Clarkia borealis ssp. borealis northern clarkia	PDONA05062			G3T2	S2.3	1B.3
6	Cryptantha crinita silky cryptantha	PDBOR0A0Q0			G1	S1.1	1B.2
7	Fritillaria eastwoodiae Butte County fritillary	PMLIL0V060			G3Q	S3.2	3.2
8	Hulsea nana little hulsea	PDAST4Z060			G4	S2.3	2.3
9	Iliamna bakeri Baker's globe mallow	PDMAL0K010			G4	S3.2	4.2
10	Neviusia cliftonii Shasta snow-wreath	PDROS14020			G2	S2.2	1B.2
11	Paronychia ahartii Ahart's paronychia	PDCAR0L0V0			G2	S2.1	1B.1
12	Potentilla newberryi Newberry's cinquefoil	PDROS1B130			G3G4	S2.3?	2.3
13	Silene occidentalis ssp. longistipitata long-stiped campion	PDCAR0U161			G4T1	S1.2	1B.2
14	Stachys palustris ssp. pilosa hairy marsh hedge-nettle	PDLAM1X1A0			G5T5	S2.3	2.3

CNPS Inventory of Rare and Endangered Plants

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ECOLOGICAL REPORT

scientific	family	life form	blooming	communities	elevation	CNPS
Agrostis hendersonii	Poaceae	annual herb	Apr-May	•Valley and foothill grassland (VFGrs)(mesic) •Vernal pools (VnPls)	70 - 305 meters	List 3.2
Botrychium crenulatum	Ophioglossaceae	perennial rhizomatous herb	Jun-Sep	•Bogs and fens (BgFns) •Lower montane coniferous forest (LCFrs) •Meadows and seeps (Medws) •Marshes and swamps (MshSw)(freshwater)	1268 - 3280 meters	List 2.2
Botrychium virginianum	Ophioglossaceae	perennial herb	Jun-Sep	•Bogs and fens (BgFns) •Lower montane coniferous forest (LCFrs)(mesic) •Meadows and seeps (Medws) •Riparian forest (RpFrs)/streams	728 - 1300 meters	List 2.2
Calochortus longebarbatus var. longebarbatus	Liliaceae	perennial bulbiferous herb	Jun-Aug	•Great Basin scrub (GBScr) •Lower montane coniferous forest (LCFrs)(openings and drainages) •Meadows and seeps (Medws) •Vernal pools (VnPls)/clay, mesic	1005 - 1900 meters	List 1B.2
Calochortus syntrophus	Liliaceae	perennial bulbiferous herb	May-Jun	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) •Valley and foothill grassland (VFGrs)(vernally mesic)	525 - 886 meters	List 3.1
Calystegia atriplicifolia ssp. buttensis	Convolvulaceae	perennial rhizomatous herb	May-Jul	•Chaparral (Chprl) •Lower montane coniferous forest (LCFrs)/rocky, sometimes roadside	600 - 1524 meters	List 1B.2
Carex vulpinoidea	Cyperaceae	perennial herb	May-Jun	•Marshes and swamps (MshSw)(freshwater) •Riparian woodland (RpWld)	30 - 1200 meters	List 2.2
Clarkia borealis ssp. arida	Onagraceae	annual herb	Jun-Aug	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs)(openings)	490 - 595 meters	List 1B.1
Clarkia borealis ssp. borealis	Onagraceae	annual	Jun-Sep	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs)	400 - 1340 meters	List 1B.3
				•Cismontane woodland		

Cryptantha crinita	Boraginaceae	annual herb	Apr-May	(CmWld) •Lower montane coniferous forest (LCFrs) •Riparian forest (RpFrs) •Riparian woodland (RpWld) •Valley and foothill grassland (VFGrs)/gravelly streambeds	85 - 1215 meters	List 1B.2
Fritillaria eastwoodiae	Liliaceae	perennial bulbiferous herb	Mar-Jun	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) (openings)/sometimes serpentinite	50 - 1500 meters	List 3.2
Gratiola heterosepala	Scrophulariaceae	annual herb	Apr-Aug	•Marshes and swamps (MshSw)(lake margins) •Vernal pools (VnPls)/clay	10 - 2375 meters	List 1B.2
Hulsea nana	Asteraceae	perennial herb	Jul-Aug	•Alpine boulder and rock field (AlpBR) •Subalpine coniferous forest (SCFrs)/rocky or gravelly, volcanic	1720 - 3355 meters	List 2.3
Juncus leiospermus var. leiospermus	Juncaceae	annual herb	Mar-May	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Meadows and seeps (Medws) •Valley and foothill grassland (VFGrs) •Vernal pools (VnPls)/vernally mesic	35 - 1020 meters	List 1B.1
Limnanthes floccosa ssp. bellingeriana	Limnanthaceae	annual herb	Apr-Jun	•Cismontane woodland (CmWld) •Meadows and seeps (Medws)/mesic	290 - 1100 meters	List 1B.2
Neviusia cliftonii	Rosaceae	perennial deciduous shrub	Apr-Jun	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) •Riparian woodland (RpWld)/ often streamsides; sometimes carbonate, volcanic, or metavolcanic	300 - 500 meters	List 1B.2
Orcuttia tenuis	Poaceae	annual herb	May-Sep (Oct) Months in parentheses are uncommon.	•Vernal pools (VnPls)	35 - 1760 meters	List 1B.1
Paronychia ahartii	Caryophyllaceae	annual herb	Mar-Jun	•Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs) •Vernal pools (VnPls)	30 - 510 meters	List 1B.1
Potentilla newberryi	Rosaceae	perennial herb	May-Aug	•Marshes and swamps (MshSw)(drying margins) •Vernal pools (VnPls)	1300 - 2200 meters	List 2.3

Rhynchospora capitellata	Cyperaceae	perennial herb	Jul-Aug	•Lower montane coniferous forest (LCFrs) •Meadows and seeps (Medws) •Marshes and swamps (MshSw) •Upper montane coniferous forest (UCFrs)/mesic	455 - 2000 meters	List 2.2
Sagittaria sanfordii	Alismataceae	perennial rhizomatous herb emergent	May-Oct	•Marshes and swamps (MshSw)(assorted shallow freshwater)	0 - 650 meters	List 1B.2
Silene occidentalis ssp. longistipitata	Caryophyllaceae	perennial herb	Jun-Aug	•Chaparral (Chprl) •Lower montane coniferous forest (LCFrs) •Upper montane coniferous forest (UCFrs)	1000 - 2000 meters	List 1B.2
Smilax jamesii	Smilacaceae	perennial rhizomatous herb	May-Jul (Aug) Months in parentheses are uncommon.	•Broadleafed upland forest (BUFrs) •Lower montane coniferous forest (LCFrs) •Marshes and swamps (MshSw) •North Coast coniferous forest (NCFrs) •Upper montane coniferous forest (UCFrs)/streambanks and lake margins	580 - 2500 meters	List 1B.3
Stachys palustris ssp. pilosa	Lamiaceae	perennial rhizomatous herb	Jun-Aug	•Great Basin scrub (GBScr) (mesic) •Meadows and seeps (Medws)	1200 - 1770 meters	List 2.3
Trifolium siskiyouense	Fabaceae	perennial herb	Jun-Jul	•Meadows and seeps (Medws) mesic	880 - 1500 meters	List 3.2

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 15 items - Mon, Mar. 31, 2008 14:55 c

Reformat list as: Standard List - with Plant Press controls

ECOLOGICAL REPORT

scientific	family	life form	blooming	communities	elevation	CNPS
Botrychium crenulatum	Ophioglossaceae	perennial rhizomatous herb	Jun-Sep	•Bogs and fens (BgFns) •Lower montane coniferous forest (LCFrs) •Meadows and seeps (Medws) •Marshes and swamps (MshSw)(freshwater)	1268 - 3280 meters	List 2.2
Botrychium virginianum	Ophioglossaceae	perennial herb	Jun-Sep	•Bogs and fens (BgFns) •Lower montane coniferous forest (LCFrs)(mesic) •Meadows and seeps (Medws) •Riparian forest (RpFrs)/streams	728 - 1300 meters	List 2.2
Calochortus longebarbatus var. longebarbatus	Liliaceae	perennial bulbiferous herb	Jun-Aug	•Great Basin scrub (GBScr) •Lower montane coniferous forest (LCFrs)(openings and drainages) •Meadows and seeps (Medws) •Vernal pools (VnPls)/clay, mesic	1005 - 1900 meters	List 1B.2
Calochortus syntrophus	Liliaceae	perennial bulbiferous herb	May-Jun	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) •Valley and foothill grassland (VFGrs)(vernally mesic)	525 - 886 meters	List 3.1
Calystegia atriplicifolia ssp. buttensis	Convolvulaceae	perennial rhizomatous herb	May-Jul	•Chaparral (Chprl) •Lower montane coniferous forest (LCFrs)/rocky, sometimes roadside	600 - 1524 meters	List 1B.2
Clarkia borealis ssp. borealis	Onagraceae	annual	Jun-Sep	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs)	400 - 1340 meters	List 1B.3
Cryptantha crinita	Boraginaceae	annual herb	Apr-May	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) •Riparian forest (RpFrs) •Riparian woodland (RpWld) •Valley and foothill grassland (VFGrs)/gravelly streambeds	85 - 1215 meters	List 1B.2
Fritillaria		perennial		•Chaparral (Chprl) •Cismontane woodland (CmWld)	50 - 1500	List

eastwoodiae	Liliaceae	bulbiferous herb	Mar-Jun	•Lower montane coniferous forest (LCFrs) (openings)/sometimes serpentinite	meters	3.2
Hulsea nana	Asteraceae	perennial herb	Jul-Aug	•Alpine boulder and rock field (AlpBR) •Subalpine coniferous forest (SCFrs)/rocky or gravelly, volcanic	1720 - 3355 meters	List 2.3
Neviusia cliftonii	Rosaceae	perennial deciduous shrub	Apr-Jun	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) •Riparian woodland (RpWld)/ often streamsides; sometimes carbonate, volcanic, or metavolcanic	300 - 500 meters	List 1B.2
Potentilla newberryi	Rosaceae	perennial herb	May-Aug	•Marshes and swamps (MshSw)(drying margins) •Vernal pools (VnPls)	1300 - 2200 meters	List 2.3
Silene occidentalis ssp. longistipitata	Caryophyllaceae	perennial herb	Jun-Aug	•Chaparral (Chprl) •Lower montane coniferous forest (LCFrs) •Upper montane coniferous forest (UCFrs)	1000 - 2000 meters	List 1B.2
Smilax jamesii	Smilacaceae	perennial rhizomatous herb	May-Jul (Aug) Months in parentheses are uncommon.	•Broadleafed upland forest (BUFrs) •Lower montane coniferous forest (LCFrs) •Marshes and swamps (MshSw) •North Coast coniferous forest (NCFrs) •Upper montane coniferous forest (UCFrs)/streambanks and lake margins	580 - 2500 meters	List 1B.3
Stachys palustris ssp. pilosa	Lamiaceae	perennial rhizomatous herb	Jun-Aug	•Great Basin scrub (GBScr) (mesic) •Meadows and seeps (Medws)	1200 - 1770 meters	List 2.3
Trifolium siskiyouense	Fabaceae	perennial herb	Jun-Jul	•Meadows and seeps (Medws) mesic	880 - 1500 meters	List 3.2

EXHIBIT C

Pre-Task Safety Plan
Job Hazard Analysis

CH2MHILL

Pre-Task Safety Plan (PTSP)

Project: _____ Location: _____Date:_____

Supervisor: _____ Job Activity:_____

_____

Task Personnel:

_____

_____

_____

_____

List Tasks:

_____

_____

_____

_____

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

_____

_____

_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	__ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	__ Pinch points	__ Poisonous plants/insects
__ Electrical	__ Cuts/abrasions	__ Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__ Radiation	__ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition

Other Potential Hazards (Describe):

_____

_____

_____

_____

CH2MHILL

Hazard Control Measures (Check All That Apply):			
PPE __ Hard Hat __ Thermal/lined __ Eye __ Dermal/hand __ Hearing __ Respiratory __ Reflective vests __ Flotation device	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections	Fire Protection __ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER __ First-aid kit __ Eye wash __ FA-CPR trained personnel __ Route to hospital	Heat/Cold Stress __ Work/rest regime __ Rest area __ Liquids available __ Monitoring __ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Cranes and rigging	Training: __ Hazwaste __ Construction __ Competent person __ Task-specific (THA) __ Hazcom
Field Notes:_____ _____ _____			

Name (Print): _____

Signature:_____ Date:_____

Job Hazard Analysis

Activity: Special-Status Plant Species Survey	**Date:** **04/15/08**
	Project: **Kilarc-Cow Creek Hydroelectric Project – Special-Status Plant Species Survey**
Description of the work: Conduct a survey for special-status plants species along the proposed access roads, canals, and impoundments to be decommissioned as part of the Kilarc-Cow Creek Hydroelectric Project. The surveys will be conducted on foot and locations of identified special-status plants species will be recorded on field maps. Work trucks will be used to access survey sites within the project area.	**Site Supervisor:** **Colby Boggs – North State Resources, Inc.**
	Site Safety Officer: **Colby Boggs – North State Resources, Inc.**
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Operating vehicle travel to and from project site	Hazards associated with vehicle travel on major highways and dirt roads: breakdowns, flat tires, collisions, maintenance, collision with animals, skidding of road, icy/muddy roads, poor visibility, backing, obstacles in roadway	General: Daily vehicle condition inspection (check fluids, tire pressure, wipers, lights, etc.); use defensive driving techniques, identify evacuation routes and air ambulance pick up locations; drivers shall not use cell phone while driving; carry emergency equipment (shovel, fire extinguisher, first aid kit); check spare and tire removal equipment. Passengers must ride inside the cab only – no passengers in the truck bed. Forest Roads: Drive at safe speeds; use seat belts; use lights; use care around brush; clear roadway instead of driving around; drive on main roadway; check road conditions; follow safe distance; keep windows clean; park so you don't have to back up to leave (use a spotter, always face danger); use low gears when descending; chock tires or set parking brake. Watch out for oncoming vehicles when driving on single lane roads – use turnouts. Passengers in truck must ride inside the cab – no passengers should ride in the truck bed.
Walking/Working in the field (variable terrain)	Hazards for walking/working in the field: falling/poor footing, falling objects; damage to eyes; bee/wasp stings; ticks; rattlesnakes; bears/mountain lions; poison oak; illegal activities (marijuana activities); exposure to livestock such as cows and bulls; accident/injury response; and exposure to bloodborne pathogens may occur when rendering first aid or CPR.	Falling/poor footing: watch footing; use caution around logs, rock burrows; use alternate routes on steep slopes; appropriate footwear. Eye damage: watch for brush and branches; wear sunglasses or eye protection. Bee/wasp stings: watch for allergic reactions with bee stings; notify dispatcher and get person to doctor immediately; flag known nests; pack

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Walking/Working in the field (continued from previous page)		appropriate treatment (inhaler, Benadryl, Epi-pen) if you are prone to a reaction; Do not administer medication that is not prescribed to the recipient. Ticks: wear long sleeves; tuck pants into socks or boots; visually check in field and at home. Rattlesnakes: watch footing for rattlesnakes; retreat from rattlesnakes, negotiate and new path to avoid; wear appropriate footwear or snake guards Bears/Mountain lions: Dangerous when they feel threatened, sow with cubs, near den, obstructing their path; never approach bears, make noise; look big, never crouch or bend over, make eye contact, if bear/lion attacks, fight back; if they don't leave, you should. Poison oak: learn to identify; avoid bushes if possible; wear long sleeves; tuck in pants into socks or boots; use prophylactic oils and after exposure cleansers (Tecnu), don't wear exposed clothing twice without laundering. Illegal activities: If evidence of irrigation, planting equipment or anything suspicious is observed, leave immediately, note location and notify your supervisor. Livestock: During pedestrian surveys, make your presence known and allow livestock enough room to avoid confrontation; do not verbally or physically harass livestock. Drive slowly where livestock is free to roams over roads. Accident/injury: Review emergency procedures. Confirm emergency telephone numbers, evacuation routes, assembly areas, and route to hospital and communicate this information to all onsite personnel. Designate emergency vehicle for field teams and keep keys in a safe location known to all field staff. Inventory and check site emergency equipment, supplies and potable water. Bloodborne pathogens: Exposure controls and personal protective equipment in first aid kit.
Stream Crossings	Footing, swift water, balance	Footing: Cross logs on hands and knees, walk through in appropriate footwear or tennis shoes, put on dry boots once across Balance: Use walking stick or pole for balance Swift water: avoid swift water, do not cross water deeper than mid-thigh.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Communication	Safety, crew unity, lost	Talk to each other, know where fellow crew members are; carry radios and spare batteries, have back up communications plan using cell phones and/or radios; have a meeting time and place; let someone know your exact location and time of return; if lost, don't panic, look at topo map and try to find a recognizable reference point, radio your partner. *Power Generation Filed Work Notification, PG-S071 rev 1* must be submitted to the PG&E power generation supervisor at least three business days prior to field work. Each team must call the PG&E switching center at the beginning and end of each field day (530.335-5660). As cell phone coverage is not available in some areas, plan accordingly.
Environmental Considerations	Heat stress, cold stress, wind	Heat stress: Be aware of weather conditions, dress appropriately; know symptoms of heat exhaustion, heat cramps, heat stroke; drink small amounts of water throughout the day, acclimatize to heat over a period of weeks, workload and duration of physical exertion may need altered to acclimatize; eat as well as consume water to maintain electrolytes; carry enough water - each person must have at least two gallons of water available during a day; and don't drink water from streams (*giardia*) unless water is properly treated (e.g., water filter). Cold stress: Dress in layers; wear head protection; maintain energy level; acclimatize to cold climates; maintain adequate food and water intake; be aware of weather conditions. Appropriate rain gear is a must in cool weather. Team members should observe one another for initial signs of cold-related or heat-related disorders. Wind: Wind affects heat loss; avoid working in old, defective timber especially hardwoods due to snag hazards.

Equipment to be used (List equipment to be used in the work activity)	Inspection Requirements (List inspection requirements for the work activity)	Training Requirements (List training requirements including hazard communication)
Field Vehicle	Ensure that vehicle is safe to operate prior to field work.	None
Cameras	Ensure that cameras are in good working order prior to field work and that extra batteries and memory sticks are provided for field staff.	None

Job Hazard Analysis

	PRINT NAME	SIGNATURE	
Supervisor Name:			**Date/Time:**
Safety Officer Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:

EXHIBIT D

Table D-1: Vascular Plant Species Observed at the Cow Creek Development Study Area

Table D-1: Vascular Plant Species Observed at the Cow Creek Development Study Area

Survey Dates: April 18 and April 22, 2008

Surveyors: Chris Riddle and Merissa Hanisko

Scientific Name	**Common Name**	**Family Name**
Foothill Woodland / Mixed Conifer Type		
Acer macrophyllum	big leaf maple	Aceraceae
Aesculus californica	california buckeye	Hippocastanaceae
Agoseris retrorsa	mountain dandelion	Poaceae
Aira caryophyllea	european hairgrass	Poaceae
Allium sp. (not a rare taxon)	onion	Liliaceae
Alnus rhombifolia	white alder	Betulaceae
Anaphalis margaritaceae	pearly everlasting	Asteraceae
Apocynum androsaemifolium	dogbane	Apocynaceae
Arceuthobium americanum	dwarf misletoe	Viscaceae
Arctostaphylos patula	green leaf manzanita	Ericaceae
Arctostaphylos viscida	white leaf manzanita	Ericaceae
Aristolochia californica	dutchmans pipe	Aristolochiaceae
Asarum hartwegii	wild ginger	Aristolochiaceae
Asclepias sp.	milkweed	Asclepiadaceae
Avena barbata	oat	Poaceae
Balsamorhiza deltoidea	balsamroot	Asteraceae
Balsamorhiza macrolepis var. *macrolepis*	big-scale balsamroot	Asteraceae
Berberis aquifolium	oregon grape	Berberidaceae
Bromus diandrus	rip gut brome	Poaceae
Bromus hordeaceus	brome	Poaceae
Bromus tectorum	cheatgrass	Poaceae
Calocedrus decurrens	incense cedar	Cupressaceae
Calochortus monophyllus	mariposa lily	Liliaceae
Carex multicaulis	sedge	Cyperaceae
Carex sp. (not a rare taxon)	sedge	Cyperaceae
Castilleja applegatei	wavy-leavedindian paintbrush	Scrophulariaceae
Ceanothus cuneatus	buck brush	Rhamnaceae
Ceanothus integgerimus	deer brush	Rhamnaceae
Ceanothus lemmonii	california lilac	Rhamnaceae
Cercocarpus betuloides	birch-leaf mountain mohogany	Rhamnaceae
Cersis occidentalis	redbud	Fabaceae
Chlorogalum pomeridianum	soap plant	Liliaceae
Cirsium vulgare	bull thistle	Asteraceae
Claytonia parviflora	miners lettuce	Portulacaceae
Convolvulus sp.	morning glory	Convolvulaceae
Cynoglossum grande	hound's tongue	Boraginaceae
Cynosurus dactylis	dogtail	Poaceae
Delphinium nudicale	red larkspur	Scrophulariaceae
Dicentra formosa	bleeding heart	Papaveraceae
Dichelostemma capitatum	blue dicks	Liliaceae
Dodecatheon hendersonii	mosquito bills	Primulaceae
Draba sp.	draba	Brassicaceae
Eriogonum sp.	buckwheat	Polygonaceae

Scientific Name	**Common Name**	**Family Name**
Foothill Woodland / Mixed Conifer Type (cont.)		
Eriophyllum lanatum	wooly sunflower	Asteraceae
Erisimum capitatum	western wallflower	Brassicaceae
Fritillaria recurva	scarlet fritillary	Liliaceae
Galium aparine	goose grass	Rubiaceae
Galium bolanderi	bolander's bedstraw	Rubiaceae
Geranium molle	wild geranium	Geraniaceae
Heuchera sp.	alum root	Saxifragaceae
Hypericum perforatum	klamath weed	Hypericaceae
Juncus tenuis	rush	Juncaceae
Lactuca serriola	prickly lettuce	Asteraceae
Linaria vulgaris	butter and eggs	Scrophulariaceae
Lolium perenne	ryegrass	Poaceae
Lomatium sp.	lomatium	Apiaceae
Lonicera hispidula	chaparral honeysuckle	Caprifoliaceae
Lotus micranthus	lotus	Fabaceae
Lotus sp.	lotus	Fabaceae
Lupinus bicolor	miniature lupine	Fabaceae
Lupinus sp.	lupine	Fabaceae
Luzula comosa	wood rush	Juncaceae
Medicago lupulina	yellow trefoil	Fabaceae
Monardella sp.	coyote mint	Lamiaceae
Nasella sp.	needlegrass	Poaceae
Nemophila heterophylla	fivespot	Hydrophyllaceae
Osmorhiza chilensis	sweetsicily	Apiaceae
Paxistima myrsinites	oregon boxwood	Celastraceae
Pedicularis densiflora	indian warrior	Scrophulariaceae
Pentagramma triangularis	goldback fern	Pteridaceae
Petrorhagia dubius	pink	Caryophyllaceae
Philadelphus lewisii	mock orange	Philadelphaceae
Phoradendron villosum	oak misletoe	Viscaceae
Pinus ponderosa	yellow pine	Pinaceae
Pinus sabiniana	grey pine	Pinaceae
Plantago lanceolata	english plantain	Plantaginaceae
Poa bulbosa	bulbous poa	Poaceae
Polygala cornuta	milkwort	Polygalaceae
Polypodium calirhiza	polypody	Polypodiaceae
Polystichum munitum	sword fern	Dryopteridaceae
Populus fremontii	fremont cottonwood	Salicaceae
Prunella vulgaris	self heal	Lamiaceae
Prunus subcordata	wild cherry	Rosaceae
Pseudotsuga menziesii	douglas-fir	Pinaceae
Quercus chrysolepis	canyon live oak	Fagaceae
Quercus garryana	oregon white oak	Fagaceae
Quercus kelloggii	california black oak	Fagaceae
Quercus wislizeni	interior live oak	Fagaceae
Ranunculus sp.	buttercup	Ranunculaceae
Rhamnus illicifolia	holly-leaf redberry	Rhamnaceae
Rhamnus tomentella	hoary coffeeberry	Rhamnaceae
Rosa gymnocarpa	wood rose	Rosaceae

Scientific Name	**Common Name**	**Family Name**
Foothill Woodland / Mixed Conifer Type (cont.)		
Rubus discolor	himalayan blackberry	Rosaceae
Rubus laciniatus	cut-leaved blackberry	Rosaceae
Rumex crispus	curly dock	Polygonaceae
Sanicula tuberosa	sanicle	Apiaceae
Selaginella hansenii	spike-moss	Selaginellaceae
Sisyrinchium sp.	blue-eyed grass	Iridaceae
Symphoricarpos albus	common snow berry	Caprifoliaceae
Taraxacum officinale	dandelion	Asteraceae
Thysanocarpus curvipes	fringepod	Brassicaceae
Torilis arvensis	torilis	Apiaceae
Toxicodendrom diversilobum	poison oak	Anacardiaceae
Trientalis latifolia	western star flower	Primulaceae
Trifolium hirtum	rose clover	Fabaceae
Trifolium sp.	clover	Fabaceae
Umbellularia californica	california bay-laurel	Lauraceae
Vicea sativa ssp. *nigra*	common vetch	Fabaceae
Vitis californica	wild grape	Vitaceae
Riparian Type		
Adiantum capillus-veneris	maiden-hair fern	Pteridaceae
Alnus rhombifolia	white alder	Betulaceae
Artemesia douglasiana	mugwort	Asteraceae
Carex sp. (not a rare taxon)	sedge	Cyperaceae
Carex sp. (not a rare taxon)	sedge	Cyperaceae
Conium maculatum	poison hemlock	Apiaceae
Cystopteris fragilis	fragile fern	Dryopteridaceae
Darmera peltata	indian rhubarb	Saxifragaceae
Equisetum arvense	horsetail	Equisetaceae
Equisetum hyemale ssp. affine	scouring rush	Equisetaceae
Juncus effusus	rush	Juncaceae
Kelloggia galioides	kelloggia	Rubiaceae
Poa sp.	poa	Poaceae
Potentilla sp.	cinquefoil	Ranunculaceae
Salix exigua	narrow-leaved willow	Salicaceae
Salix laevigata	red willow	Salicaceae
Oak Savannah Type		
Amsinckia sp.	Fiddleneck	Boraginaceae
Avena barbata	oat	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus horedeaceus	brome	Poaceae
Castilleja sp.	indian paintbrush	Scrophulariaceae
Chammomila suaveolens	pinapple weed	Asteraceae
Convolvulus arvensis	field bindweed	Convolvulaceae
Cynosurus echinatus	dogtail	Poaceae
Dichelostemma capitatum	blue dicks	Liliaceae
Erodium brachycarpum	storks bill fillaree	Geraniaceae

Scientific Name	Common Name	Family Name
	Oak Savannah Type (cont.)	
Geranium molle	geranium	Geraniaceae
Hordeum sp.	barley	Poaceae
Lepidium sp.	peppergrass	Brassicaceae
Linaria vulgaris	toadflax	Scrophulariaceae
Lotus wrangelianus	lotus	Fabaceae
Lupinus bicolor	miniature lupine	Fabaceae
Lupinus sp.	lupine	Fabaceae
Medicago polymorpha	burclover	Fabaceae
Pentagramma triangularis	goldback fern	Pteridaceae
Petrorhagia dubia	pink	Caryophyllaceae
Pinus sabiniana	grey pine	Pinaceae
Plantago minima	plantain	Plantaginaceae
Poa bulbosa	poa	Poaceae
Quercus douglasii	blue oak	Fagaceae
Quercus lobata	california white oak	Fagaceae
Quercus wislizeni	interior live oak	Fagaceae
Ranunculus barbata	buttercup	Ranunculaceae
Ranunculus sp.	buttercup	Ranunculaceae
Rhamnus tomentella	hoary coffeeberry	Rhamnaceae
Rumex crispus	curly dock	Polygonaceae
Sagina apetala	pearlwort	Caryophyllaceae
Senecio jacobaea	old man in spring	Asteraceae
Sherardia arvensis	field madder	Rubiaceae
Stellaria sp.	chickweed	Caryophyllaceae
Taeniatherum caput-medusae	medusa head	Poaceae
Torilis arvensis	torilis	Apiaceae
Toxicodendron diversilobum	poison oak	Anacardiaceae
Trifolium hirtum	rose clover	Fabaceae
Trifolium sp.	clover	Fabaceae
Vicea sativa ssp*. nigra*	vetch	Fabaceae
Vicea villosa	vetch	Fabaceae
Vulpia sp.	vulpia	Poaceae
Zigadenus venenosus	death camas	Liliaceae

EXHIBIT E

NSR Special-Status Plant Species Occurrence Discovery Record for <u>Balsamorhiza</u> <u>macrolepis</u> var. <u>macrolepis</u>

Representative Photographs of <u>Balsamorhiza</u> <u>macrolepis</u> var. <u>macrolepis</u>

SPECIAL-STATUS PLANT SPECIES
OCCURRENCE DISCOVERY RECORD

DISCOVERY DATE: 21 April 2008 and 22 April 2008 **DISCOVERED BY:** Boggs & Kelly and Hanisko & Riddle

SPECIES: *Balsamorhiza macrolepis* var. *macrolepis*

OCCURRENCE IDENTIFIER: BAMAMA 1

LOCATION

STUDY AREA UNIT: Cow **VISIT NUMBER:** 1

QUAD(S): Inwood, CA **LOCATION (directions, landmarks, etc.):** adjacent to new access road

UTM Zone: 10T **Easting:** 4492841 **Northing:** 0585530

OCCURRENCE

☑ POINT or ☐ POLYGON (check one)

SIZE (sq. ft.): 24 **NUMBER of INDIVIDUALS:** 23

DESCRIPTION (phenology, age class, density, etc): ~75% of individuals in bloom; many of the small individuals not in bloom

PHOTOGRAHIC DOCUMENTATION

PROVIDE PHOTO # and DESCRIPTION (e.g., close-up, looking north, associated habitat, etc.): 21 April – Photo 1 (habitat), Photo 2 (close-up); 22 April – Photo 3 (close-up), Photo 4 (habitat)

HABITAT

ELEVATION (feet): 1690 **ASPECT (degrees):** 225 **SLOPE (percent):** 15

PLANT COMMUNITY: Blue Oak Woodland

SOILS

SOIL MAP UNIT NAME (NRCS CODE): TcE – Toomes very rocky loam, 0 to 50 percent slopes

TEXTURE (e.g., clay loam): very rocky clay loam

DISTURBANCE

NATURE of DISTURBANCE: None

CURRENT CONDITION of OCCURRENCE: Stable

POSSIBLE FUTURE THREATS: widening and/or regrading road, spraying herbicides, and other improvements to and/or maintenance of road

ASSOCIATED PLANTS LIST [* = dominant(s) for each group]

TREES:	SHRUBS:	HERBS:
*Quercus douglasii**	none	*Dichelostemma capitatum*
Pinus sabiniana		*Lupinus bicolor*
		*Avena barbata**
		Chlorogalum pomeridianum
		Bromus sp.*
		Ranunculus occidentalis

Photo 1 - view of habitat associated with Balsamorhiza macrolepis var. macrolepis; note proximity to existing road

Photo 2 - close-up view of Balsamorhiza macrolepis var. macrolepis

Photo 3 - another close-up view of Balsamorhiza macrolepis var. macrolepis

Photo 4 - another view of habitat associated with Balsamorhiza macrolepis var. macrolepis

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