BOTANICAL RESOURCES SURVEY REPORT
PATUA II GEOTHERMAL PROJECT
LYON AND CHURCHILL COUNTIES, NEVADA

Prepared for:
Gradient Resources, Inc.
Patua Project, LLC
9670 Gateway Drive, Suite 200
Reno, Nevada 89521

Prepared by:
Joan Reynolds
P.O. Box 3476
Lake City, CA 96115

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1. INTRODUCTION

1.1 Project Description

Gradient Resources, Inc. and Patua Project, LLC is proposing to design, construct, and operate geothermal well pads and wells, geothermal fluid pipelines, transmission lines, and their associated access roads, on lands that are managed by the Bureau of Reclamation (BOR), Bureau of Land Management (BLM), and private lands. These facilities would be connected to a geothermal power generation facility, capable of producing 60 megawatts (MW) net of electricity, to be located on a privately owned portion of Section 21. Botanical resources, including rare plant species (TESC - Threatened, Endangered, Sensitive, Candidate, and Watchlist plant species) and noxious weed species were the focus of field surveys conducted on May 2, 3, 4 and 31, 2011. Surveys were conducted on approximately 820 acres in Lyon and Churchill counties, Nevada.

The surveys were conducted on the southeast slopes of the Virginia Range in Lyon County, and across to the southwestern flank of the Hot Springs Mountains in Churchill County, Nevada. The surveys were conducted on BLM, BOR, and private lands within the area legally described as sections and/or portions of Sections 21, 29, 30 and 32, Township 20 North, Range 26 East (T20N, R26E), and portions of Sections 6, T19N, R26E, Mount Diablo Base and Meridian (Figure 1).

1.2 Environmental Setting

The Patua II Geothermal Project Area ranges in elevation from approximately 3,600 to 4,200 feet above mean sea level. The Project Area lies within the Lahontan Basin Section of the Great Basin Division of the Intermountain Region. The mountains are mostly of block-faulted beds of volcanic origin, and the greater part of the area is alluvial flat and playa (Cronquist et al. 1972). The low altitude and the position in the rain-shadow of the Sierra Nevada created the dry and warm conditions of the area. Within the Project Area, the average temperature in the summer is 91 degrees Fahrenheit and 29 degrees Fahrenheit in the winter. The average annual precipitation for the area in the last 30 years is 5.9 inches. In 2010 and 2011, the annual precipitation was about 4 inches, most of which fell from November to April (http://www.wrcc.dri.edu/summary/Climsmnv.html).

The vegetation of the survey area was comprised of a variety of desert saltshrub plant species in the foothills and playa. One irrigation canal (Truckee Canal), which was dry during the time of the field survey, and two seasonally wet laterals were encountered in portions of the survey area.

1.3 Purpose and Need

Gradient Resources, Inc. and Patua Project, LLC is proposing to conduct geothermal exploration, drilling, site construction, and transmission line construction in the Patua II Geothermal Project Area. The purpose of the field work was to conduct a botanical resource survey, including TESC plant species and potential habitat, noxious weed species, and other botanical resources that may occur in the area for environmental compliance and permitting requirements under NEPA for the BLM and the BOR.

2. BOTANICAL SURVEY METHODS

A database query was conducted with the Nevada Natural Heritage Program (NNHP) and the U.S. Fish and Wildlife Service (USFWS) prior to performing the field survey. An intuitive survey was conducted throughout the Patua II Project Area for TESC plant species, including Lahontan indigo bush (*Psorothamnus kingii*) and Nevada dune beardtongue (*Penstemon arenarius*), any other rare plant species. Intensive searches were conducted in noxious weed infested areas. Appendix A includes the letter from the NNHP database search results. The USFWS database was queried for T&E plant species and the results are included in Appendix B. No T&E plant species are known to occur within proximity of the proposed project.

The plant species listed by the NNHP in the 2011 database search, Lahontan indigo bush, is endemic to sand dune habitats. Areas of potential habitat with sandy soils and sand dunes were not encountered within the Patua II Geothermal Project Area during the 2011 field surveys.

The survey was conducted by one botanists and one botanical technician and consisted of walking transects approximately 30 to 50 feet apart in potential habitat areas and/or noxious weed infested areas (intensive survey), and 100 feet apart throughout the remaining areas (intuitive survey). All plant species encountered were identified and compiled into a plant species list (Appendix C).

Locating, identifying and mapping noxious weed species was the primary activity included in the survey methods, with intensive searches conducted in along canals, adjacent roads, lateral and drainage areas, and canal clean-out dumping areas. Numerous occurrences of noxious weed species, tall whitetop (*Lepidium latifolium*) were encountered and documented with GPS coordinates for mapping purposes (Figure 2). One occurrence of Russian knapweed (*Acroptilon repens*) was encountered on the east side of the Truckee irrigation canal in Section 32, along two seasonally wet laterals. A large number of invasive weed species Russian olive (*Elaeagnus angutifolius*) were also found along the same areas growing with tall whitetop. Two occurrences of saltcedar or tamarisk (*Tamarix ramossisima*) were encountered, one tree was found in an old gravel pit in the northeastern portion of Section 32, the other included over 100 saltcedar trees in a wetland area in Section 29. Other invasive plants noted in the area included tumble mustard (*Descurainia pinnata*), four-horn smotherweed (*Bassia hyssopifolia*), halogeton (*Halogeton glomerata*), cheatgrass (*Bromus tectorum*), Russian olive and Russian thistle (*Salsola tragus*). Three species of noxious weeds were found and documented on Invasive Plant Survey Form(s) and mapped, and are included in Appendix D. As part of the Patua Geothermal Exploration Project, a noxious weed abatement plan (Patua Noxious Weed Abatement Plan, 2009) was prepared to reduce the spread of noxious weeds and to treat noxious weeds within the proposed project area.

2.1 TESC Plant Species Habitat Descriptions

Lahontan indigo bush, (*Psorothamnus kingii*) a state listed species of concern, is known to occur in the lower Humboldt River valley and Carson sink in northwestern Nevada, between Winnemucca and Paradise Valley in Humboldt County, and in the foothills of Hot Spring and Blow Sand Mountains in Churchill County. It is found in sand-flats and hollows in mobile sand dunes. It develops elongating rhizomes, forming populous colonies in extremely localized areas. This shrubby dune plant flowers in June through August, at elevations ranging from 3,800 to 4,800 feet. No suitable habitat and no plant occurrences were noted during the 2011 field survey of the project area.

The BLM listed Sensitive plant species, Nevada dune beardtongue (*Penstemon arenarius*), is endemic to western Nevada. It is known to occur from the vicinity of Tonopah in northwestern Nye and southern Mineral counties, north to the Fallon region in Churchill County, Nevada. It grows in loose, drifting desert sands. It is found in sand dune desert saltshrub plant communities at elevations ranging from 3,600 to 5,500 feet. It flowers from May through June. No suitable habitat or plant occurrences were noted during the 2011 field survey in the project area.

3. BOTANICAL SURVEY RESULTS

3.1 Plant Communities

The vegetation of survey area was comprised of desert saltshrub plant communities in the uplands. The lowland habitats included plant association dominants such as greasewood (*Sarcobates vermiculatus*), Torrey seablite (*Suaeda moquinii*), four-wing saltbush (*Atriplex canescens*) and shadscale *Atriplex confertifolia*). The well drained, dry plains of the Lahontan sediments and residual soils in the foothill elevations were dominated by Bailey's greasewood (*Sarcobates vermiculatus* var. *baileyi*), shadscale, Nevada ephedra (*Ephedra nevadensis*), budsage (*Artemisia spinescens*), winterfat (*Krascheninnikovia lanata*), and glandular indigo bush (*Psorothamnus polyadenius*). The volcanic outcrops and sandy clay soils in the foothills of the Virginia Range were dominated by burrobrush (*Hymenoclea salsola* var. *salsola*), spiney hopsage (*Grayia spinosa*), Bailey's greasewood, budsage, winterfat, glandular indigo bush, shadscale, and Nevada ephedra.

The irrigation canal, wetland areas and laterals were comprised of native and weedy plant species, dominated in areas by greasewood, tall whitetop *(Lepidium latifolium*), saltgrass (*Distichlis spicata*), rubber rabbitbrush (*Chrysothamnus nauseosus*), creeping wildrye (*Leymus triticoides*), and halogeton (*Halogeton glomerata*). Occasional overstory trees encountered in the wetland habitats included Fremont cottonwood (*Populus fremontii*), coyote willow (*Salix exigua*), Chinese elm (*Ulmus parvifolia*) and Russian olive (*Elaeagnus angustifolia*).

3.2 TESC Plants

The May survey was conducted at an optimum time of year for most native plant species identification in the area. No occurrences of TESC plant species were encountered within the Patua II Geothermal Project Area. No suitable habitat for the two rare plant species discussed above was noted.

3.3 Noxious Weeds

Three species of Nevada State-listed noxious weeds were encountered within the Patua II Geothermal Project Area during the botanical surveys (NRCS website, Nevada Administrative Code. 2003. *Control of insects, pests, and noxious weeds.* (State of Nevada.) One of these noxious weed species, tall whitetop, was encountered during the surveys in seasonally wet areas and along the Truckee Canal, frequently found as the dominant ground cover within and along the fringes of wetland habitats. Scattered individuals of tall whitetop extended out into the landscape on both banks of the Truckee Canal. Another noxious weed species, Russian knapweed, was encountered and documented in two seasonally wet laterals of Section 32, often found growing with tall whitetop under a canopy of Russian olive. Approximately 100 saltcedar/tamarisk trees were documented in the wetland area of Section 29, one tree was found in the northeast corner of Section 32, and a large infestation was documented just outside the project boundary in Section 25.

Approximately 68 acres of tall whitetop were documented and mapped with GPS points (individual plants) and polygons (> ¼ acre) in the survey area. Approximately 2 acres infested with Russian knapweed was documented and mapped with GPS. Both tall whitetop and Russian knapweed were growing together on approximately 19 acres. Approximately 2 acres were infested with saltcedar/tamarisk, most of which was documented within the wetland habitat in Section 29, outside the Project Area in Section 25, and one tree found in the northeast corner of Section 32. The saltcedar/tamarisk and tall whitetop together infested approximately 28.4 acres in the wetland are in Section 29. Figure 2 presents an overview of all of the noxious weed occurrences and acreages documented within the Project Area. All noxious weed infestations were documented on Invasive Plant Survey Forms (Appendix D).

4. CONCLUSION AND RECOMMENDATIONS

4.1 TESC Plants

Botanical surveys were completed throughout the Patua II Geothermal Project Area and no TESC plant occurrences or suitable habitat areas were encountered.

4.2 Noxious Weeds

There are numerous areas infested with tall whitetop within the Patua II Geothermal Project Area. Additionally, two other noxious weed species were found within the Project Area. All of the noxious weed species identified during the surveys grow in or near seasonal wetland and/or riparian habitats.

Tall whitetop is an extremely prolific plant that has spread into thousands of acres of lands in Nevada, especially in habitats adjacent to water sources. It is highly invasive in riparian areas, wetlands, marshes, flood plains, irrigation canals and ditches, roadsides, native hay meadows, alfalfa fields, and rangeland habitats. It vigorously spreads by seed, from perennial roots, and deep-seated underground rhizomes.

Nevada Noxious Weed Law states: “The Inspection and Destruction of Noxious Weeds Section of NRS 555 advises that the control of noxious weeds is the responsibility of every landowner or occupant.”. In order to comply with Nevada Law, it is recommended that all areas infested with noxious weeds (particularly tall whitetop and saltcedar) within existing and proposed travel and transmission routes, well pad sites, and any areas slated for disturbance, construction or vehicular/machinery on and off road travel for the Patua II Geothermal Project Area be treated to eradicate the noxious weed species. Additional measures to prevent the spread of noxious weeds onto and off the project site, as well as monitoring for new infestations should be implemented under the direction of the Patua Geothermal Project Noxious Weed Abatement Plan (2009).

5. BOTANY REFERENCES

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R25E

R26E

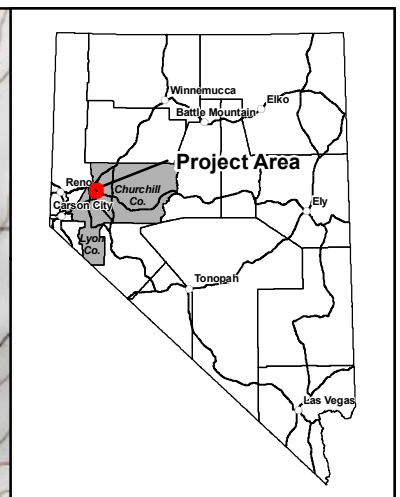
T20N

T20N

T19N

T19N

R26E



Darwin

Black Butte

Ragtown Pass

SOUTHERN PACIFIC

TRUCKEE CANAL

Project Area - 854 acres

Feet
0 1,000 2,000 3,000 4,000 5,000

N

Projection: UTM Zone 11 North, NAD83

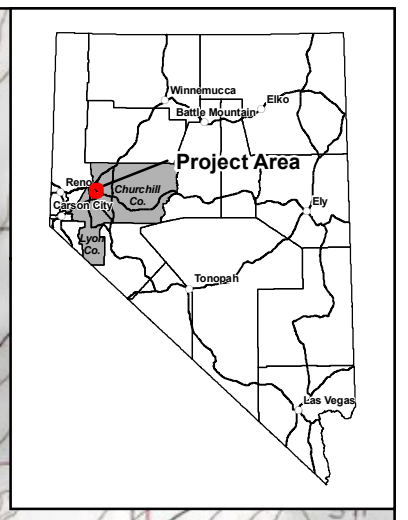
PATUA II PROJECT

Survey Area

Figure 1

Date: 6/3/2011 | Drawn by: CVD

File: PatuaII_NoxWeeds_UTMs.mxd



R25E

R26E

T20N

T19N

Darwin

Black Butte

Ragtown Pass

Project Area - 854 acres

Noxious Weeds

- Acroptilon repens — 0.74 acres
- Acroptilon repens and Lepidium latifolium — 18.65 acres
- Lepidium latifolium — 20.83 acres
- Lepidium latifolium and Tamarix ramosissima — 28.36 acres
- Tamarix ramosissima — 2.06 acres

0 1,000 2,000 3,000 4,000 5,000 Feet

Projection: UTM Zone 11 North, NAD83

PATUA II PROJECT

Noxious Weeds

Figure 2

Date: 6/3/2011 | Drawn by: CVD

File: PatuaII_NoxWeeds_UTMs.mxd

Appendix A

LEO DROZDOFF
Director

Department of Conservation
and Natural Resources

JENNIFER E. NEWMARK
Administrator

BRIAN SANDOVAL
Governor

Nevada Natural Heritage Program
Richard H. Bryan Building
901 S. Stewart Street, suite 5002
Carson City, Nevada 89701-5245
U.S.A.

tel: (775) 684-2900
fax: (775) 684-2909

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Nevada Natural Heritage Program

http://heritage.nv.gov

17 March 2011

Joan Reynolds
Joan Reynolds Botanical Consultants
PO Box 3476
Lake City, CA 96110

RE: Data request received 13 March 2011

Dear Ms. Reynolds:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or At Risk plant and animal taxa recorded within or near the Patua II (Geothermal) Project area. We searched our database and maps for the following, a five kilometer radius around:

Township 19N Range 26E Section 06
Township 20N Range 26E Sections 21, 30 and 32

The enclosed printout lists the taxa recorded within the given area. The Nevada Department of Wildlife (NDOW) manages, protects, and restores Nevada's wildlife resources and associated habitat. Please contact Chet Van Dellen, NDOW GIS Coordinator (775.688.1565) to obtain further information regarding wildlife resources within and near your area of interest. Removal or destruction of state protected flora species (NAC 527.010) requires a special permit from Nevada Division of Forestry (NRS 527.270).

Please note that our data are dependent on the research and observations of many individuals and organizations, and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist /Data Manager

At Risk Taxa Recorded Near the Patua II Project Area

Compiled by the Nevada Natural Heritage Program for Joan Reynolds Botanical Consultants
17 March 2011

Scientific name	Common name	Usfws	Blm	Usfs	State	Srank	Grank	Lat	Long	Prec	Last observed
Plants											
Psorothamnus kingii	Lahontan indigobush					S3	G3	393925N	1190144W	G	1871-08
Invertebrates											
Limenitis archippus lahontani	Nevada viceroy					S1S2	G5T1T2	393450N	1190744W	M	1969-08-10
Limenitis archippus lahontani	Nevada viceroy					S1S2	G5T1T2	393440N	1190640W	S	1978-08-14
Limenitis archippus lahontani	Nevada viceroy					S1S2	G5T1T2	393311N	1190524W	M	1966-08-14
Limenitis archippus lahontani	Nevada viceroy					S1S2	G5T1T2	393346N	1190249W	S	1978-08-14
Birds											
Charadrius alexandrinus nivosus	Western Snowy Plover		N		YES	S3B	G4T3	393824N	1190817W	G	1949-08-30

of Land Management (Blm) Species Classification:

N Nevada Special Status Species - designated Sensitive by State Office

State Protected (State) Species Classification:

na:

YES Species protected under NRS 501.

n (Prec) of Mapped Occurrence:

Precision, or radius of uncertainty around latitude/longitude coordinates:

S Seconds: within a three-second radius
M Minutes: within a one-minute radius, approximately 2 km or 1.5 miles
G General: within about 8 km or 5 miles, or to map quadrangle or place name

Nevada Natural Heritage Program Global (**Grank**) and State (**Srank**) Ranks for Threats Vulnerability:

G Global rank indicator, based on worldwide distribution at the species level
T Global trinomial rank indicator, based on worldwide distribution at the infra level
S State rank indicator, based on distribution within Nevada at the lowest tax level
- 1 Critically imperiled and especially vulnerable to extinction or extirpation extreme rarity, imminent threats, or other factors
- 2 Imperiled due to rarity or other demonstrable factors
- 3 Vulnerable to decline because rare and local throughout its range, or wi restricted range
- 4 Long-term concern, though now apparently secure; usually rare in part range, especially at its periphery
- 5 Demonstrably secure, widespread, and abundant
  - A Accidental within Nevada
  - B Breeding status within Nevada (excludes resident taxa)
  - H Historical; could be rediscovered
  - N Non-breeding status within Nevada (excludes resident taxa)
  - Q Taxonomic status uncertain
  - U Unrankable
  - Z Enduring occurrences cannot be defined (usually given to mig accidental birds)
  - ? Assigned rank uncertain

Appendix B

Wildlife Resource Consultants

State Supervisor
United States Fish and Wildlife Service
1340 Financial Boulevard, Suite 234
Reno, NV 89502

March 8, 2011

Dear Sir:

I am requesting information on endangered, threatened, and species of concern that might occur within the proposed project: Patua II project (Lyon and Churchill Counties, Nevada).

The project is located near the town of Hazen and is approximately five miles east of Fernley, in the following area:

Patua II: T19N R26E; Sec 6
T20N R26E; Sec 21, 30, and 32

Sincerely,

Sue Fox
Wildlife Resource Consultants

PO Box 68
FedEx/UPS: 24124 County Road 1
Cedarville, CA 96104
530 708 0691

Appendix C

PATUA II GEOTHERMAL PROJECT
PLANT SPECIES LIST 2011

Scientific Name	**Common Name**	**Non-native=X Noxious = XX**
Achnatherum hymenoides	Indian ricegrass	
Achnatherum speciosa	Desert needlegrass	
Acroptilon repens	Russian knapweed	XX
Alyssum desertorum	Desert alyssum	
Ambrosia acanthicarpa	Annual bursage	X
Amsinckia tessellata	Fiddleneck	
Artemisia spinescens	Budsage	
Asclepias fascicularis	Narrow-leaf milkweed	
Atriplex canescens	Fourwing saltbush	
Atriplex confertifolia	Shadscale	
Bassia hyssopifolia	Four-horn smotherweed	X
Boechera fendleri	Fendler's rockcress	
Brickellia microphylla	Brickellia	
Bromus tectorum	Cheatgrass	X
Camissonia boothii var. *alyssoides*	Booth primrose	
Camissonia claviformis var. *purpurascens*	Clavate fruit primrose	
Castilleja chromosa	Indian paintbrush	
Caulanthus pilosus	Hairy wild cabbage	
Chaenactis macrantha	Large flower pincushion	
Chaenactis stevioides	Desert pincushion	
Chrysothamnus nauseosus	Rubber rabbitbrush	
Chrysothamnus viscidiflorus var. *puberulus*	Green rabbitbrush	
Cryptantha circumscissa	Cushion cryptantha	
Cryptantha micrantha	Redroot cryptantha	
Cryptantha pterocarya	Wing nut cryptantha	
Descurainia pinnata	Tansy mustard	X
Descurainia paradisa var. *nevadensis*	Tansy mustard	
Distichlis spicata	Desert saltgrass	
Elaeagnus angustifolius	Russian olive	X
Elymus elymoides	Squirreltail grass	
Ephedra nevadensis	Nevada ephedra	
Eriastrum sparsiflora	Wooly starflower	
Eriogonum deflexum var. *nevadense*	Deflexed buckwheat	
Eriogonum heermannii	Heerman's buckwheat	
Eriogonum pusillum	Puny buckwheat	
Gilia inconspicua var. *sinuata*	Shy gilia	
Gilia leptomeria var. *leptomeria*	Great Basin gilia	
Gilia polycladon	Spreading gilia	
Glyptopleuron marginata	Carved seed	
Grayia spinosa	Hopsage	

Gutierrezia sarothrae	Snakeweed	
Halogeton glomerata	Halogeton	X
Hymenoclea salsola var. *salsola*	Burrobrush	
Iva axillaris ssp. *robustior*	Poverty weed	X
Juncus balticus	Baltic rush	
Juncus effusus	Rush	
Kochia scoparia	Summer cypress	X
Krascheninnikovia lanata	Winterfat	
Lactuca serriola	Prickly lettuce	X
Lepidium latifolium	Tall whitetop	XX
Lygodesmia spinosa	Spiney skeletonweed	
Machaeranthera canescens	Hoary aster	
Malacothrix glabrata	Desert dandelion	
Mentzelia albicaulis	White stem stickleaf	
Mirabilis alipes	Wing four o'clock	
Oenothera caespitosa	Caespitose evening primrose	
Oxytheca perfoliata	Perfoliate leaf oxytheca	
Pleuraphis jamesii	Galleta	
Psathyrotes annua	Mealy rosettes	
Psorothamnus polydenius	Glandular indigo bush	
Ranunculus testiculatus	Bur buttercup	X
Salsola tragus	Russian thistle	X
Sarcobates vermiculatus	Greasewood	
Sarcobates vermiculatus var. *baileyi*	Bailey greasewood	
Sisymbrium altissimum	Tumble mustard	X
Sphaeralcea ambigua	Desert globemallow	
Suaeda moquinii	Torrey seablite	
Stanleya pinnata	Prince's plume	
Stephanomeria pauciflora	Few-flowered wire-lettuce	
Tamarix ramossisima	Saltcedar/Tamarisk	XX
Tetradymia glabrata	Little-leaf horsebrush	
Tetradymia spinosa var. *spinosa*	Spiny horsebrush	
Tiquilia nuttallii	Nuttall tiquilia	
Xanthium strumarium	Cocklebur	X

Appendix D

INVASIVE PLANT SURVEY FORM

Date: May 2, 3 and 4 **Recorder's Name:** Joan Reynolds

Time: N/A **Phone #:** (530) 279-2779

Weed Name (s): *Tamarix ramossisima* - Saltcedar/Tamarisk
Infestation Estimate (area, percent infested, and/or # of plants): One plant found growing in old gravel pit in Section 32. Over 100 trees were noted in the wetland of Section 29, growing with tall whitetop. One large infestation west of Project area in Section 25 in man-made drainage - gravel pit with approximately 100 mature trees included in infestation.

Control Methods (what was used and at what rate):
Currently no control methods employed. Noxious weed management plan (Patua Noxious Weed Abatement Plan, 2009) is on file with Gradient Resources, Inc., prepared for the first phase of the geothermal exploration in 2009.

Land Use (roadside, pasture, range, crop, facility, residence, landscape, etc..):
Geothermal exploration/development.

Location: Hazen, NV
Township: 20N **Range:** 26E **Section(s):** 29, 32

County: Lyon and Churchill **State:** Nevada

Latitude: **Longitude:**

UTM: NAD 83

320951	4301191
318051	4382306
318036	4382238
318011	4382247
317980	4382272
318005	4382297

Check if GPS: [X]
See attached Excel spreadsheet for noxious weed UTMs and Figure 2 for mapping of noxious weeds within the Patua II Project Area.

Other Notes: (site flagged or marked, descriptive location, etc..) See Figure 2 Map - Noxious Weeds 2011. Plants growing in low spots in sections 32 and 25, and throughtout the wetland area of Section 29.

INVASIVE PLANT SURVEY FORM

Date: May 2, 3, 4 **Recorder's Name:** Joan Reynolds

Time: N/A **Phone #:** (530) 279-2779

Weed Name (s): *Lepidium latifolium* - Tall whitetop
Infestation Estimate (area, percent infested, and/or # of plants):
Numerous areas - including approximately 68 total acres. In section 32, tall whitetop was growing in association with Russian knapweed and Russian olive. In Section 29, a large tall whitetop and tamarisk infestation was documented in a wetland area.
Control Methods (what was used and at what rate):
Currently no control methods employed. Noxious weed management plan (Patua Noxious Weed Abatement Plan, 2009) is on file with Gradient Resources, Inc., prepared for the first phase of the geothermal exploration in 2009.
Land Use (roadside, pasture, range, crop, facility, residence, landscape, etc..):
Roadside, Truckee canal, geothermal exploration/development, gravel pits

Location: Hazen, NV
Township: 20N **Range:** 26E **Section(s):** portions of sections 29, 30 and 32

County: Lyon and Churchill **State:** Nevada

Latitude: **Longitude:**

UTM: NAD 83

Check if GPS: [X] Figure 2 for mapping of noxious weeds within the Patua II Project Area.

Other Notes: (site flagged or marked, descriptive location, etc..) See Figure 2 Map - Noxious Weeds 2011. Thousands of tall whitetop plants were growing along the Truckee Canal and spreading into the landscape on both sides of the canal. Canal clean-out areas were dumped into portions of the gravel pit in Section 30 and continue to grow, including 100's of plants. Plants growing along a lateral on east side of the canal in section 32. Section 29 wetland infested with over 10,000 tall whitetop plants growing with over 100 saltcedar.

INVASIVE PLANT SURVEY FORM

Date: May 2, 3 and 4 **Recorder's Name:** Joan Reynolds

Time: N/A **Phone #:** (530) 279-2779

Weed Name (s): *Centauria repens* - Russian knapweed
Infestation Estimate (area, percent infested, and/or # of plants):
One extensive occurrence along two laterals, scattered throughout approximately 18 acres in section 32. More than 1,000 plants included in infestation.
Control Methods (what was used and at what rate):
Currently no control methods employed. Noxious weed management plan (Patua Noxious Weed Abatement Plan, 2009) is on file with Gradient Resources, Inc., prepared for the first phase of the geothermal exploration in 2009.
Land Use (roadside, pasture, range, crop, facility, residence, landscape, etc..):
Geothermal exploration/development.

Location: Hazen, NV
Township: 20N **Range:** 26E **Section(s):** 32

County: Lyon and Churchill **State:** Nevada

Latitude: **Longitude:**

UTM: NAD 83

320167	4380428
320233	4380495
320340	4380553
320481	4380613
320530	4380593
320530	4380593
320347	4380538
320275	4380474

Check if GPS: [X] See attached Excel spreadsheet for noxious weed UTMs and Figure 2 for mapping of noxious weeds within the Patua II Project Area.

Other Notes: (site flagged or marked, descriptive location, etc..) See Figure 2 Map - Noxious Weeds 2011. Plants growing along laterals on east side of the canal in section 32.

From: "jreynoldsbotany@aol.com" <jreynoldsbotany@aol.com>
To: "Emily Thornley" <emily.thornley@gradient.com>
Subject: Re: Additional Areas in Section 21

Hi Emily,
I conducted the additional field survey in Section 21 on 6/27 and 6/28 and found no noxious weeds or rare plant occurrences/habitat. I reviewed the 2011 Botanical Resource Report and I do not think it needs revising as there were no botanical resources to add/report for the additional acreage.

Attached is the revised Noxious Weed Abatement Plan. I recommend that Gradient adds all three Botanical Resource Survey Reports to Appendix A (2009, 2010, 2011), and adds the maps developed in 2010 and 2011 to the map Appendix. Let me know if you have any questions.
Thanks Emily.
JR