United States Department of Agriculture

Forest Service

SHAWNEE NATIONAL FOREST

Invasive Species Management Implementation Plan

June 2014

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BACKGROUND

This implementation plan is based on the May, 2014 Final Decision Notice for the Invasives Species Management Project and the Environmental Assessment of the Invasives Species Management Project. It contains all the implementation and monitoring elements described in the environmental assessment and required in the decision notice. This implementation plan will be the guide for all invasive species treatments on the Shawnee National Forest (Forest). It may be amended, supplemented or revised, depending upon future project decisions or based on the most-current, best-available science.

INVASIVE SPECIES MANAGEMENT IMPLEMENTATION

Under the 2014 Invasive Species Management Decision, we will treat four species at the sites depicted on the maps at Appendix B:

- **Amur honeysuckle *(Lonicera maackii*)**
- **Chinese yam *(Dioscorea oppositifolia*)**
- **Garlic mustard (*Alliaria petiolata*)**
- **Kudzu (*Pueraria montana*)**

We will manage 23 natural areas and their associated treatment zones (see maps at Appendix B):

Table 1. High-Priority Natural Areas.

Name*	Location	Name*	Location
Ava	Jackson County T7.5S, R4W	**Keeling Hill South**	Hardin County T12S, R8E
Barker Bluff	Hardin County T12S, R8E	**Kickasola Cemetery**	Pope County T15S, R6.5E
Bell Smith Springs	Pope County T11.5S, R5E	**LaRue-Pine Hills**	Union County T11S, R3W
Bulge Hole	Johnson County T12S, R3E	**Massac Tower Springs**	Pope County T15S, R6.5E
Cretaceous Hills	Pope County T15S, R6E	**Odum Tract**	Johnson County T12S, R3E
Dean Cemetery West	Pope County T15S, R6E	**Panther Hollow**	Hardin County T11S, R10E
Double Branch Hole	Pope County T11.5S, R5.5E.	**Poco Cemetery East**	Pope County T15S, R6.5E
Fink Sandstone Barrens	Johnson County T11.5S, R4E	**Poco Cemetery North**	Pope County T15S, R6.5E
Fountain Bluff	Jackson County T10S, R4W	**Reid's Chapel**	Saline County T10S, R5E
Hayes Creek/Fox Den	Pope County T11.5S, R5.5E	**Russell Cemetery**	Hardin County T10.5S, R8E
Jackson Hole	Pope County T11.5S, R5.5E	**Snow Springs**	Pope County T15S, R6.5E
Keeling Hill North	Hardin County T12S, R8E		

The general order of priority for treating natural areas and treatment zones can be found at Appendix C.

– Herbicides –

The 2014 Decision allows the treatment of invasive species with five herbicides:

Clopyralid Glyphosate Picloram Sethoxydim Triclopyr

When applying herbicides, we will use the most controllable application methods with the least residual impact:

1) hand-held applicator, hack-and-squirt, sprayer, brush or wick applicator
2) backpack sprayer
3) boom-mounted spray rig

Table 2. Herbicides Approved for Use

Chemical	Trade Names	Targeted Use	Risk Assessment
Clopyralid	Curtail™ Reclaim™ Transline™	Foliar spray; broadleaf selective–especially legumes, smartweeds and composites	Durkin 2004a
Glyphosate	Accord® Foresters®	Woody and broadleaf plants: stump treatment, 10-20% solution; foliar spray; non-selective;	Durkin 2011a
Glyphosate (aquatic)	Aquamaster® Rodeo®	Foliar treatment, invasives near open water, non-selective	Durkin 2011a
Picloram	Tordon K Tordon 22k; Grazon	Stump and/or basal-bark treatment	Durkin 2011b
Sethoxydim	Poast® Vantage®	Foliar spray; narrowleaf selective (grasses)	Durkin 2001
Triclopyr	Crossbow™ Garlon™3A Garlon™4 Habitat®;	Stump and/or basal-bark treatment, foliar spot spray; broadleaf selective; woody plants	Durkin 2011c

Under the 2014 Decision, when using **glyphosate**, we will use only formulations with less than high toxicity:

Table 3. Classification of Glyphosate Formulations

	Apparent Toxicity					
Confidence	**Low**		**Medium**	**High**		
High	Accord	Glyfos Aquatic		Buccaneer	Roundup Orig.	
	Accord Conc.	Glyphosate VMF		Cornerstone	Roundup Pro	
	AquaMaster	Glypro		Eliminator	Roundup Pro Conc.	
	AquaNeat	Rodeo		Gly Star Plus	Roundup ProDry	
	Foresters			Honcho	Roundup ProMax	
				Ranger pro	Roundup UltraMax	
	Low	**Medium**		**High**		
Medium	Diamondback	Accord SP	Glyphomax Plus	Glyphogan		
		Buccaneer Plus	Gly-4 Plus	Glyphos X-TRA		
		Cornerstone Plus	Honcho Plus	Roundup Orig. Max		
	Low	**Medium**	**High**			
Low	Aqua Star	Accord XRT	Accord XRT II	RapidFire		
		Durango	DuraMax	Roundup WeatherMax		
		Glyphomax XRT	Durango DMA	RT 3		
		Mirage	Helosate Plus			

Table 4. INVASIVE SPECIES HERBICIDE TREATMENT METHODS	
Species	**BROADLEAF PLANTS** **Treatment Method**
Adam's needle (yucca)	Remove entire plant by hand and grub out root.
Asiatic dayflower	Hand-pull where control is desired.
Chinese yam (PRIORITY SPECIES)	Difficult to control; complete eradication not likely possible. However, it is important to eradicate populations and sources in and around natural areas. Apply triclopyr on dormant or early-germinating bulbils in early spring through April.
Beefsteakplant Common sheep sorrel	Apply triclopyr before bloom or seedset in areas where broadleaf-selective herbicide is preferable; alternatively, glyphosate may be applied where non-selective herbicide is acceptable.
Creeping jenny (bindweed)	Apply glyphosate on heavy infestation in summer-early fall. Extensive root systems may require repeat applications.
Curly dock Common dandelion	Hand-pull individuals where possible, removing taproot. Alternatively, apply triclopyr to young, growing plants, ideally before seeding.
Garlic mustard (PRIORITY SPECIES)	Control of garlic mustard requires depletion of the seedbank; treatment may be required for several years. Hand-pull light/small infestations anytime soil is not frozen, removing all parts of plant. Apply glyphosate in spring or fall. Apply in spring to head off seeding, but take care not to affect early ephemerals that may be in proximity; or, apply in fall/dormant season when garlic mustard is still green. This process may need to be repeated, depending on persistence of seedbank.
Japanese knotweed	Apply glyphosate or triclopyr in fall when leaves are translocating to rhizomes.
Oriental lady's-thumb	Apply glyphosate when plant is actively growing.
Periwinkle	Cut plants, then apply glyphosate to new growth.
Queen Anne's lace Garden yellowrocket	Apply glyphosate to rosettes; apply triclopyr to rosettes the following year if necessary. Plants are biennial; goal is to treat before seeding.
Common St. Johnswort Sleepydick	Apply glyphosate.
Species	**GRASSY PLANTS** **Treatment Method**
Bald brome Canada bluegrass Kentucky bluegrass Smooth brome	Apply fire in late spring after plants are growing, and in late season to ensure control. If application of fire or repeat fire is not possible, apply sethoxydim to new growth.
Japanese bristlegrass	Do not burn. Apply glyphosate or sethoxydim in late spring before warm-season grasses appear; the former where use of non-selective herbicide is acceptable, the latter where grass-selective herbicide is more desirable.
Johnsongrass	Apply glyphosate during June, just prior to seed maturity.
Nepalese browntop	Efforts to eliminate or prevent seedbank are critical to control. Plant is easily pulled and can be cut or burned prior to seed production. Where chemical control is necessary in large infestations, apply sethoxydim when plants are 6-8 inches high, actively growing, and not under stress. Depending on persistence of seedbank, repeat applications may be required.
Orchardgrass Tall fescue	Single clumps can be dug, ensuring whole plant and all stems are removed. If digging is not practical, apply glyphosate when plants are actively growing and not stressed.

Table 4. INVASIVE SPECIES HERBICIDE TREATMENT METHODS	
Reed canarygrass	Apply fire in late spring; apply glyphosate in June and September to ensure control.
Species	**LEGUMINOUS / COMPOSITE PLANTS** **Treatment Method**
Annual ragweed	Control with fire and/or remove by cutting, most effectively prior to seeding. If these methods are not possible, apply triclopyr before seeding. An herbicide containing at least 40% clopyralid could also be used at the rate 21 ounces to the gallon.
Bristly oxtongue	Remove by digging if possible. If large infestation, apply glyphosate.
Bull thistle	Apply fire in late spring, if possible, to increase exposure of rosettes to herbicide application. Apply glyphosate to plants in late bud-stage or early bloom-stage and root reserves are lowest.
Common plantain Common yarrow	Remove by digging individual plants, if possible, ensuring removal of taproot or rhizomes (yarrow). If digging is not practical, apply glyphosate to actively growing plants/rosettes.
Common mullein	Mullein is prolific seed-producer; treatments should be done prior to seeding to effect control. Cut plant below crown prior to seeding, if possible. Alternatively, apply glyphosate or triclopyr to rosette when plant is actively growing.
Crownvetch	Apply triclopyr before seed maturity; clopyralid if a more legume-specific herbicide is desired.
Field clover Yellow sweetclover Red clover Korean clover	Apply glyphosate or triclopyr to actively growing plants; the former where use of non-selective herbicide is acceptable, the latter where a broadleaf-selective herbicide is more desirable.
Kudzu **(PRIORITY SPECIES)**	Eradication by direct root removal is not practical because of the nature of the root system. Total eradication is necessary to prevent regrowth. Cut and remove all parts of plant, or burn where possible. Apply an herbicide containing at least 40% clopyralid at 21 ounces to the gallon to remaining growth during the period August 15 to October 15. Add a non-ionic surfactant to mixture to help penetrate leaf cuticle. (Clopyralid targets legumes and composites, so will not harm non-leguminous trees beneath the kudzu.) A second application can be made during specified timeframe. Follow-up treatments can be made to young stems and leaves in early summer using an herbicide containing at least 44% triclopyr. Target area should be monitored and if residual plants are located treat them with the clopyralid mixture. **If follow-up treatments are not made, kudzu will quickly reclaim an area**. Picloram can be applied directly to cut stumps to further effect eradication. Outside of natural areas, thin-line and hack-and-squirt herbicide application could be done using clopyralid or triclopyr at the specified solutions.
Lesser burdock	Apply glyphosate to actively growing plant rosettes.
Oxeye daisy	Apply an herbicide containing at least 40% (21 ounces to the gallon) clopyralid to actively growing plants.
Sericea lespedeza	Apply triclopyr during June to mid-July when plants are still vegetative and during early flowering. An herbicide containing at least 40% clopyralid could also be used at the rate 21 ounces to the gallon.
Species	**WOODY PLANTS** **Treatment Method**
Amur honeysuckle **(PRIORITY SPECIES)** Bush honeysuckle	Apply prescribed fire if sufficient fuel is present to sustain fire; treat resprouting with glyphosate. In heavy infestations of honeysuckle, spray foliage with glyphosate in late fall when non-target plants are dormant and honeysuckle is still actively growing. Outside of natural areas, thin-line and hack-and-squirt herbicide application could be done using glyphosate at the specified solution.

Table 4. INVASIVE SPECIES HERBICIDE TREATMENT METHODS	
Autumn olive Multiflora rose Tree-of-heaven	Cut plant at main stem(s); apply glyphosate to cut surfaces late in growing season—July – September. For tree-of-heaven, apply glyphosate at 20-50% solution to cut surfaces in summer to late fall. For multiflora rose, routine application of prescribed fire will hinder invasion and prevent establishment. Outside of natural areas, thin-line and hack-and-squirt herbicide application could be done using glyphosate at the specified solution.
Black locust Princess-tree	Cut plant at main stem(s); apply triclopyr at 50% solution to cut stump at any time of year, preferably in dormant season. Outside of natural areas, thin-line and hack-and-squirt herbicide application could be done using triclopyr at the specified solution.
Burningbush Japanese meadowsweet Mock orange	Apply prescribed fire if sufficient fuel is present to sustain fire; treat resprouting with glyphosate. Alternatively, cut plant at main stem(s); apply glyphosate at 10-20% solution to cut surfaces. Outside of natural areas, thin-line and hack-and-squirt herbicide application could be done using glyphosate at the specified solution.
Japanese honeysuckle	Apply prescribed fire and treat resprouting with glyphosate. Cut vining in canopies before burning.
Wintercreeper	Hand-pull and grub small populations, removing all parts of the plant from the site. Otherwise, cut plant as close to ground as possible and apply triclopyr to cut surfaces.

– Design Criteria –

In accordance with the 2013 Decision, comply with the design criteria specified in Tables 5 and 6.
Record all treatment locations with GPS and report treatments in the appropriate database.

Table 5. Design Criteria for Invasive Species Management.	
Resource	**Design Criteria**
Public Affairs	Continue to raise awareness and inform and educate the public and Forest visitors and staff about 1) the issue and effects of invasive species on the Forest, 2) prevention activities and 3) opportunities to participate in low-impact invasive species removal activities.
Invasive Plant Treatments	Clean all equipment before entering and leaving project sites.
	Workers should inspect, remove and properly dispose of plant parts found on clothing and equipment before entering or leaving the project area.
	Minimize soil disturbance to avoid creating favorable conditions that encourage invasives establishment.
	All treatment locations will be recorded with global positioning systems and tracked in the database of record.
	Known or new occurrences that cross ownership boundaries will be noted and data shared with landowners and other agencies.
Botanical	Protect rare plant resources, including state-listed threatened and endangered species, from mechanical or chemical treatments.
Wildlife	Retain all standing dead trees unless necessary to cut for human safety or to accomplish project objectives.
	To reduce the chances of affecting bat maternity roosts and foraging habitats, no prescribed burns shall be done in upland forests from 5/1-9/1.
	Burning near known timber rattlesnake den locations will be done only during hibernation - 11/1-3/31.

Table 5. Design Criteria for Invasive Species Management.	
Resource	**Design Criteria**
Wildlife	For protection of nesting migratory birds, burns should be done as early or late in the season as possible, preferably before 4/1 and after 8/1.
	In order to protect eastern small-footed bats, fires will not be ignited near known-occupied rock outcroppings or cave entrances. No firelines will be constructed in or immediately adjacent to cave habitat.
	High-intensity prescribed fire should not be applied to known locations of the carinate pillsnail in LaRue-Pine Hills Research Natural Area.
Heritage	The Area of Potential Effects will be reviewed and inventoried as needed to ensure that all heritage resources are adequately protected.
Recreation and Visual	Ensure visitor safety before, during and after burning activities. Burn areas should be closed to the public.
	Protect recreational improvements (campgrounds, trailheads and trail-signing).
	Damage to trails and roads used as firebreaks or for access should be repaired to standard.
Wilderness	Ensure non-motorized invasives treatments are utilized.
	Avoid treatments during periods with typical high visitor volume (holidays).
Soil, Water and Air	Use erosion-control measures, including seeding, for firelines that could erode soil into water resources.
	Avoid intense burns that remove forest-floor litter and expose excessive bare soil.
	Maintain soil-stabilization practices until the site is fully revegetated and stabilized.
	Avoid operating heavy equipment to cause excessive soil displacement, rutting or compaction.
	Apply guidelines for protection of water quality and riparian areas; guidelines for the reduction of bare-soil disturbance; retain native vegetation and limit soil disturbance as much as possible.
	Revegetate soils disturbed by management activities by allowing growth of existing on-site vegetation where possible and desirable or by planting or seeding native vegetation.
	Fueling or oiling mechanical equipment must be done away from aquatic habitats.
	When using pesticides in riparian areas and within 100 feet of sinkholes, springs, wetlands and cave openings, adhere to the following: Minimize the use of herbicides; use only herbicides labeled for use in or near aquatic systems; and use only herbicides based on analysis that shows they are environmentally sound and the most biologically effective method practicable.

Table 6. Design Criteria for Human Health and Safety.

Prior to the handling and application of herbicides and fire, review and follow Job Hazard Analyses, Material Safety Data Sheets, product labeling and Safety and Spill Plan requirements.

The following standards must be observed and implemented:

Pre-application

- Use herbicides only when they will provide the most effective control relative to the potential hazards of other proposed management techniques; choose the most effective herbicide requiring the least number of applications.
- Use herbicides in compliance with the product label.
- All applications will be under the direction of a certified pesticide applicator.
- All individuals working with herbicides will review corresponding Material Safety Data Sheets.
- Follow herbicide label directions carefully. This could include temporary closure of treatment areas in order to prevent or limit public exposure and insure public health and safety.
- Obtain weather forecasts prior to herbicide treatment. Halt or delay treatment, if necessary, to prevent runoff during heavy rain or high wind. Apply herbicide only when wind speeds are less than 10 mph, or according to label direction, to minimize herbicide drift. Herbicide applicators must appropriate protective gear.
- Prior to application of prescribed fire, identify smoke-sensitive receptors in the area of the scheduled burn and make required notifications. Plan for public and personnel safety.

Application

- Use the lowest pressure, largest droplet size, and largest volume of water permitted by the label to obtain adequate treatment success; use the lowest spray boom and release height possible consistent with operator safety.
- Apply pesticides during periods of low visitor use when possible; areas treated with pesticides shall be signed, as appropriate, to ensure users are informed of possible exposure.
- Minimize the use of herbicides where runoff may easily enter the water table, (i.e. creeks, rivers, wetlands, caves, sink-holes, or springs); use only pesticides labeled for use in or near aquatic systems.

Post-application

- Store all herbicides in approved buildings when not in use.
- Herbicides will have Material Safety Data Sheets per Forest Service guidelines.
- Wash and rinse equipment used in the mixing and application of herbicides in areas where runoff will not reach surface waters, wetlands, fens, sinkholes, or other special habitats.
- Dispose of rinse water from cleaning or rinsing actions in conjunction with herbicide treatment according to the Federal Insecticide, Fungicide and Rodenticide Act (Website).
- Store and dispose herbicide containers according to label specifications.

– Monitoring –

Monitor treatments for effectiveness and success; if monitoring reveals unacceptable outcomes, implement appropriate measures to correct problems (see Table 7).

Table 7. Monitoring.

Monitoring Activity	Description	Location and Timing
Soil Resources	Visual inspection for sheet, rill and gully erosion. Inspection of soil disturbance.	Before, during and after project activities are completed in project area.
Invasive Species	Samples of project area would be surveyed to assess invasive species increase/decrease.	Selected locations would be monitored before and after implementation.
	Ensure that invasive species design criteria are implemented.	Selected locations would be monitored during and after implementation.
Rare Plant Resources	Monitor known rare plants to ensure no adverse impacts.	Selected locations would be monitored during and after implementation.
Heritage Resources	Ensure that heritage resources are protected during and after implementation.	This project would be checked annually to assess damage to historic properties.
Native Species	Visual inspection to determine presence / repopulation of treated areas by native species.	In treated areas following a growing season.

– Treatment Protocol –

Step 1: Identify areas to be treated, species to be treated, treatment timing, and appropriate treatment methods (see Table 4).

Step 2: Fill out required forms.

Step 3: Prior to treatment, consult a Forest Botanist or other suitably trained person to identify target plants, sensitive sites, rare plants, and methods to protect non-target species. Selected non-target species may be protected with items such as cardboard, plastic, sheets, or similar barriers, to prevent contact from overspray or drift.

Step 4: If using herbicides, post signs to alert the public as to the location and types of treatments being done and the date when a treated area can be re-entered.

Step 5: Apply treatments observing Design Criteria specified in Tables 5 and 6.

Step 6: Report treatments and outcomes in the database(s) of record.

Step 7: Monitor as described in table 7.

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APPENDIX A

Invasive Species Management by HUC6 Watershed

INDEX OF NATURAL AREAS	
Natural Area	**HUC6 Watershed**
Ava Zoological Area	Little Kinkaid Creek – Kinkaid Creek
Barker Bluff Research Natural Area – Ecological Area	Peters Creek – Ohio River
Bell Smith Springs Ecological Area	Little Bay Creek – Bay Creek
Bulge Hole Ecological Area	Little Cache Creek
Cretaceous Hills Ecological Area	Barren Creek
Dean Cemetery West Ecological Area	Barren Creek
Double Branch Hole Ecological Area	Hayes Creek
Fink Sandstone Barrens Ecological Area	Cedar Creek
Fountain Bluff Geological Area	Fountain Bluff – Mississippi River
Hayes Creek – Fox Den Ecological Area	Hayes Creek
Jackson Hole Ecological Area	Hayes Creek
Keeling Hill North Ecological Area	Peters Creek – Ohio River
Keeling Hill South Ecological Area	Peters Creek – Ohio River
Kickasola Cemetery Ecological Area	Sister Islands – Ohio River
LaRue-Pine Hills Research Natural Area – Ecological Area	Hutchins Creek
Massac Tower Springs Ecological Area	Sister Islands – Ohio River
Odum Tract Ecological Area	Little Cache Creek
Panther Hollow Research Natural Area – Ecological Area	Camp Creek – Ohio River
Poco Cemetery East Ecological Area	Sister Islands – Ohio River
Poco Cemetery North Ecological Area	Sister Islands – Ohio River
Reid's Chapel Ecological Area	Little Saline River
Russell Cemetery Ecological Area	Goose Creek – Big Creek
Snow Springs Ecological Area	Sister Islands – Ohio River

BARREN CREEK

[See Azotus, and Cretaceous Hills, Dean Cemetery West area maps.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	0.7 acre

Cretaceous Hills and Dean Cemetery West Ecological Areas

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Common periwinkle 0.69 acre	Nepalese browntop 11.12 acres	Annual ragweed 0.12 acre Sericea lespedeza 0.01 acre	Autumn olive 2.53 acres Japanese honeysuckle 100.84 acres Multiflora rose .03 acre
Total: 0.69 acre	Total: 11.12	Total: 0.13 acre	Total: 103.4 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Common periwinkle, Japanese honeysuckle: glyphosate 3% on 101.53A = 36.327 Nepalese browntop: sethoxydim 1.5% on 11.12A = 3.545 Autumn olive, multiflora rose: glyphosate 20% on 2.56A = 2.714	Annual ragweed, sericea lespedeza: triclopyr 3% on 0.13A = 0.146 Kudzu: triclopyr 2% on 0.7 acre = 1.313 Annual ragweed, kudzu, sericea lespedeza: clopyralid 3% on 0.83A = 1.015

Soil Conditions

Soils in this area—when wet—have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

BAY CREEK DITCH

[See Robnett Barrens area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	16.18 acres	0	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam: triclopyr 3% on 16.18A = 22.753

Soil Conditions

Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

BEAVER CREEK-SALINE RIVER

[See Camp Cadiz area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	92.16 acres	0	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam: triclopyr 3% on 92.16A = 129.6

Soil Conditions

Soils of these sites have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

BIG CREEK *[See Tecumseh, Whoopie Cat area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0.11 acre	0	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Chinese yam: triclopyr 3% on .11A = 0.155			
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

BIG GRAND PIERRE CREEK *[See Herman Hill and One-Horse Gap area maps.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	373.79 acres	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Garlic mustard: glyphosate 3% on 373.79A = 672.822			
Soil Conditions			
Soils of these sites have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.			

BLACK BRANCH-EAGLE CREEK *[See Dennison Hollow area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	1 acre	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Garlic mustard: glyphosate 3% on 1A = 1.8			
Soil Conditions			
Soil of these sites has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

CAMP CREEK-OHIO RIVER

[See Brown Hill and Panther Hollow area maps.]

Priority Species outside Natural Area Treatment Zone

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
8.7 acres	0	0	0

Panther Hollow Research Natural Area–Botanical Area

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Asiatic dayflower .16 acre Oriental lady's-thumb 0.08 acre	Canada bluegrass 1.17 acres Nepalese browntop 1.8 acres Tall fescue 2.8 acres	Sericea lespedeza 0.16 acre	Autumn olive 0.99 acre Japanese honeysuckle 8.54 acres Multiflora rose 2.72 acres
Total: 0.24 acre	Total: 5.77 acres	Total: 0.16 acre	Total: 12.25 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, Japanese honeysuckle, oriental lady's-thumb, tall fescue: glyphosate 3% on 20.12A = 8.2656 Canada bluegrass: sethoxydim 3% on 1.17A = 0.044	Nepalese browntop: sethoxydim 1.5% on 1.8A = 0.57375 Sericea lespedeza: clopyralid 3% on 0.16A = 0.086 Sericea lespedeza: triclopyr 3% on 0.16A = 0.18 Autumn olive, multiflora rose: glyphosate 20% on 3.71A = 3.9326

Soil Conditions

Soil in this area has a slight potential for leaching herbicides and a severe potential for herbicide runoff during heavy rainfall.

CEDAR CREEK

[See Fink Sandstone area map.]

Priority Species outside Natural Area Treatment Zone

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	0

Fink Sandstone Barrens Ecological Area

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.01 acre	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Adam's needle 0.01 acre Asiatic dayflower 0.11 acre Japanese knotweed 0.07 acre Oriental lady's-thumb 0.08 acre Queen Anne's lace 0.01 acre Sleepydick 0.01 acre	Bald brome 0.08 acre Canada bluegrass 0.08 acre Japanese bristlegrass 0.08 acre Kentucky bluegrass 0.08 acre Nepalese browntop 2.7 acres Orchardgrass 0.09 acre Reed canarygrass 0.08 acre Tall fescue 0.08 acre	Common mullein 0.01 acre Common plantain 0.01 acre Common yarrow 0.08 acre Field clover 0.08 acre Lesser burdock 0.08 acre Sericea lespedeza 0.19 acre Yellow sweetclover 0.02 acre	Autumn olive 0.09 acre Japanese honeysuckle 76.66 acres Multiflora rose 0.11 acre
Total: 0.29 acre	Total: 3.27 acres	Total: 0.47 acre	Total: 76.86 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, common mullein, common plantain, common yarrow, field clover, Japanese bristlegrass, Japanese honeysuckle, Japanese knotweed, lesser burdock, orchardgrass, oriental lady's-thumb, Queen Anne's lace, reed canarygrass, sleepydick, tall fescue, yellow sweetclover: glyphosate 3% on 77.45A = 28.218 Autumn olive, multiflora rose: glyphosate 20% on 0.2A = 0.212	Common mullein, field clover, Japanese knotweed, Queen Anne's lace, sericea lespedeza, yellow sweetclover: triclopyr 3% on 0.38A = 0.449 Bald brome, Canada bluegrass, Japanese bristlegrass, Kentucky bluegrass: sethoxydim 3% on 0.32A = 0.015 Nepalese browntop: sethoxydim 1.5% on 2.7A = 0.860 Sericea lespedeza: clopyralid 3% on 0.19A = 0.108

Soil Conditions

Soils in this area—when wet—have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

CEDAR LAKE-CEDAR CREEK *[See Cedar Lake area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	0	38.31 acres
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Kudzu: clopyralid 3% on 38.31A = 58.719		Kudzu: triclopyr 2% on 38.31A = 71.831	
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

COOPER CREEK-MILL CREEK *[See East Dogwood Flats area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	0	0.26 acre
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Kudzu: clopyralid 3% on 0.26A = 0.351		Kudzu: triclopyr 2% on 0.26A = 0.488	
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a severe potential for herbicide runoff during heavy rainfall.			

DRURY CREEK *[See Rich's Cave area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0.81 acre	0	0	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Amur honeysuckle: glyphosate 3% on 0.81A = 0.292			
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

DUTCH CREEK *[See Dutch Creek area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
1.73 acres	0	0	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Amur honeysuckle: glyphosate 3% on 1.73A = 0.623			
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

DUTCHMAN CREEK *[See Bulge Hole, Odum Tract area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0.01 acre	0	0	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Amur honeysuckle: glyphosate 3% on 0.01A = 0.0036			
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

EDMONDSON SLOUGH-SEXTON CREEK *[See Bean Ridge area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	0.96 acre	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Garlic mustard: glyphosate 3% on0.96A = 1.728			
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a severe potential for herbicide runoff during heavy rainfall.			

FOUNTAIN BLUFF-MISSISSIPPI RIVER *[See Fountain Bluff and Talbott Hollow area maps.]*			
Priority Species outside Natural Area Treatment Zone			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
4.63 acres	0	9.38 acres	0
Fountain Bluff Geological Area			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0.01 acre	0	0.01 acre	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
None	None	None	None
Total: 0	Total: 0	Total: 0	Total: 0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Amur honeysuckle, garlic mustard: glyphosate 3% on 14.03A = 18.554			
Soil Conditions			
Soils in this area have a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

GOOSE CREEK-BIG CREEK *[See Tecumseh, Whoopie Cat area map.]*			
Priority Species outside Natural Area Treatment Zone			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0.2 acre	0.1 acre	0
Russell Cemetery Barrens Ecological Area			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
None	Johnsongrass 0.02 acre Nepalese browntop 0.32 acre Orchardgrass 0.01 acre	Common mullein 0.08 acre Sericea lespedeza 0.04 acre	Autumn olive 0.02 acre Japanese honeysuckle 0.92 acre Multiflora rose 0.18 acre Tree-of-heaven 0.04 acre
Total: 0	Total: 0.35 acre	Total: 0.12 acre	Total: 1.16 acres
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Chinese yam, sericea lespedeza: triclopyr 3% on 0.24A = 0.326 Common mullein, garlic mustard, Japanese honeysuckle, Johnsongrass, orchardgrass: glyphosate 3% on 1.13A = 0.595 Nepalese browntop: sethoxydim 1.5% on 0.32A = 0.06		Sericea lespedeza: clopyralid 3% on 0.04A = 0.022 Autumn olive, multiflora rose, tree-of-heaven: glyphosate 20% on 0.24A = 0.2544	
Soil Conditions			
Soils in this area—when wet—have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.			

GRASSY CREEK *[See Panther Den area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	9.41 acres (2.98 acres in Panther Den Wilderness)	0	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Chinese yam: triclopyr 3% on 9.41A = 13.233			
Soil Conditions			
Soils of this site have a moderate potential for leaching herbicides and a for herbicide runoff during heavy rainfall (Forest Plan Table F-9).			

HAYES CREEK

[See Double Branch, Jackson Hole, Hayes Creek area map.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	0

Double Branch Hole, Hayes Creek-Fox Den and Jackson Hole Ecological Areas

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0.2 acre	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Asiatic dayflower 0.09 acre Creeping Jenny 0.01 acre Curly dock 0.01 acre Oriental lady's-thumb 0.65 acre	Bald brome 0.08 acre Canada bluegrass 0.01 acre Nepalese browntop 12.85 acres Tall fescue 1.48 acres	Common yarrow 0.16 acre Field clover 0.08 acre Oxeye daisy 0.08 acre Sericea lespedeza 0.52 acre Yellow sweetclover 0.41 acre	Autumn olive 0.18 acre Black locust 0.08 acre Japanese honeysuckle 52.37 acres Multiflora rose 2.19 acres
Total: 0.76 acre	Total: 14.42 acres	Total: 1.25 acres	Total: 54.82 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam, field clover, oxeye daisy, sericea lespedeza, yellow sweetclover: triclopyr 3% on 1.29A =2.802 Common yarrow, creeping Jenny, field clover, Japanese honeysuckle, oriental lady's-thumb, tall fescue, yellow sweetclover: glyphosate 3% on 55.16A = 21.006 Curly dock: triclopyr 5% on 0.01A = 0.0047	Nepalese browntop: sethoxydim 1.5% on 12.85A = 4.096 Bald brome, Canada bluegrass: sethoxydim 3% on 0.09A = 0.0034 Oxeye daisy, sericea lespedeza: clopyralid 3% on 0.6A = 0.298 Autumn olive, multiflora rose: glyphosate 20% on 2.37A = 2.512 Black locust: triclopyr 50% on .08A = 0.012

Soil Conditions

Soils in these areas—when wet—have a moderate potential of leaching herbicides and for herbicide runoff during heavy rainfall.

HUTCHINS CREEK

[See LaRue-Pine Hills area map.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.01 acre	1.58 acres	0.69 acre (0.66 acre in Bald Knob Wilderness)	0

LaRue-Pine Hills / Otter Pond Research Natural Area / Ecological Area (~320 acres)

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.31 acre	0.01 acre	0.01 acre	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Queen Anne's lace 0.01 acre	Nepalese browntop 0.01 acre Orchardgrass 0.06 acre Tall fescue 0.8 acre	Yellow sweetclover 0.03 acre	Black locust 0.01 acre Japanese honeysuckle 0.06 acre Multiflora rose 0.28 acre
Total broadleaf: 0.01 acre	Total grassy: 0.87 acre	Total leguminous: 0.03 acre	Total woody: 0.35 acre

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, garlic mustard, Japanese honeysuckle, orchardgrass, Queen Anne's lace, tall fescue, yellow sweetclover: glyphosate 3% on 1.67A = 2.029 Nepalese browntop: sethoxydim 1.5% on 0.01A = 0.0032	Chinese yam, Queen Anne's lace, yellow sweetclover: triclopyr 3% on 1.63A = 2.312 Multiflora rose: glyphosate 20% on 0.28A = 0.297 Black locust: triclopyr 50% on 0.01A = 0.006

Soil Conditions

Soils of this area have a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

KINKAID LAKE-KINKAID CREEK

[See Johnson Creek and Kinkaid Lake area maps.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
176.76 acres	0	17.62 acres	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, garlic mustard: glyphosate 3% on 194.38A = 95.35

Soil Conditions

Soils at these sites have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

LAKE OF EGYPT

[See Lake of Egypt area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	2.02 acres	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Garlic mustard: glyphosate 3% on 2.02A = 3.636

Soil Conditions

Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

LITTLE BAY CREEK-BAY CREEK

[See Bell Smith Springs and Jackson Falls area maps.]

Priority Species outside Natural Area Treatment Zone

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	6.49 acres	0

Bell Smith Springs Ecological Area

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0.37 acre	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Asiatic dayflower 0.31 acre Common dandelion 0.01 acres Common St. Johnswort 0.08 acre Curly dock 0.08 acre Oriental lady's-thumb 0.62 acre Queen Anne's lace 0.28 acre	Canada bluegrass 0.08 acre Kentucky bluegrass 0.08 acre Nepalese browntop 4.82 acres Orchardgrass 0.08 acre Tall fescue 1.55 acres	Bristly oxtongue 0.08 acre Bull thistle 0.08 acre Common mullein 0.08 acre Common yarrow 0.09 acre Oxeye daisy 0.08 acre Red clover 0.16 acre Sericea lespedeza 0.49 acre Yellow sweetclover 1.26 acres	Autumn olive 0.25 acre Japanese honeysuckle 4.95 acres Multiflora rose 0.97 acre
Total: 1.38 acres	Total: 6.61 acres	Total: 2.32 acres	Total: 6.17 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam, common dandelion, common mullein, Queen Anne's lace, red clover, sericea lespedeza, yellow sweetclover: triclopyr 3% on 2.65A = 4.176 Curly dock: triclopyr 5% on 0.08A = 0.075 Canada bluegrass, Kentucky bluegrass: sethoxydim 3% on 0.16A = 0.012 Nepalese browntop: sethoxydim 1.5% on 4.82A = 1.536	Bristly oxtongue, bull thistle, common mullein, common St. Johnswort, common yarrow, garlic mustard, Japanese honeysuckle, orchardgrass, oriental lady's-thumb, Queen Anne's lace, red clover, tall fescue, yellow sweetclover: glyphosate 3% on 15.8A = 16.891 Oxeye daisy, sericea lespedeza: clopyralid 3% on 0.57A = 0.267 Autumn olive, multiflora rose: glyphosate 20% on 1.22A = 1.293

Soil Conditions

Soils in this area—when wet—have a moderate potential of leaching herbicides and for herbicide runoff during heavy rainfall.

LITTLE CACHE CREEK

[See Bulge Hole, Odum Tract area map.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.57 acre	0	0.6 acre	0

Bulge Hole and Odum Tract Ecological Areas

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.37 acre	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Asiatic dayflower 0.16 acre Cultivated garlic 0.16 acre Garden yellowrocket 0.08 acre Oriental lady's-thumb 0.39 acre Queen Anne's lace 0.1 acre Wild garlic 0.08 acre	Canada bluegrass 0.08 acre Nepalese browntop 37.71 acres Smooth brome 0.08 acre Tall fescue 0.45 acre	Bull thistle 0.01 acre Common mullein 0.29 acre Common yarrow 0.08 acre Crownvetch 0.29 acre Field clover 0.08 acre Korean clover 0.08 acre Red clover 0.09 acre Sericea lespedeza 1.12 acres Shrub lespedeza 0.48 acre	Autumn olive 0.21 acre Japanese honeysuckle 40.48 acres Multiflora rose 1.08 acres
Total: 0.97 acre	Total: 38.32 acres	Total: 2.52 acres	Total: 41.77 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, bull thistle, common mullein, common yarrow, cultivated garlic, field clover, garden yellowrocket, garlic mustard, Japanese honeysuckle, Korean clover, Oriental lady's-thumb, Queen Anne's lace, red clover, Tall fescue, wild garlic: glyphosate 3% on 43.37A = 9.678 Canada bluegrass, smooth brome: sethoxydim 3% on 0.16A = 0.012	Common mullein, crownvetch, field clover, garden yellowrocket, Korean clover, red clover, Queen Anne's lace, sericea lespedeza: triclopyr 3% on 2.13A = 4.026 Nepalese browntop: sethoxydim 1.5% on 37.71A = 12.02 Crownvetch, sericea lespedeza, shrub lespedeza: clopyralid 3% on 1.89A = 1.608 Autumn olive, multiflora rose: glyphosate 20% on 1.29A = 1.367

Soil Conditions

Soils in these areas have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

LITTLE EAGLE CREEK

[See Russell Cemetery area map.]

Priority Species outside Natural Area Treatment Zone

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0.01 acre	1.78 acres	0

Russell Cemetery Barrens Ecological Area

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
None	None	None	Japanese honeysuckle 1.49 acres Multiflora rose 0.01 acre
Total: 0	Total: 0	Total: 0	Total: 1.5 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Garlic mustard, Japanese honeysuckle: glyphosate 3% on 3.27A = 3.74	Chinese yam: triclopyr 3% on 0.01A = 0.014 Multiflora rose: glyphosate 20% on 0.01A = 0.011

Soil Conditions

Soil in the area has a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

LITTLE GRAND PIERRE CREEK *[See Gowin area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0.2 acre	0.13 acre	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Chinese yam: triclopyr 3% on 0.2A = 0.281		Garlic mustard: glyphosate 3% on 0.13A = 0.234	
Soil Conditions			
Soil of these sites has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

LITTLE KINKAID CREEK-KINKAID CREEK *[See Ava area map.]*			
Priority Species outside Natural Area Treatment Zone			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
181.51 acres	0.2 acre	3.12 acres	0
Ava Zoological Area			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
35.26 acres	0.01 acre	10.69 acres	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
None	None	None	Autumn olive 4.77 acres Japanese honeysuckle 14.1 acres Multiflora rose 42.31 acres
Total: 0	Total: 0	Total: 0	Total: 61.21 acres
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Amur honeysuckle, garlic mustard, Japanese honeysuckle: glyphosate 3% on 244.68A = 107.971		Autumn olive, multiflora rose: glyphosate 20% on 47.08A = 49.905 Chinese yam: triclopyr 3% on 0.21A = 0.295	
Soil Conditions			
Soils of these sites have a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

LITTLE LUSK CREEK-LUSK CREEK *[See Little Lusk 1, Little Lusk 2 and Little Lusk 3 area maps.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	112.78 acres (55.32 acres in Lusk Creek Wilderness)	2.58 acres (1.81 acres in Lusk Creek Wilderness)	1.57 acres
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Chinese yam: triclopyr 3% on 112.78A = 158.597 Garlic mustard: glyphosate 3% on 2.58A = 3.096		Kudzu: clopyralid 3% on 1.57A = 2.12 Kudzu: triclopyr 2% on 1.57A = 2.944	
Soil Conditions			
Soils have a moderate potential for leaching and for herbicide runoff during heavy rainfall.			

LITTLE SALINE RIVER

[See McCormick and Reid's Chapel area maps.]

Priority Species outside Natural Area Treatment Zone

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0	14.46 acres

Reid's Chapel Ecological Area

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.01 acre	0	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Oriental lady's-thumb 0.08 acre Queen Anne's lace 0.1 acre	Nepalese browntop 0.03 acre Tall fescue 0.94 acre	Red clover 0.19 acre Yellow sweetclover 0.08 acre	Autumn olive 0.1 acre Black locust 0.08 acre Japanese honeysuckle 2.86 acres Multiflora rose 0.14 acre Princesstree 0.1 acre
Total: 0.18 acre	Total: 0.97 acre	Total: 0.27 acre	Total: 3.28 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Japanese honeysuckle, oriental lady's-thumb, Queen Anne's lace, tall fescue, yellow sweetclover: glyphosate 3% on 4.06A = 1.886 Kudzu, Queen Anne's lace, red clover, yellow sweetclover: triclopyr 3% on 14.83A = 27.428	Nepalese browntop: sethoxydim 1.5% on 0.03A = 0.0096 Kudzu: clopyralid 3% on 14.46A= 19.521 Autumn olive, multiflora rose: glyphosate 20% on 0.24A = 0.254 Black locust, princesstree: triclopyr 50% on 0.18A = 0.012

Soil Conditions

Soil of this area—when wet—has a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

LUSK CREEK

[See Pleasant Valley area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	6.68 acres	1.51 acres	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam: triclopyr 3% on 6.68A = 9.394	Garlic mustard: glyphosate 3% on 1.51A = 2.718

Soil Conditions

Soils of these sites have a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

MILL CREEK

[See Burner Hill area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	2.04 acres	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Garlic mustard: glyphosate 3% on 2.04A = 3.672

Soil Conditions

Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

PETERS CREEK-OHIO RIVER

[See Barker Bluff, Keeling Hill and Tower Rock area maps.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	4.16 acres	0

Barker Bluff Research Natural Area, Keeling Hill North and Keeling Hill South Ecological Areas

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0.02 acre	0	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Common sheep sorrel 1.17 acres Oriental lady's-thumb 0.23 acre	Canada bluegrass 0.16 acre Nepalese browntop 0.31 acre Tall fescue 0.1 acre	Common mullein 0.08 acre	Autumn olive 0.2 acre Japanese honeysuckle 20.43 acres Multiflora rose 2.28 acres Tree-of-heaven 0.1 acre Wintercreeper 0.01 acre
Total: 1.4 acres	Total: 0.57 acre	Total: 0.08 acre	Total: 23.02 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Common mullein, common sheep sorrel, garlic mustard, Japanese honeysuckle, Oriental lady's-thumb, tall fescue: glyphosate 3% on 26.17A = 15.264 Chinese yam, common mullein, common sheep sorrel, wintercreeper: triclopyr 3% on 1.17A = 0.548	Nepalese browntop: sethoxydim 1.5% on 0.31A = 0.099 Autumn olive, multiflora rose: glyphosate 20% on 2.48A = 5.952 Tree-of-heaven: glyphosate 50% on 0.1A = 0.106 Canada bluegrass: sethoxydim 3% on 0.16A = 0.006

Soil Conditions

Barker Bluff: Soils of this area have a slight potential for leaching herbicides and severe potential for herbicide runoff during heavy rainfall. **Keeling Hill North and South:** Soils of these areas—when wet—hasve a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall .

PINHOOK CREEK-BIG GRAND PIERRE CREEK

[See Garden of the Gods and High Knob area maps.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0.2 acre	4.21 acres (2.38 acres in Garden of the Gods Wilderness)	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam: triclopyr 5% on 0.2A = 0.4	Garlic mustard: glyphosate 3% on 4.21A = 7.578

Soil Conditions

Soil of these sites has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

ROCK CREEK

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	10.72 acres	0	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Chinese yam: triclopyr 3% on 10.72A = 21.44

Soil Conditions

Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

RUNNING LAKE DITCH

[See LaRue-Pine Hills area map.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.09 acre	0.01 acre	1 acre	0

LaRue-Pine Hills/Otter Pond Research Natural Area / Ecological Area

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.83 acres	0.61 acre	1.8 acres	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Beefsteakplant 0.8 acre Common periwinkle 0.26 acre Creeping Jenny 0.07 acre Daffodil 0.01 acre Queen Anne's lace 0.16 acre	Johnsongrass 0.22 acres Nepalese browntop 6.4 acres Orchardgrass 0.35 acre Tall fescue 0.77 acre	Crownvetch 0.01 acre Yellow sweetclover 0.15 acre	Autumn olive 0.01 acre Black locust 0.18 acres Burningbush 0.02 acre Japanese honeysuckle 1.95 acres Multiflora rose 1.91 acres Wintercreeper 0.12 acre
Total: 1.3 acres	Total: 7.74 acres	Total: 0.16 acre	Total: 4.19 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, beefsteakplant, burningbush, common periwinkle, creeping Jenny, garlic mustard, Japanese honeysuckle, Johnsongrass, orchardgrass, Queen Anne's lace, tall fescue, yellow sweetclover: glyphosate 3% on 7.64A = 7.861 Black locust: triclopyr 50% on 0.18A = 1.627	Beefsteakplant, Chinese yam, Queen Anne's lace, wintercreeper: triclopyr 3% on 1.7A = 1.209 Nepalese browntop: sethoxydim 1.5% on 6.4A = 2.04 Autumn olive, burningbush, multiflora rose: glyphosate 20% on 1.94A = 2.056

Soil Conditions

Soils of this area have a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

SANDY CREEK

[See Bean Ridge and Opossum Trot area maps.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0.62 acre	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Garlic mustard: glyphosate 3% on 0.62A = 1.116

Soil Conditions

Soils of this site—when wet—have a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

SEMINARY FORK-CLEAR CREEK

[See Bald Knob area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0.09 acre (in Bald Knob Wilderness)	0	1.06 acres (0.92 acre in Bald Knob Wilderness)	0.14 acre (in Bald Knob Wilderness)

Herbicide Application (in pounds of active ingredient per acre/treatment)

Amur honeysuckle, garlic mustard: glyphosate 3% on 1.15A = 1.304	Kudzu: clopyralid 3% on 0.14A = 0.158 Kudzu: triclopyr 2% on 0.14A=0.263

Soil Conditions

Soil of these sites has a slight potential for leaching herbicides and a severe potential for herbicide runoff during heavy rainfall.

SISTER ISLANDS-OHIO RIVER

[See Poco Cemetery North and East, Kickasola area map.]

Priority Species outside Natural Area Treatment Zones

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0.01 acre	10.7 acres

Kickasola Cemetery, Massac Tower Springs, Poco Cemetery East, Poco Cemetery North and Snow Springs Ecological Areas

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0.2 acre	0.11 acre	9.56 acres
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Annual ragweed 0.36 acre Common periwinkle 0.1 acre Queen Anne's lace 0.02 acre	Nepalese browntop 16.55 acres	Common yarrow 0.02 acre Sericea lespedeza 1.04 acres Yellow sweetclover 0.01 acre	Autumn olive 2.68 acres Black locust 0.01 acre Japanese honeysuckle 24.64 acres Japanese meadowsweet 0.01 acre Mock orange 0.01 acre Multiflora rose 0.08 acre
Total: 0.48 acre	Total: 16.55 acres	Total: 1.07 acres	Total: 27.43 acres

Herbicide Application (in pounds of active ingredient per acre/treatment)

Kudzu: clopyralid 3% on 20.26A = 30.39 Common periwinkle, common yarrow, garlic mustard, Japanese honeysuckle, Queen Anne's lace: glyphosate 3% on 24.9A = 9.112 Annual ragweed, kudzu, Queen Anne's lace, sericea lespedeza: triclopyr 3% on 21.68A = 39.649 Nepalese browntop: sethoxydim 1.5% on 16.55A = 5.275	Chinese yam: triclopyr 5% on 0.2A = 0.47 Annual ragweed, sericea lespedeza: clopyralid 3% on 1.4A = 0.84 Autumn olive, Japanese meadowsweet, mock orange, multiflora rose: glyphosate 20% on 2.78A = 2.947 Black locust: triclopyr 50% on 0.01A=0.09

Soil Conditions

Kickasola Cemetery and Snow Springs: Soils of these areas have a slight potential for leaching herbicides and a severe potential for herbicide runoff during heavy rainfall. **Massac Tower Springs:** Soil of this area has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall. **Poco Cemetery East and North:** Soil of this area has a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.

SPRING VALLEY CREEK-SOUTH FORK SALINE RIVER

[See Dennison Hollow area map.]

Priority Species

Amur Honeysuckle	Chinese Yam	Garlic Mustard	Kudzu
0	0	0.17 acre	0

Herbicide Application (in pounds of active ingredient per acre/treatment)

Garlic mustard: glyphosate 2% on 0.17A = 0.306

Soil Conditions

Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.

SUGAR CREEK *[See Glendale area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	5.57 acres	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Garlic mustard: glyphosate 2% on 5.57A = 10.026			
Soil Conditions			
Soil of this site—when wet—has a moderate potential for leaching herbicides and for herbicide runoff during heavy rainfall.			

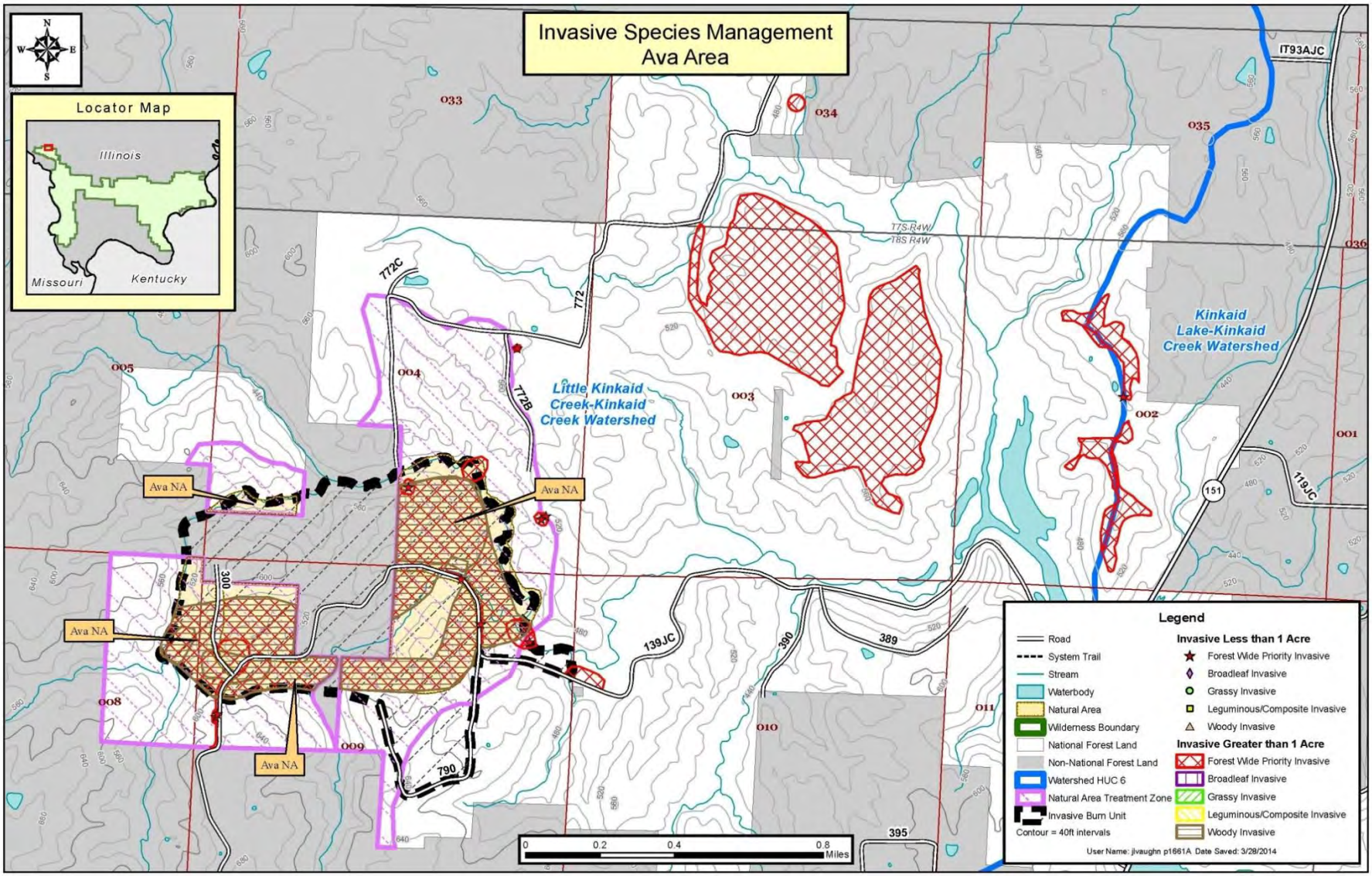
TOWN CREEK-BIG MUDDY RIVER *[See Grassy Knob and LaRue-Pine Hills area maps.]*			
Priority Species outside Natural Area Treatment Zone			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0.01 acre	0	11.88 acres (2.19 acres in Clear Springs Wilderness)	1 acre
Fountain Bluff Geological Area			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0.01 acre	0	0.05 acre	0
Broadleaf	**Grassy**	**Leguminous/Composite**	**Woody**
Queen Anne's lace 0.01 acre	Johnsongrass 0.01 acre Tall fescue 0.1 acre	None	Multiflora rose 0.03 acre
Total: 0.01 acre	Total: 0.11 acre	Total: 0	Total: 0.03 acre
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Amur honeysuckle, garlic mustard, Johnsongrass, Queen Anne's lace, tall fescue: glyphosate 3% on 12.07A = 21.589		Kudzu, Queen Anne's lace: triclopyr 3% on 1.01A = 3.257 Kudzu: clopyralid 3% on 1 acre = 1.35 Multiflora rose: glyphosate 20% on 0.03A = 0.072	
Soil Conditions			
Soil of this site has a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

WORTHEN BAYOU *[See Kinkaid Lake area map.]*			
Priority Species			
Amur Honeysuckle	**Chinese Yam**	**Garlic Mustard**	**Kudzu**
0	0	3.38 acres	0
Herbicide Application (in pounds of active ingredient per acre/treatment)			
Garlic mustard: glyphosate 3% on 3.4A = 6.12			
Soil Conditions			
Soils of this site have a slight potential for leaching herbicides and a moderate potential for herbicide runoff during heavy rainfall.			

APPENDIX B

Location Maps of Treatment Areas

Location Map		HUC6 Watershed
Ava	30	Little Kinkaid Creek-Kinkaid Creek
Azotus	31	Barren Creek
Bald Knob	32	Seminary Fork-Clear Creek
Barker Bluff	33	Peters Creek-Ohio River
Bean Ridge	34	Sandy Creek
Bell Smith Springs	35	Little Bay Creek-Bay Creek
Brown Hill	36	Camp Creek-Ohio River
Bulge Hole, Odum Tract	37	Little Cache Creek
Burner Hill	38	Mill Creek
Camp Cadiz	39	Beaver Creek-Saline River
Cedar Lake	40	Cedar Lake-Cedar Creek
Cretaceous Hills, Dean Cemetery West	41	Barren Creek
Dennison Hollow	42	Spring Valley Creek-South Fork Saline River
Double Branch, Jackson Hole, Hayes Creek	43	Hayes Creek
Dutch Creek	44	Dutch Creek
East Dogwood Flats	45	Cooper Creek-Mill Creek
Fink Sandstone	46	Cedar Creek
Fountain Bluff	47	Fountain Bluff-Mississippi River
Garden of the Gods	48	Pinhook Creek-Big Grand Pierre Creek
Glendale	49	Sugar Creek
Gowin	50	Little Grand Pierre Creek
Grassy Knob	51	Town Creek-Big Muddy River
Herman Hill	52	Big Grand Pierre Creek
High Knob	53	Pinhook Creek-Big Grand Pierre Creek
Jackson Falls	54	Little Bay Creek-Bay Creek
Johnson Creek	55	Kinkaid Lake-Kinkaid Creek
Keeling Hill	56	Peters Creek-Ohio River
Kinkaid Lake	57	Kinkaid Lake-Kinkaid Creek
Lake of Egypt	58	Lake of Egypt
LaRue-Pine Hills	59	Town Creek-Big Muddy River
Lusk Creek 1	60	Little Lusk Creek-Lusk Creek
Lusk Creek 2	61	Little Lusk Creek-Lusk Creek
Lusk Creek 3	62	Little Lusk Creek-Lusk Creek
McCormick	63	Little Saline River
One-Horse Gap	64	Big Grand Pierre Creek
Oppossum Trot	65	Sandy Creek
Panther Den	66	Grassy Creek
Panther Hollow	67	Camp Creek-Ohio River
Pleasant Valley	68	Lusk Creek
Poco Cemetery North & East, Kickasola	69	Sister Islands-Ohio River
Reids Chapel	70	Little Saline River
Rich's Cave	71	Drury Creek
Robnett Barrens	72	Bay Creek Ditch
Russell Cemetery	73	Little Eagle Creek
Talbott Hollow	74	Fountain Bluff-Mississippi River
Tecumseh, Whoopie Cat	75	Goose Creek-Big Creek
Tower Rock	76	Peters Creek-Ohio River
Watershed Vicinity Map	77	


Invasive Species Management
Ava Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
033
034
035
036
IT93AJC
T7S R4W
T8S R4W
772C
772
772B
005
004
003
002
001
Little Kinkaid Creek-Kinkaid Creek Watershed
Kinkaid Lake-Kinkaid Creek Watershed
Ava NA
Ava NA
Ava NA
300
008
009
790
139JC
390
389
011
010
151
119JC
395
0 0.2 0.4 0.8 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
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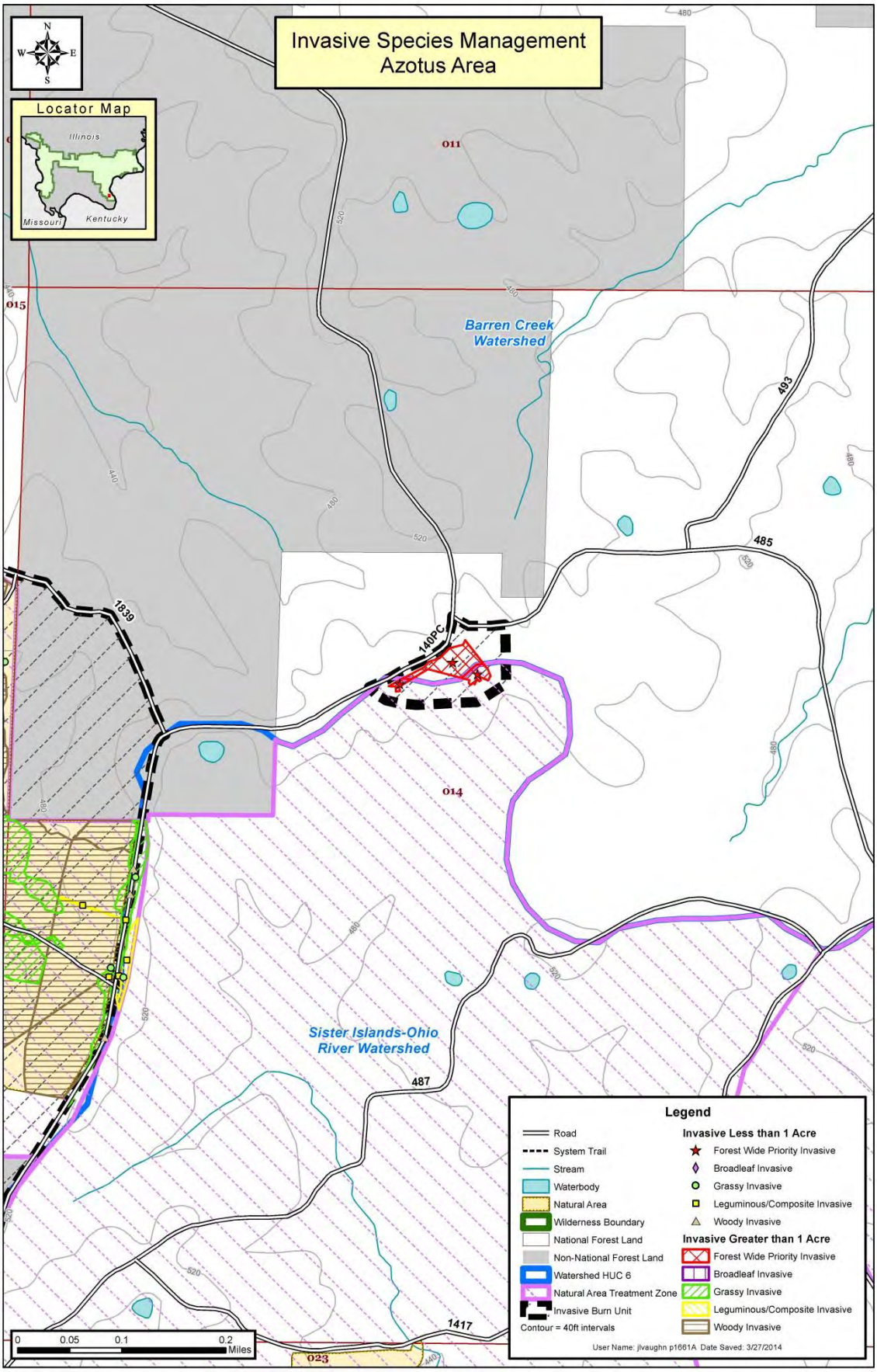
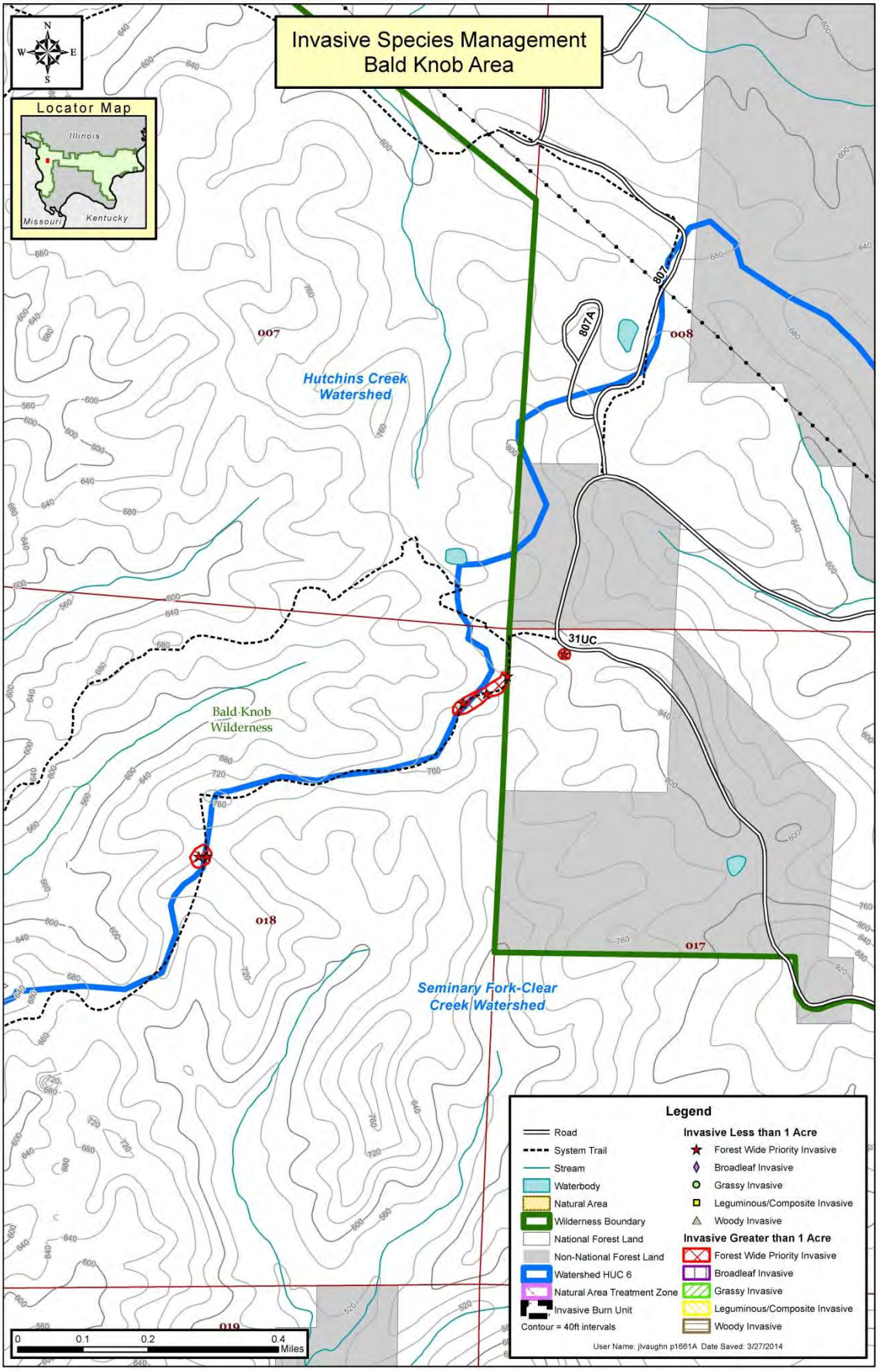
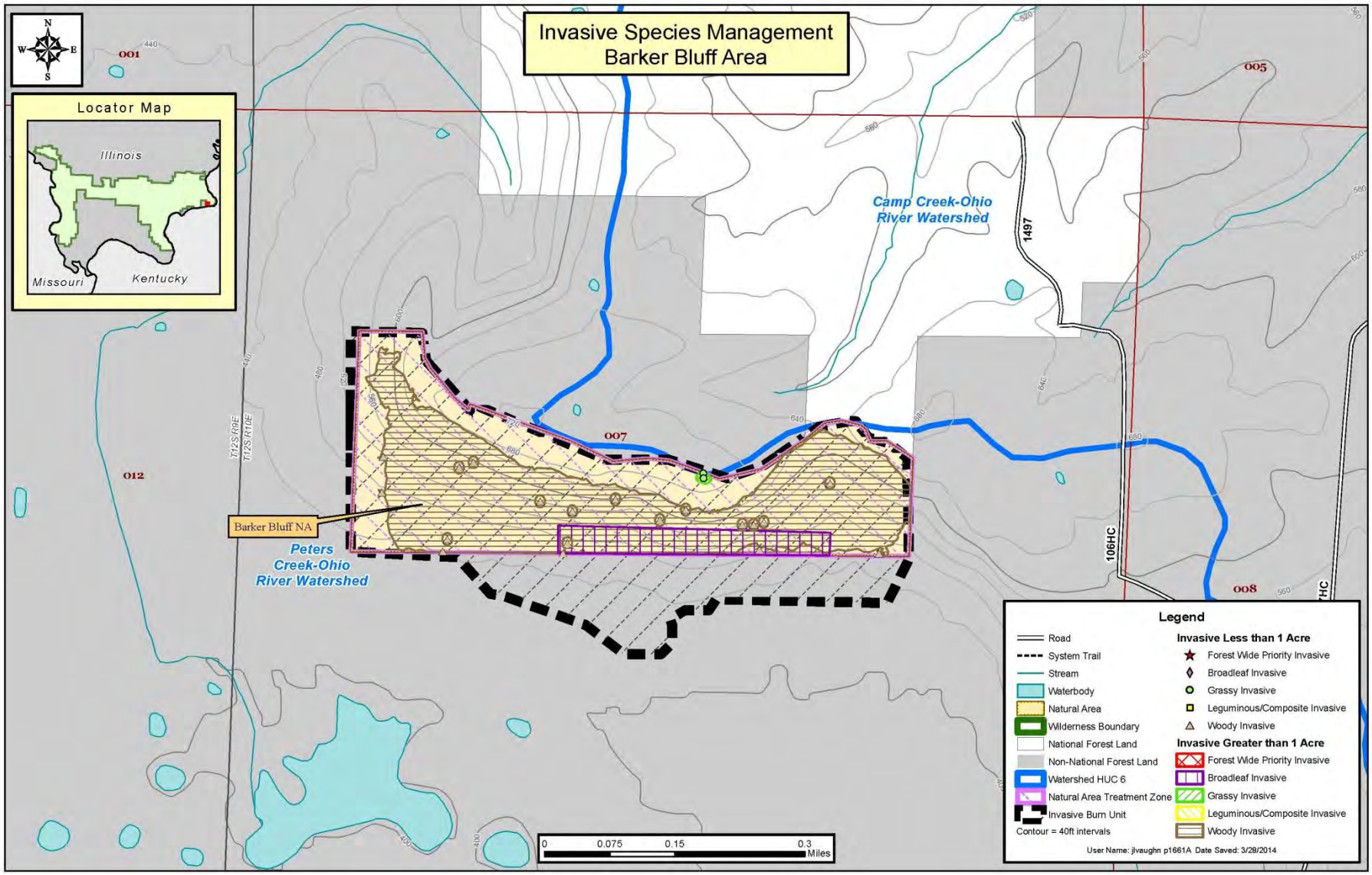
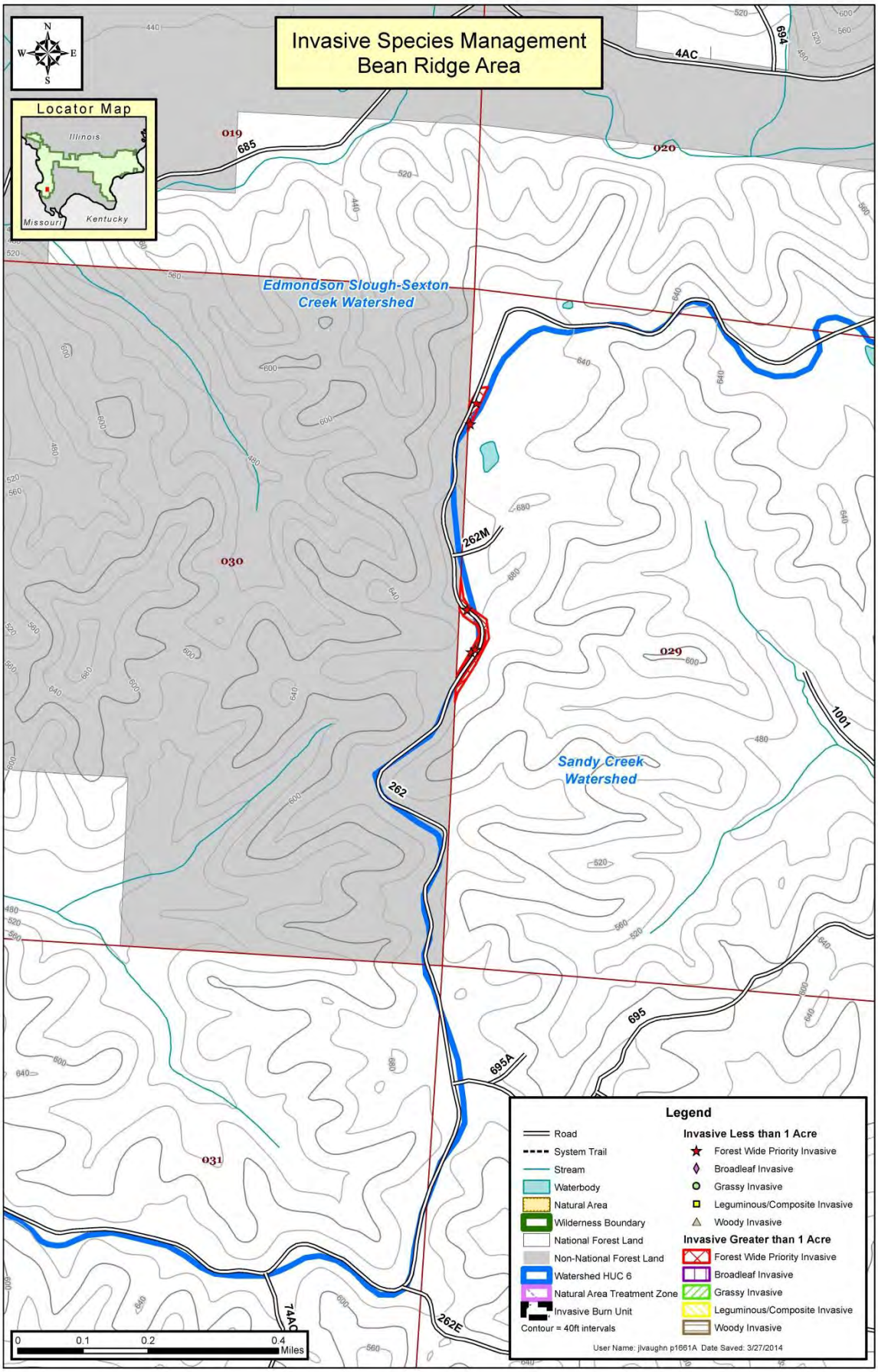
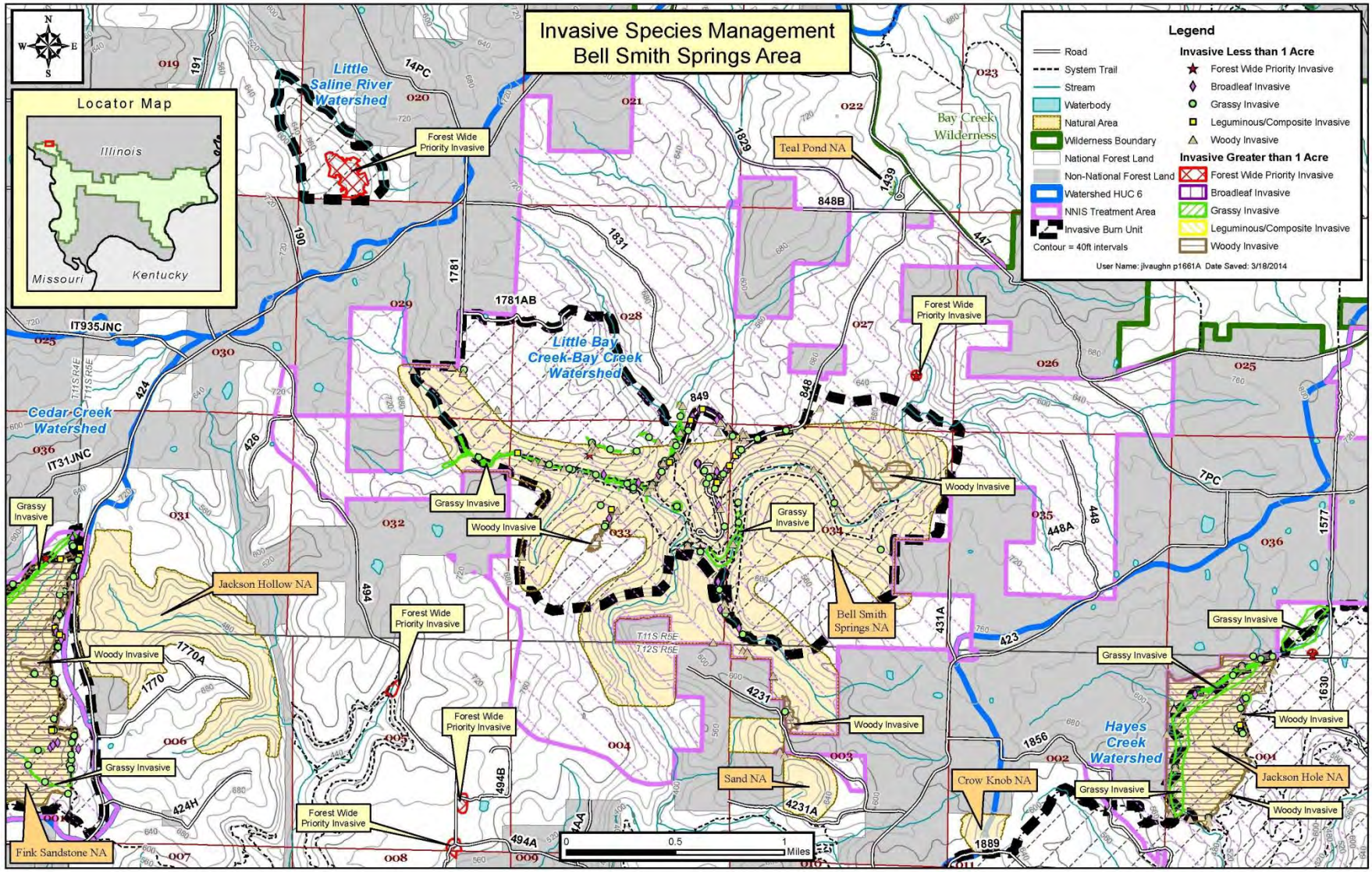
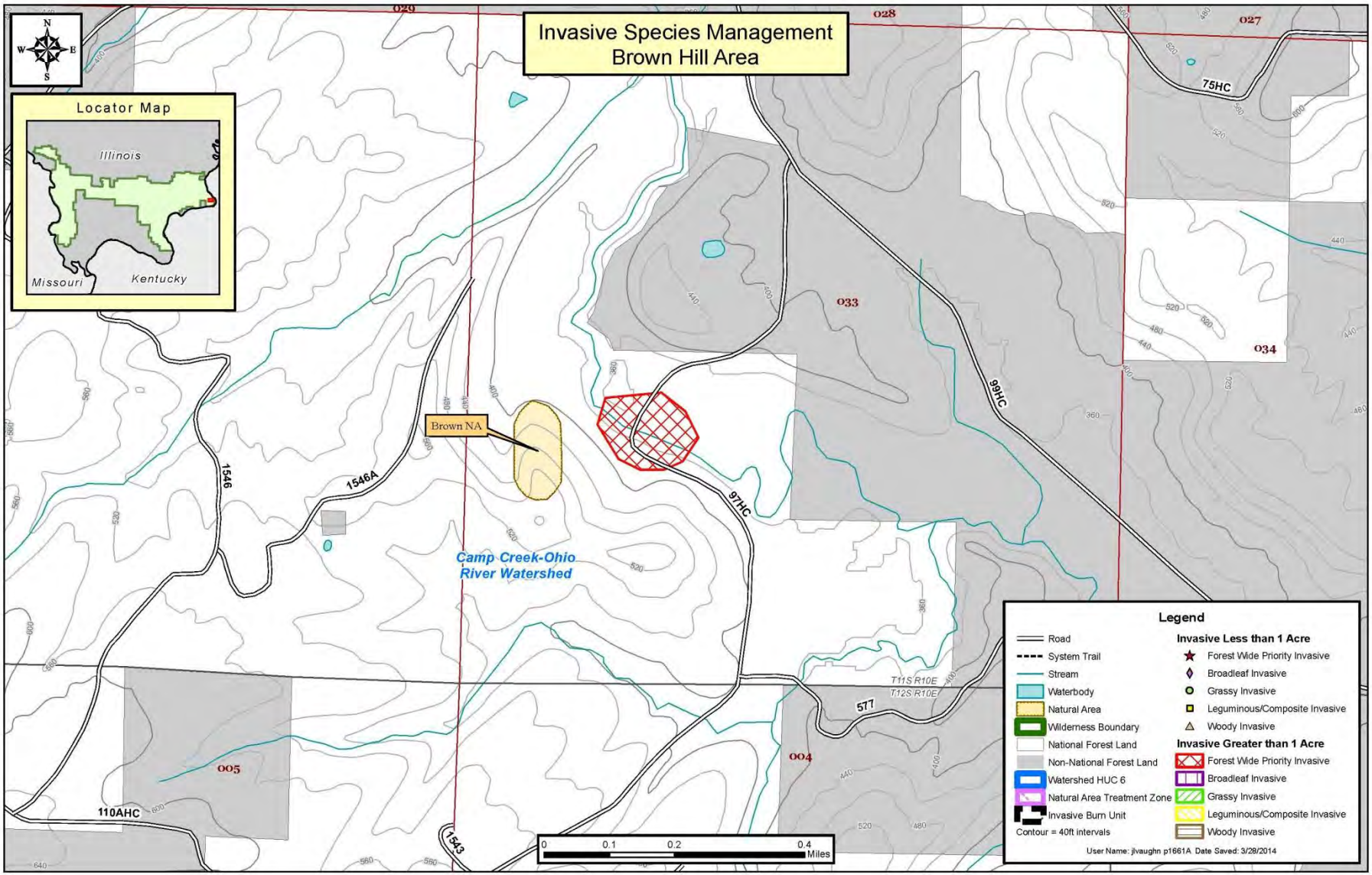

Invasive Species Management
Azotus Area
Locator Map
Illinois
Missouri
Kentucky
011
015
014
Barren Creek
Watershed
Sister Islands-Ohio
River Watershed
1839
140PC
485
493
487
1417
023
0 0.05 0.1 0.2
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

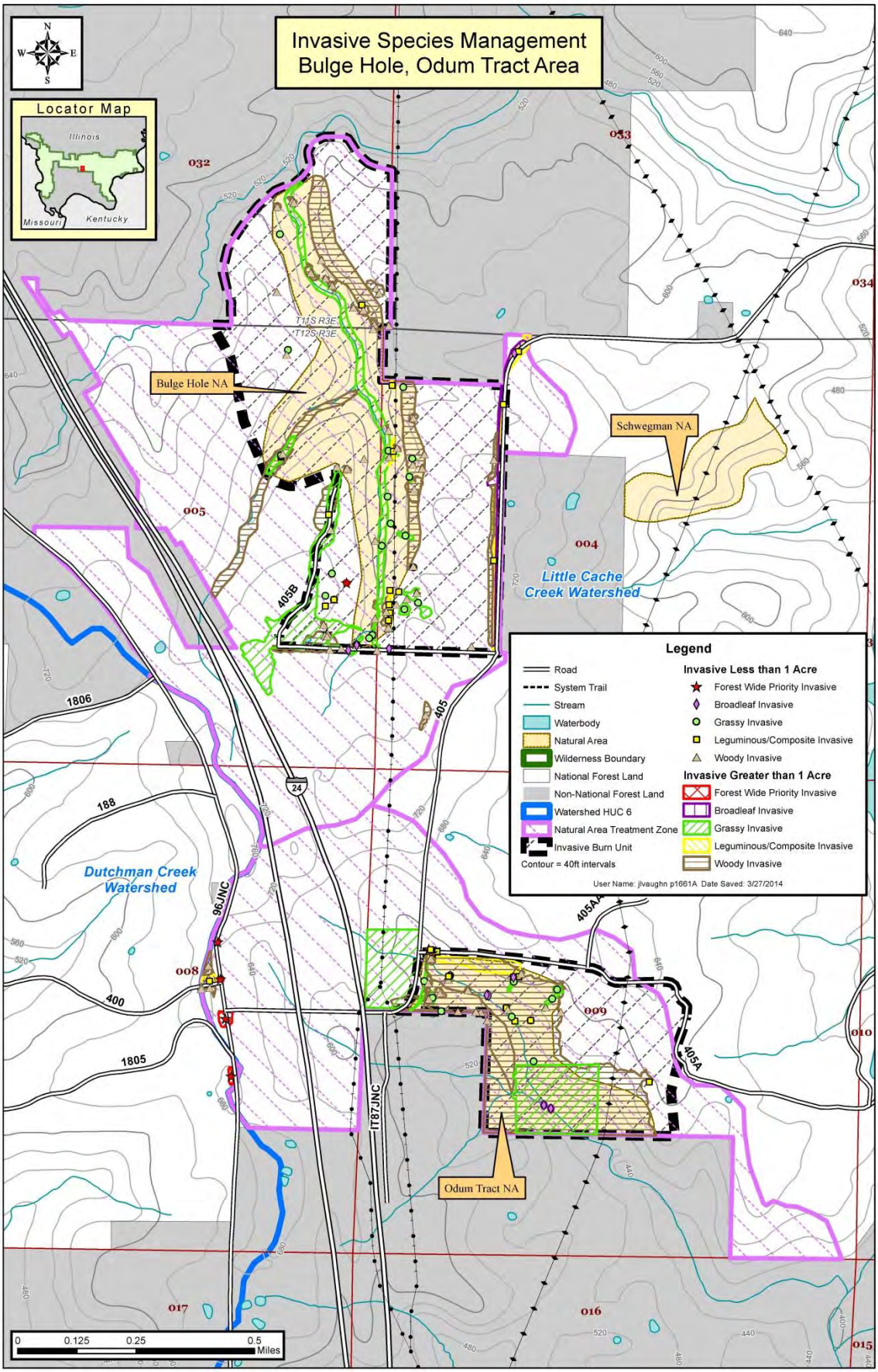

Invasive Species Management
Bald Knob Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
007
008
018
017
019
807
807A
31UC
Hutchins Creek
Watershed
Bald Knob
Wilderness
Seminary Fork-Clear
Creek Watershed
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

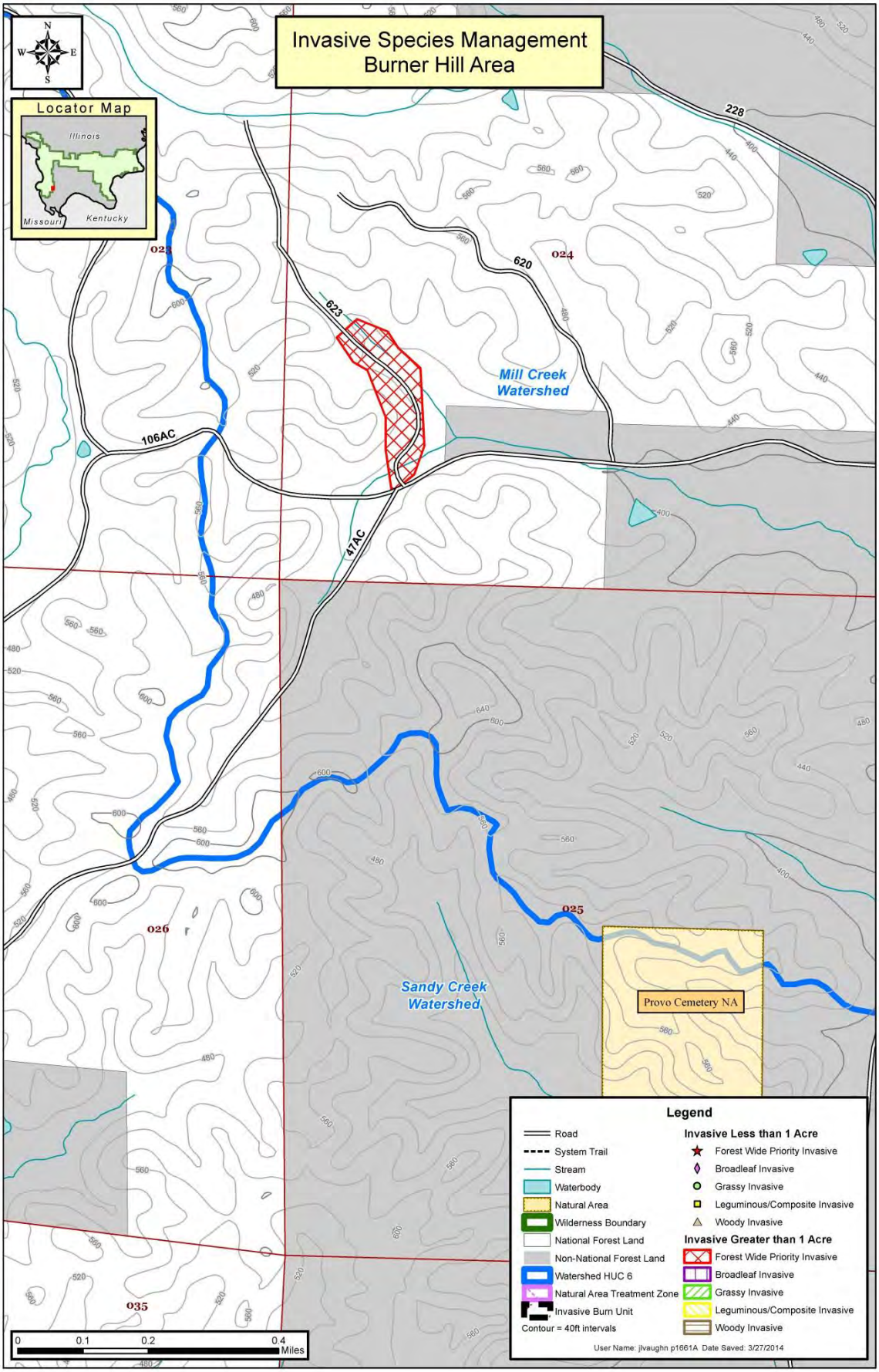

Invasive Species Management
Barker Bluff Area
Locator Map
Illinois
Missouri
Kentucky
Camp Creek-Ohio
River Watershed
Peters
Creek-Ohio
River Watershed
Barker Bluff NA
001
005
007
008
012
1497
106HC
T12S R9E
T12S R10E
0
0.075
0.15
0.3
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014

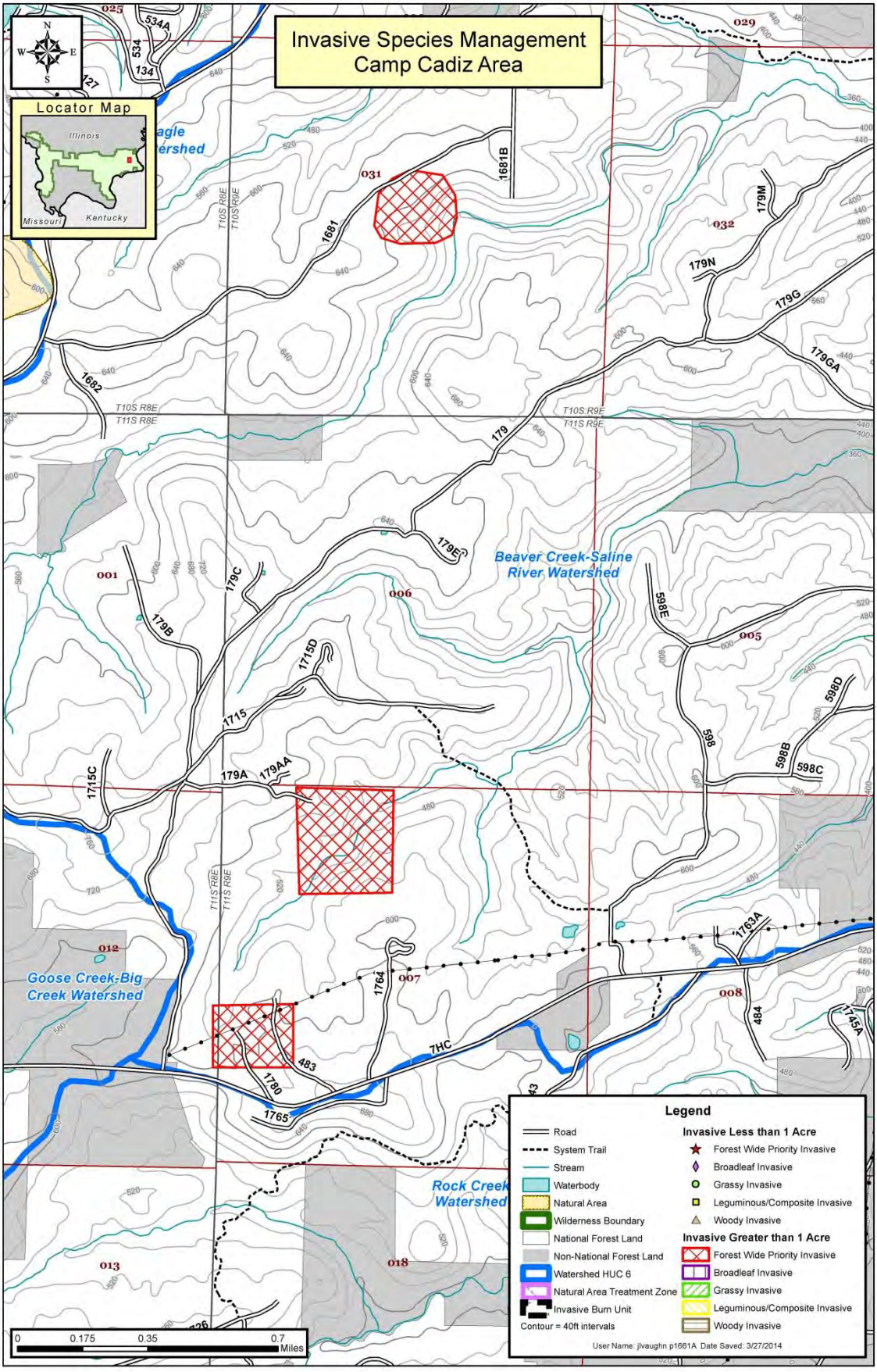

Invasive Species Management
Bean Ridge Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
019
020
030
029
031
685
694
4AC
262M
262
262E
74AC
1001
695
695A
Edmondson Slough-Sexton
Creek Watershed
Sandy Creek
Watershed
0 0.1 0.2 0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

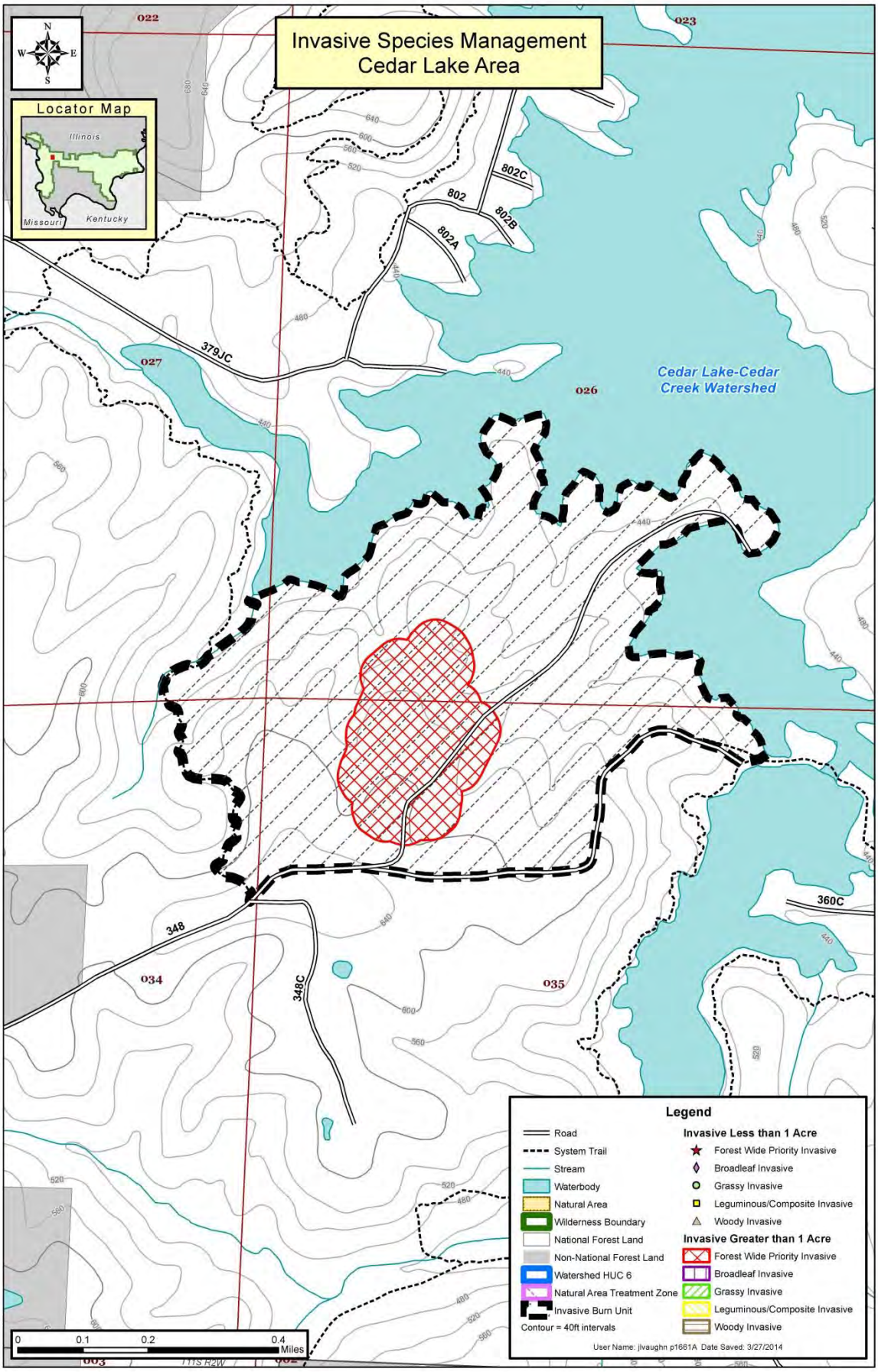

Invasive Species Management
Bell Smith Springs Area
Locator Map
Illinois
Missouri
Kentucky
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
NNIS Treatment Area
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/18/2014
Little Saline River Watershed
Little Bay Creek-Bay Creek Watershed
Cedar Creek Watershed
Hayes Creek Watershed
Bay Creek Wilderness
Teal Pond NA
Jackson Hollow NA
Bell Smith Springs NA
Sand NA
Crow Knob NA
Fink Sandstone NA
Jackson Hole NA
Forest Wide Priority Invasive
Grassy Invasive
Woody Invasive
0 0.5 1 Miles

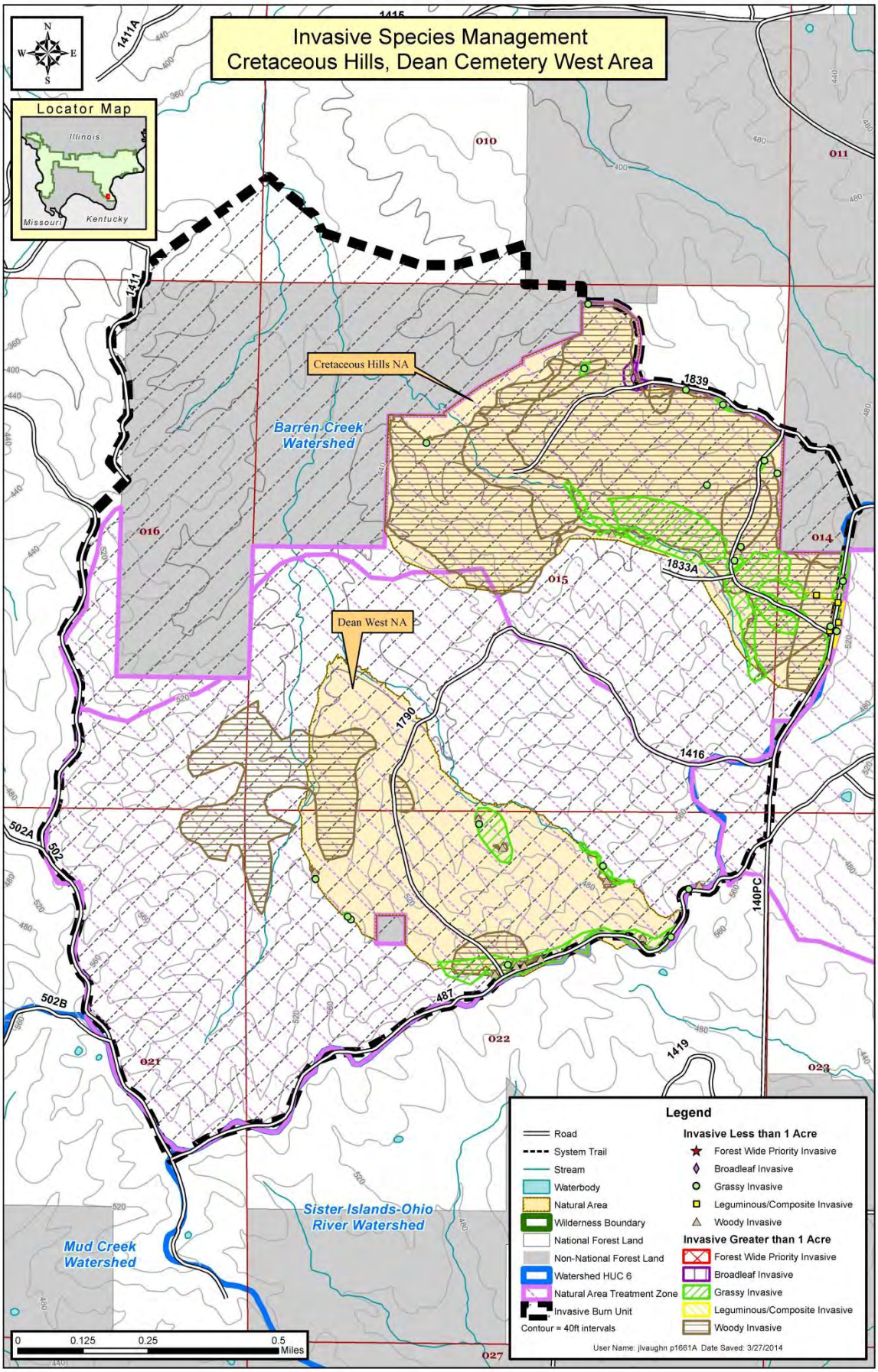

Invasive Species Management
Brown Hill Area
Locator Map
Illinois
Missouri
Kentucky
Brown NA
Camp Creek-Ohio
River Watershed
029
028
027
033
034
005
004
75HC
99HC
97HC
1546
1546A
1543
110AHC
577
T11S R10E
T12S R10E
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014

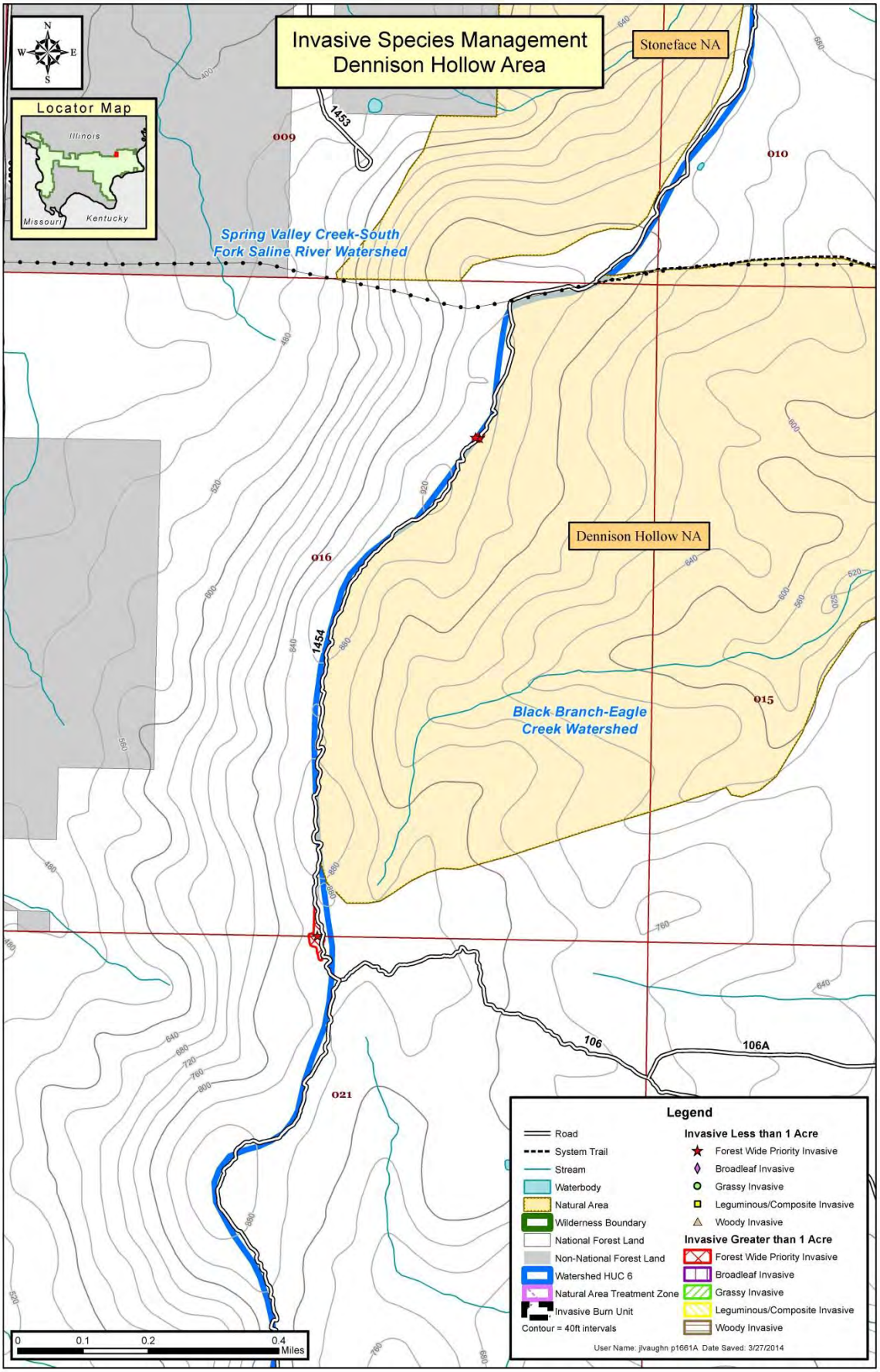

Invasive Species Management
Bulge Hole, Odum Tract Area
Locator Map
Illinois
Missouri
Kentucky
T11S R3E
T12S R3E
Bulge Hole NA
Schwegman NA
Odum Tract NA
Little Cache Creek Watershed
Dutchman Creek Watershed
032
033
034
005
004
008
009
010
017
016
015
1806
188
400
1805
405B
405
405A
96JNC
187JNC
24
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.125 0.25 0.5 Miles

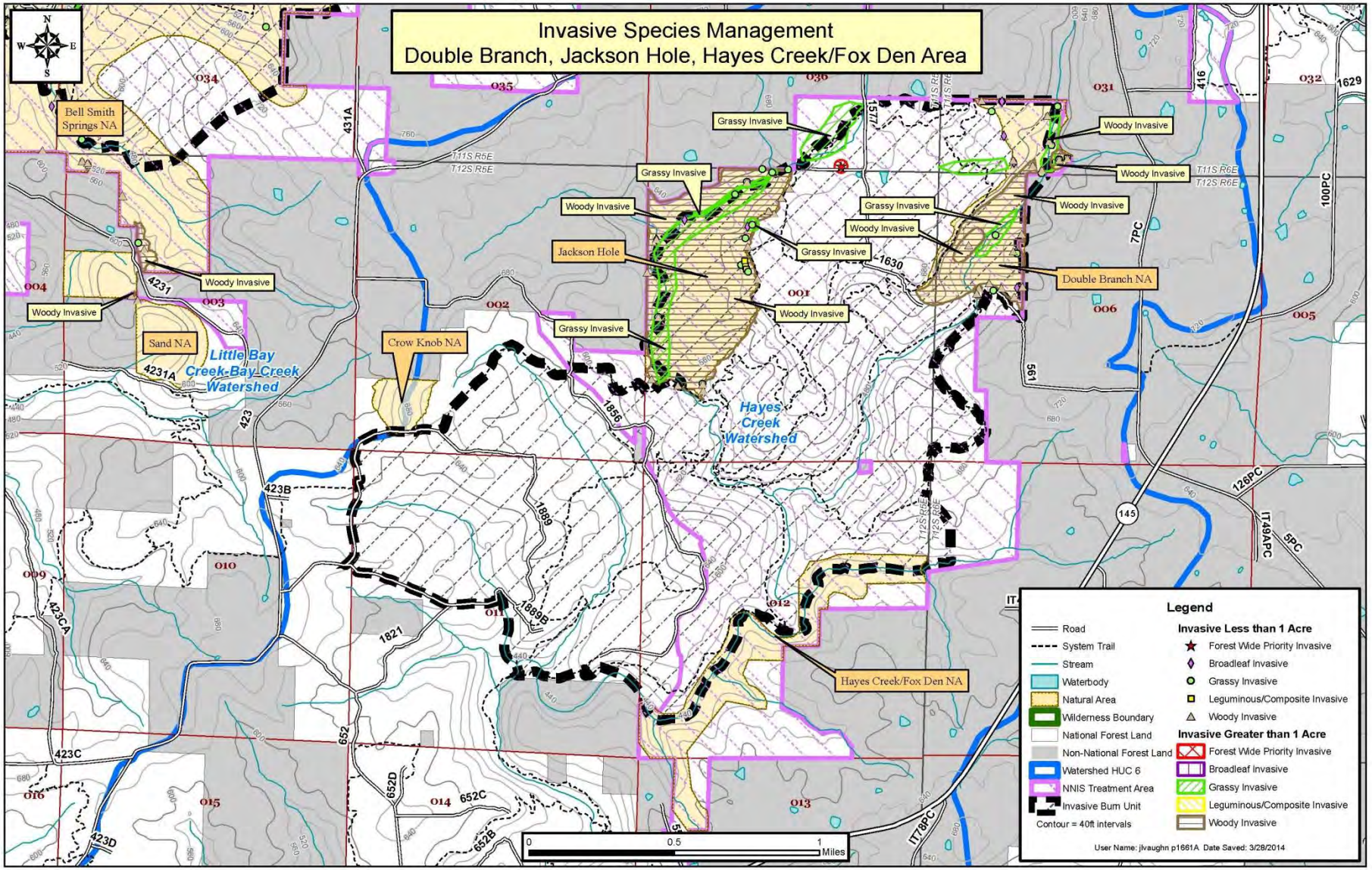

Invasive Species Management
Burner Hill Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
023
024
025
026
035
620
623
228
106AC
47AC
Mill Creek
Watershed
Sandy Creek
Watershed
Provo Cemetery NA
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

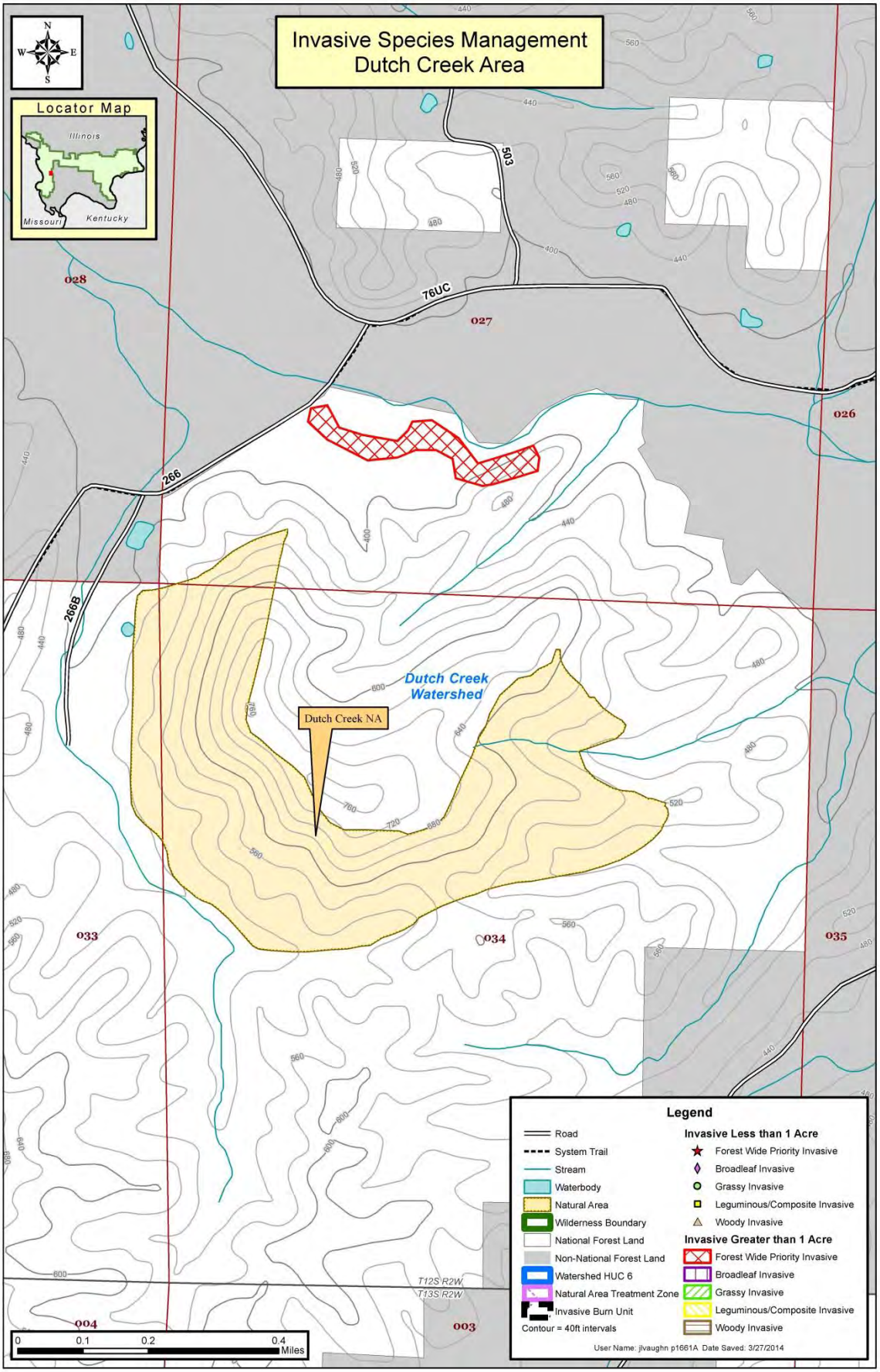

Invasive Species Management
Camp Cadiz Area
Locator Map
Illinois
Missouri
Kentucky
Beaver Creek-Saline River Watershed
Goose Creek-Big Creek Watershed
Rock Creek Watershed
T10S R8E
T11S R8E
T10S R9E
T11S R9E
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.175 0.35 0.7 Miles

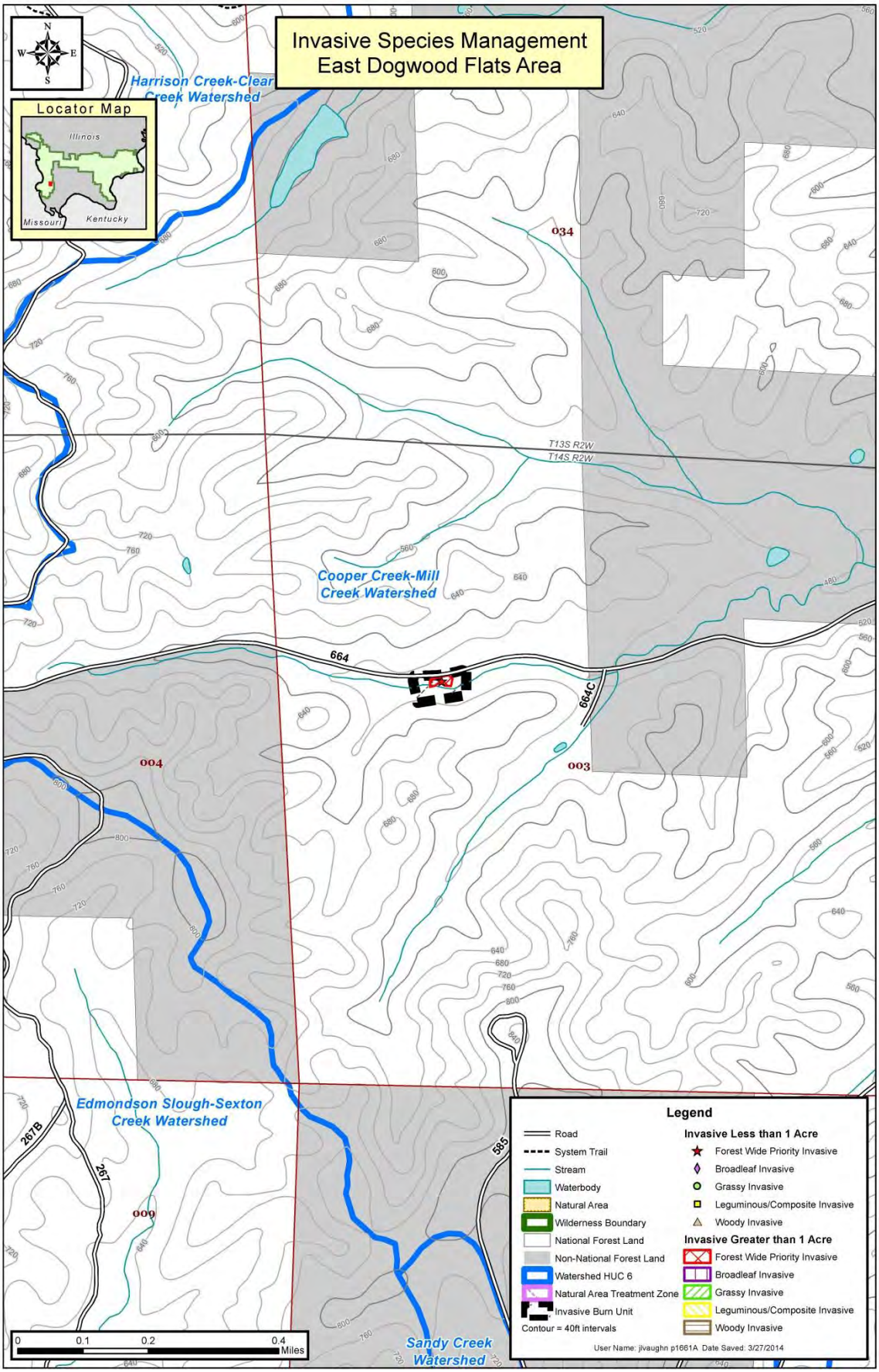

Invasive Species Management
Cedar Lake Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
022
023
026
027
034
035
802
802A
802B
802C
379JC
348
348C
360C
Cedar Lake-Cedar
Creek Watershed
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0
0.1
0.2
0.4
Miles
11S R2W

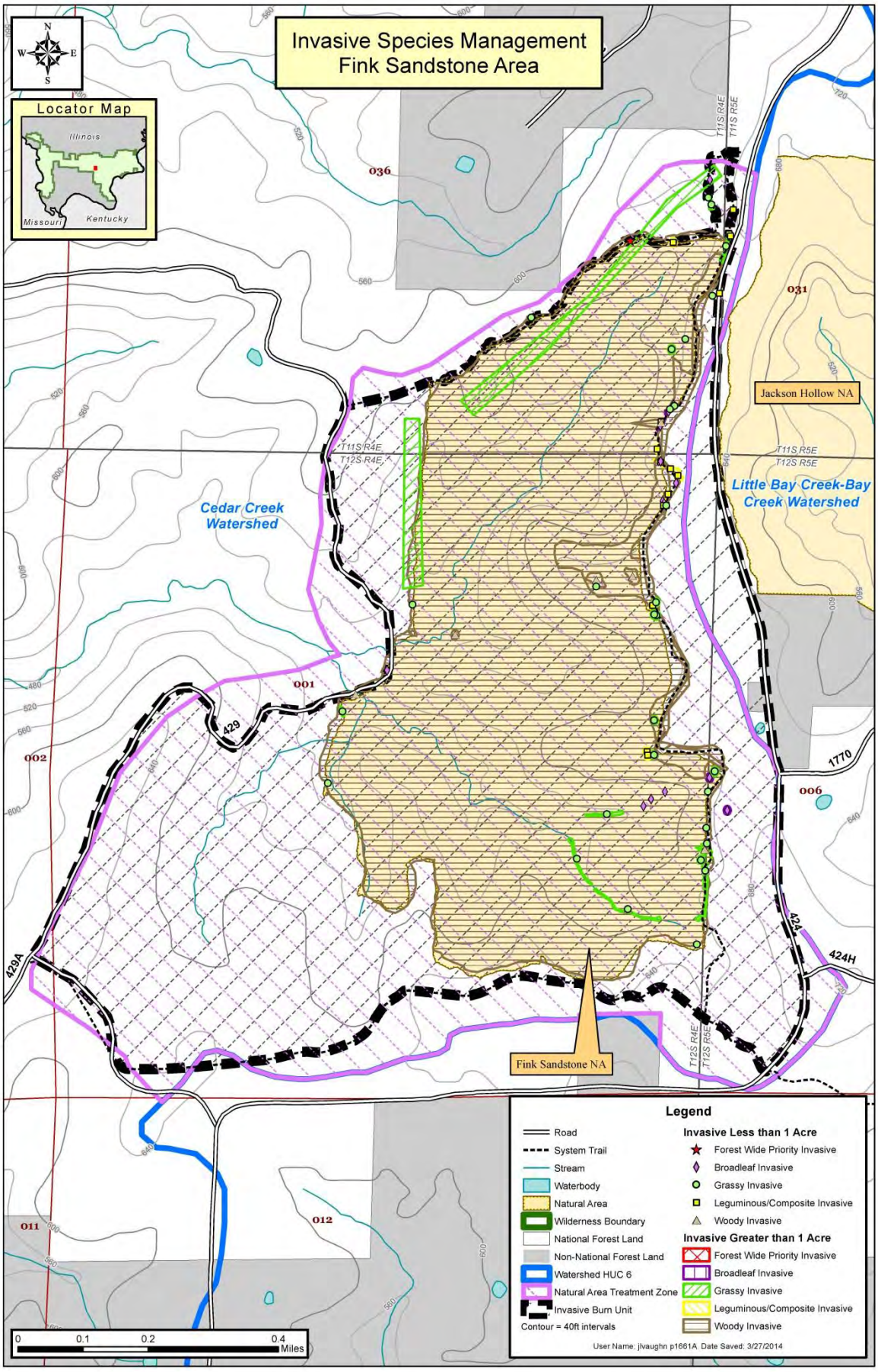

Invasive Species Management
Cretaceous Hills, Dean Cemetery West Area
Locator Map
Illinois
Missouri
Kentucky
Cretaceous Hills NA
Dean West NA
Barren Creek Watershed
Sister Islands-Ohio River Watershed
Mud Creek Watershed
010
011
014
015
016
021
022
023
027
1411
1411A
1839
1833A
1790
1416
140PC
487
1419
502
502A
502B
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0
0.125
0.25
0.5
Miles

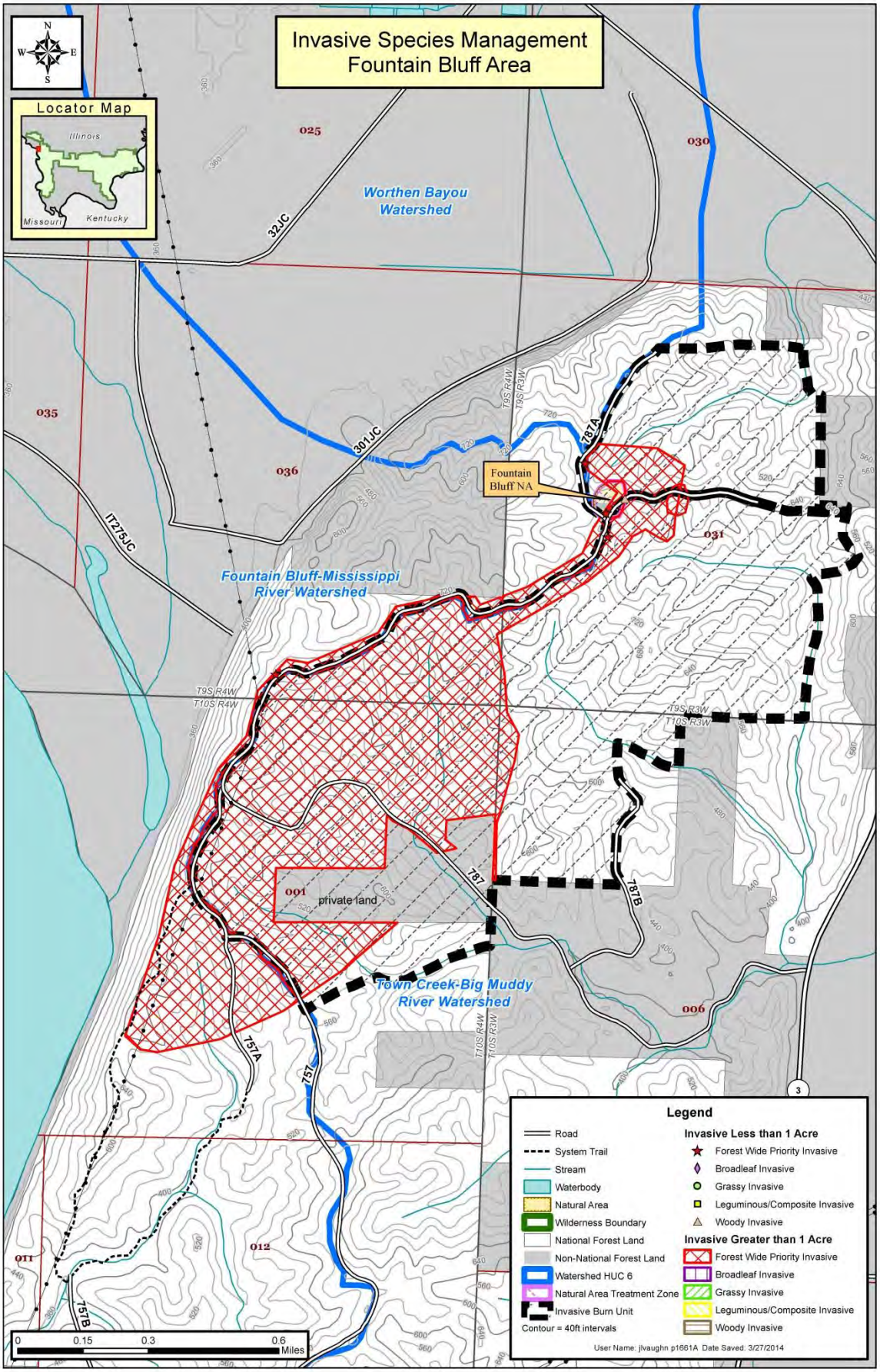

Invasive Species Management
Dennison Hollow Area
Stoneface NA
Dennison Hollow NA
Locator Map
Illinois
Missouri
Kentucky
Spring Valley Creek-South Fork Saline River Watershed
Black Branch-Eagle Creek Watershed
009
010
015
016
021
1453
1454
106
106A
N
S
E
W
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

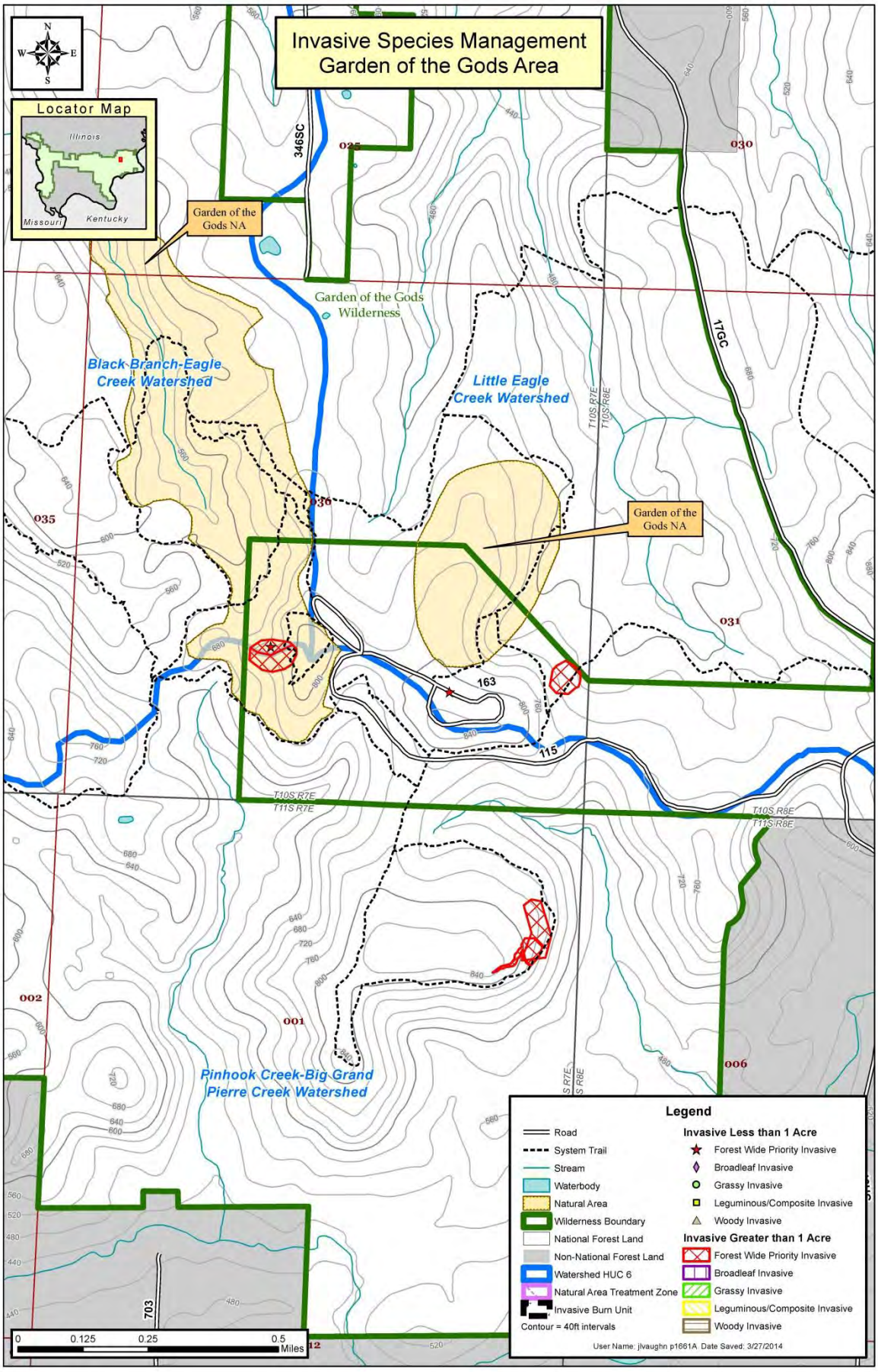

Invasive Species Management
Double Branch, Jackson Hole, Hayes Creek/Fox Den Area
Bell Smith Springs NA
Sand NA
Crow Knob NA
Jackson Hole
Double Branch NA
Hayes Creek/Fox Den NA
Little Bay Creek-Bay Creek Watershed
Hayes Creek Watershed
Grassy Invasive
Woody Invasive
T11S R5E
T12S R5E
T11S R6E
T12S R6E
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
NNIS Treatment Area
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
0
0.5
1
Miles
User Name: jlvaughn p1661A Date Saved: 3/28/2014

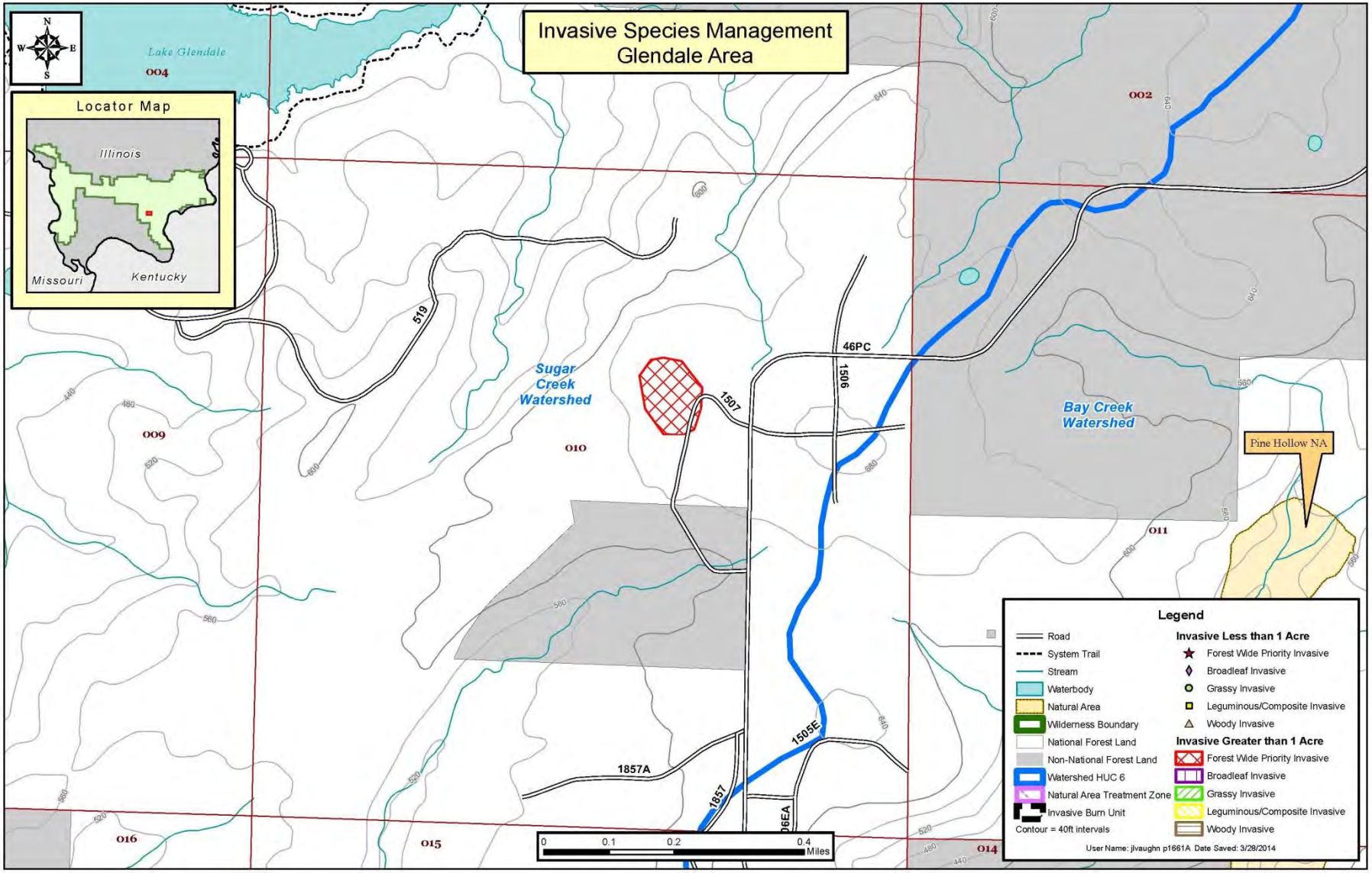

Invasive Species Management
Dutch Creek Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
503
76UC
266
266B
028
027
026
033
034
035
004
003
Dutch Creek Watershed
Dutch Creek NA
T12S R2W
T13S R2W
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

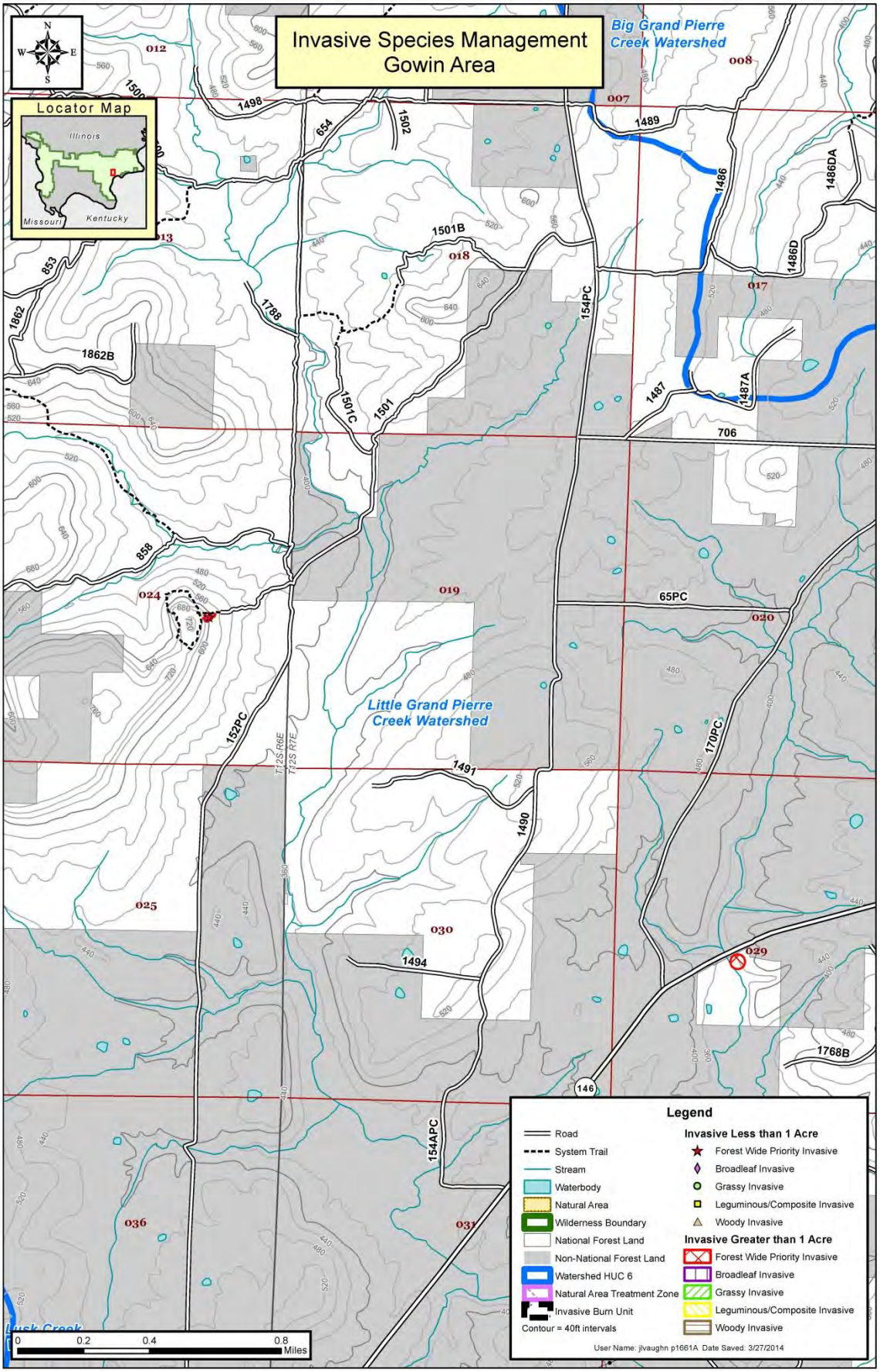

Invasive Species Management
East Dogwood Flats Area
Harrison Creek-Clear Creek Watershed
Locator Map
Illinois
Missouri
Kentucky
034
T13S R2W
T14S R2W
Cooper Creek-Mill Creek Watershed
664
664C
004
003
009
267B
267
585
Edmondson Slough-Sexton Creek Watershed
Sandy Creek Watershed
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

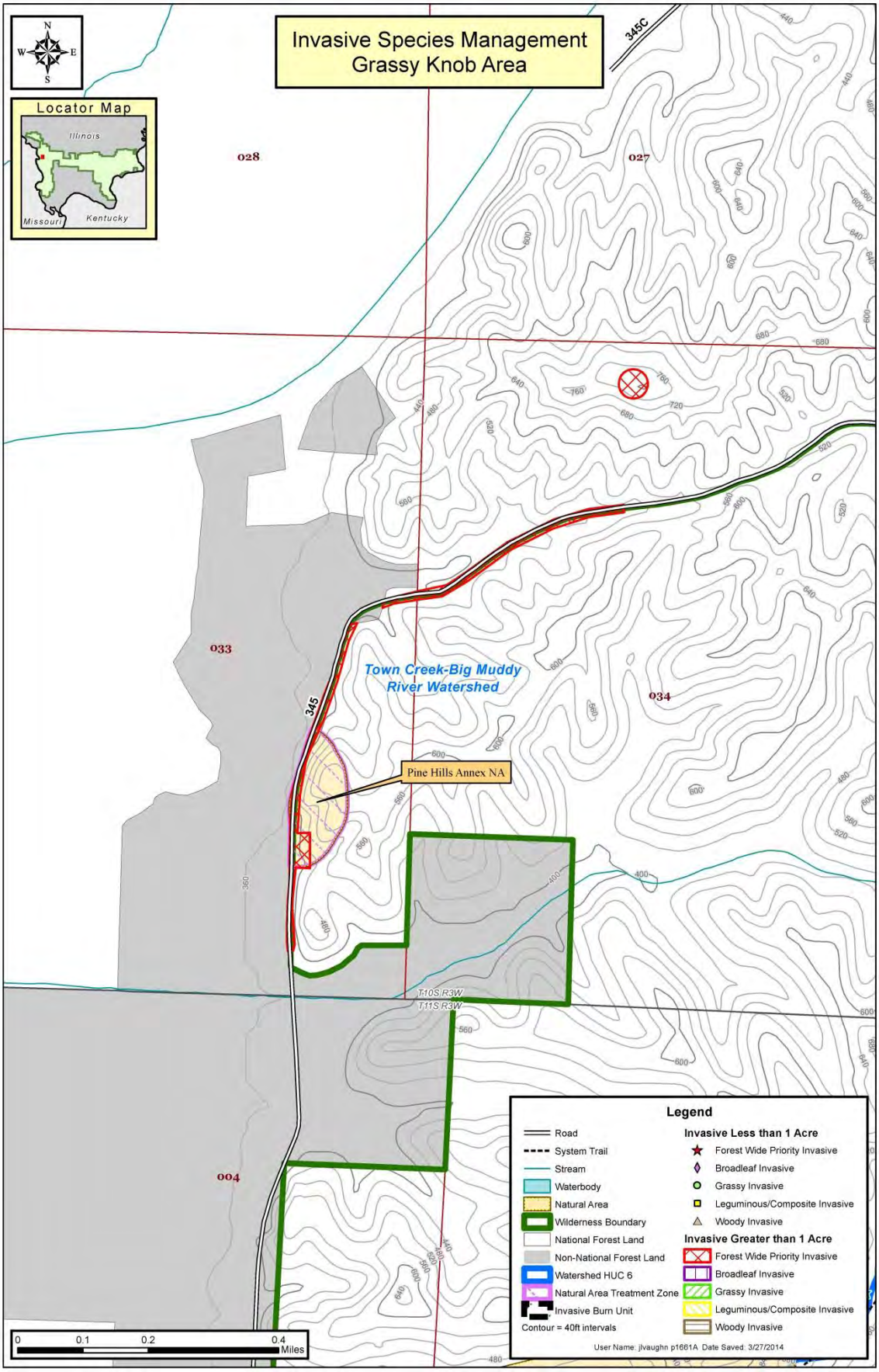

Invasive Species Management
Fink Sandstone Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
036
031
001
002
011
012
006
T11S R4E
T11S R5E
T12S R4E
T12S R5E
Jackson Hollow NA
Fink Sandstone NA
Cedar Creek Watershed
Little Bay Creek-Bay Creek Watershed
429
429A
424
424H
1770
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

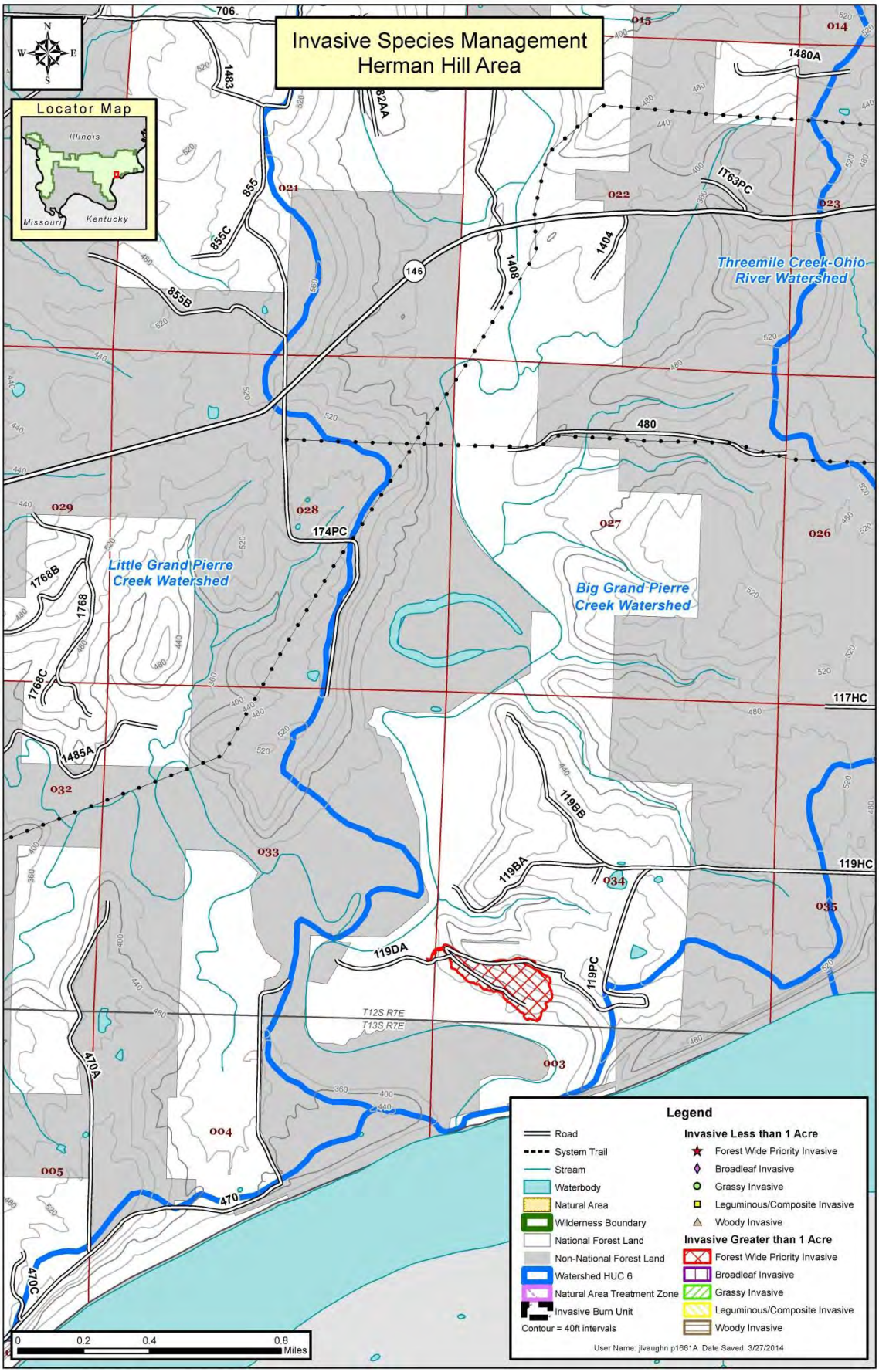

Invasive Species Management
Fountain Bluff Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
025
030
035
036
031
006
011
012
Worthen Bayou
Watershed
Fountain Bluff-Mississippi
River Watershed
Town Creek-Big Muddy
River Watershed
Fountain
Bluff NA
001
private land
32JC
301JC
IT275JC
787A
787
787B
757A
757
757B
T9S R4W
T9S R3W
T10S R4W
T10S R3W
0
0.15
0.3
0.6
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

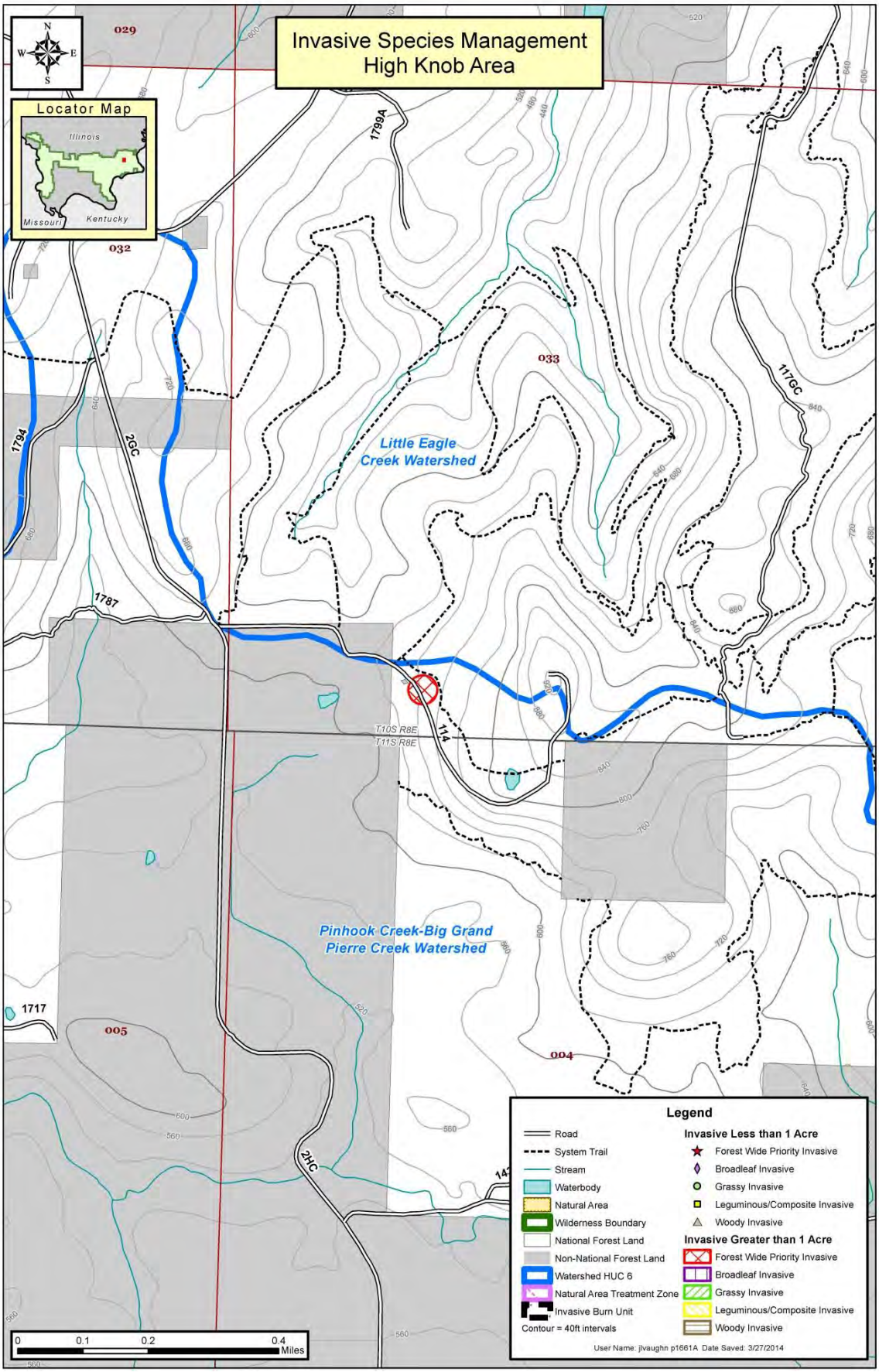

Invasive Species Management
Garden of the Gods Area
Locator Map
Illinois
Missouri
Kentucky
Garden of the Gods NA
Garden of the Gods Wilderness
Black Branch-Eagle Creek Watershed
Little Eagle Creek Watershed
Pinhook Creek-Big Grand Pierre Creek Watershed
346SC
17GC
703
T10S R7E
T11S R7E
T10S R8E
T11S R8E
035
036
031
030
002
001
006
163
115
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.125 0.25 0.5 Miles

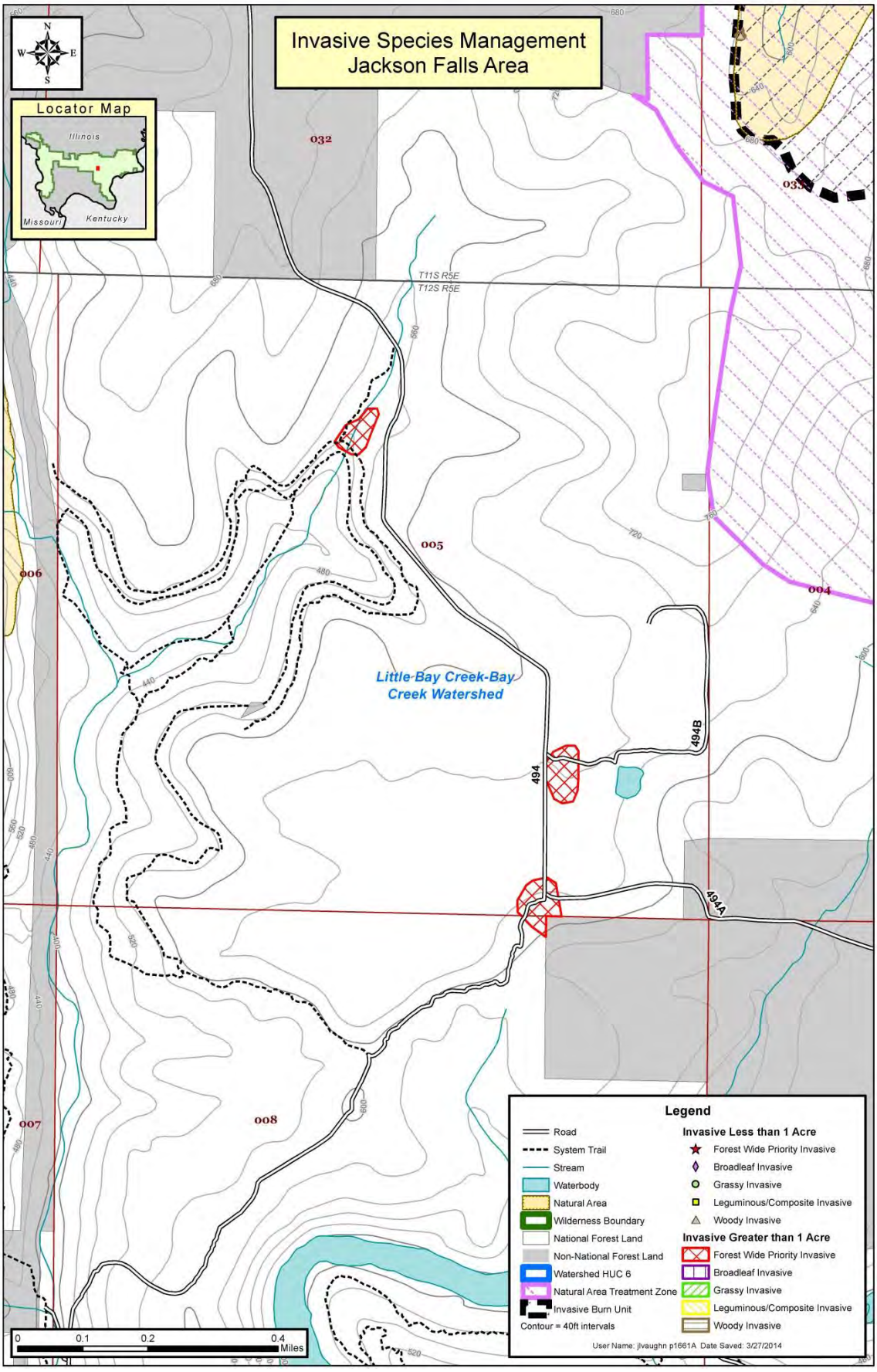

Invasive Species Management
Glendale Area
Lake Glendale
004
002
009
010
011
014
015
016
Locator Map
Illinois
Missouri
Kentucky
519
46PC
1506
1507
1505E
1857A
1857
06EA
Sugar Creek Watershed
Bay Creek Watershed
Pine Hollow NA
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014

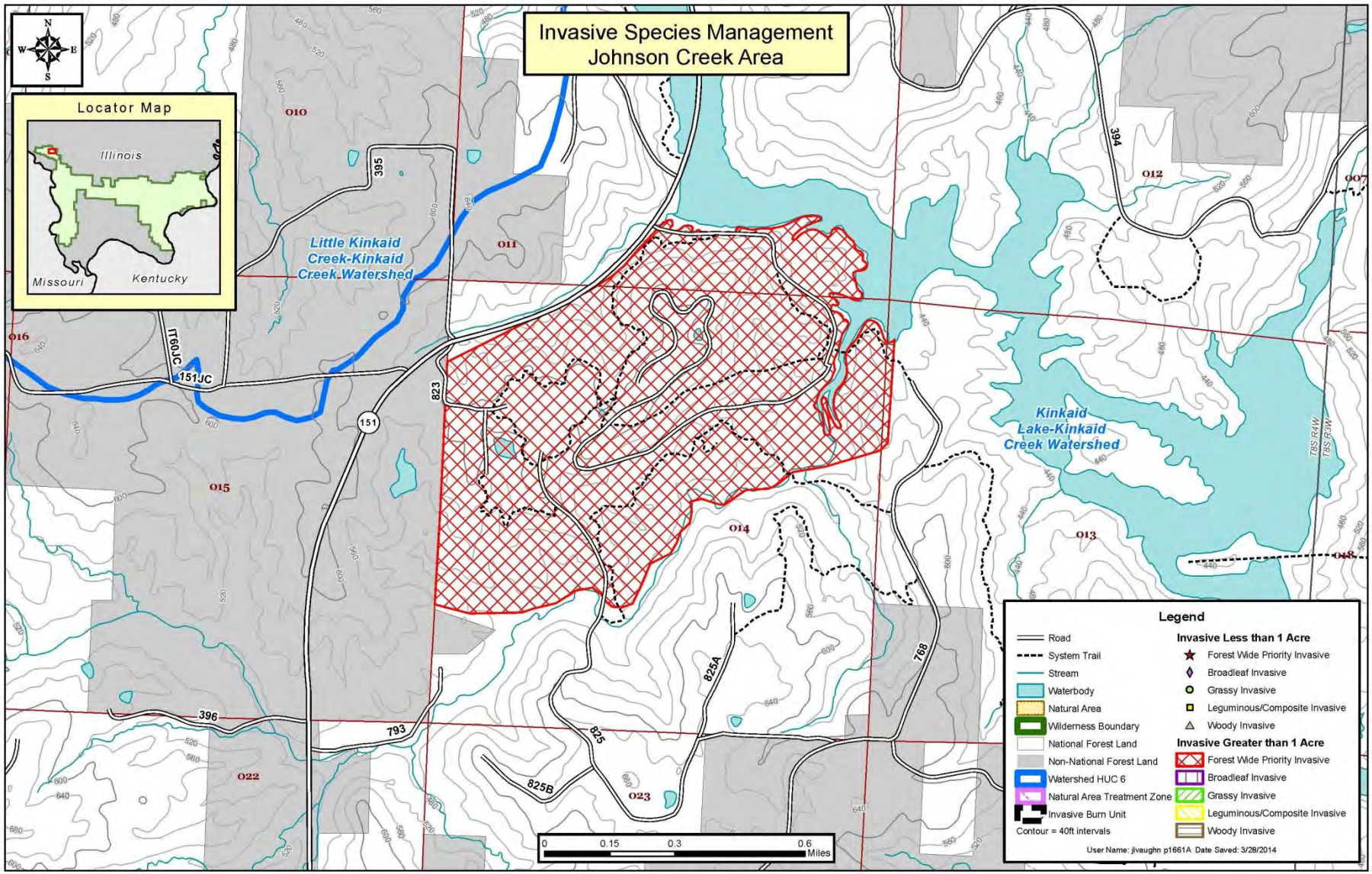

Invasive Species Management
Gowin Area
Locator Map
Illinois
Missouri
Kentucky
Big Grand Pierre
Creek Watershed
Little Grand Pierre
Creek Watershed
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.2 0.4 0.8 Miles

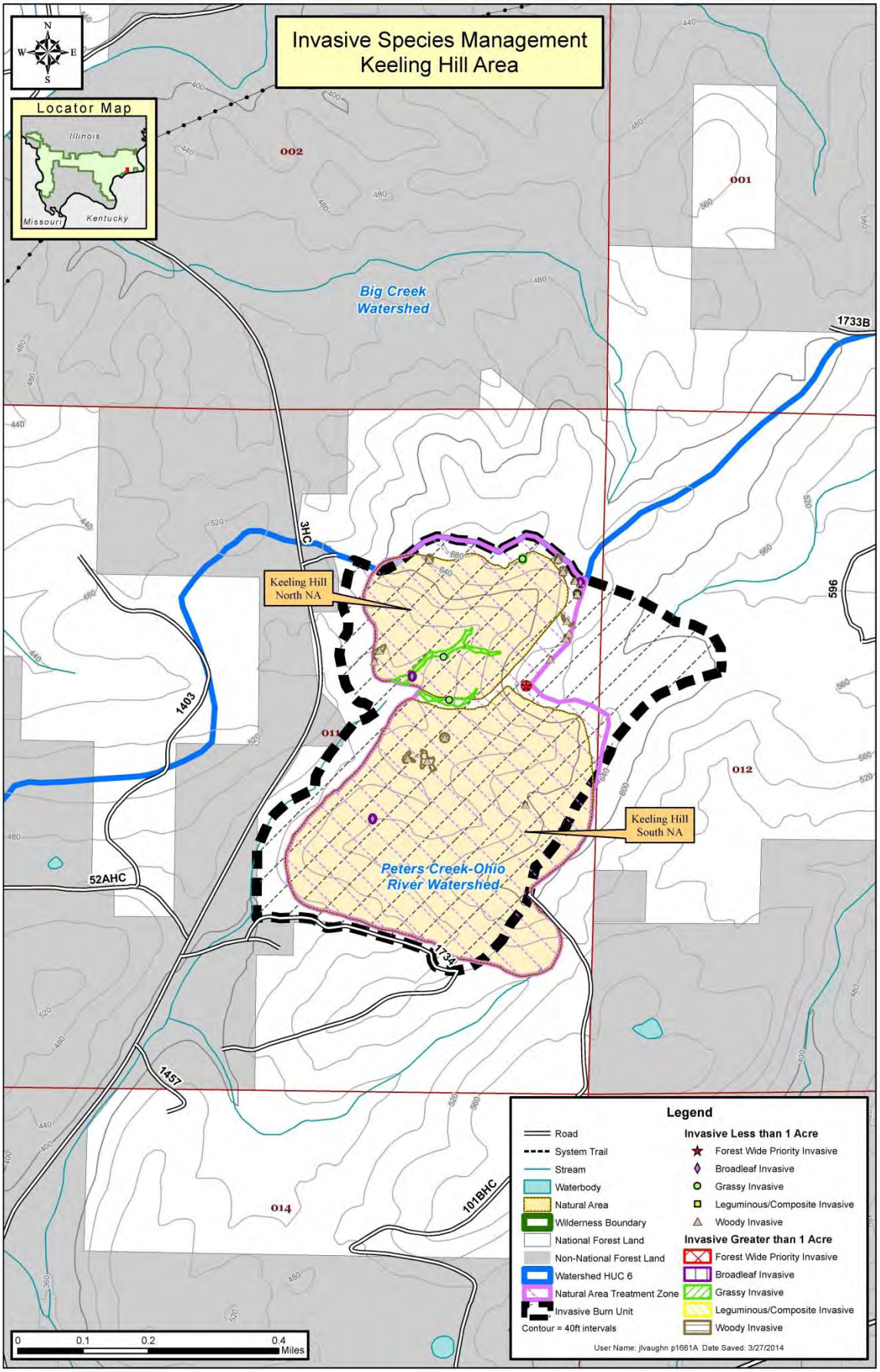

Invasive Species Management
Grassy Knob Area
Locator Map
Illinois
Missouri
Kentucky
345C
028
027
033
034
004
345
Town Creek-Big Muddy
River Watershed
Pine Hills Annex NA
T10S R3W
T11S R3W
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.1 0.2 0.4 Miles

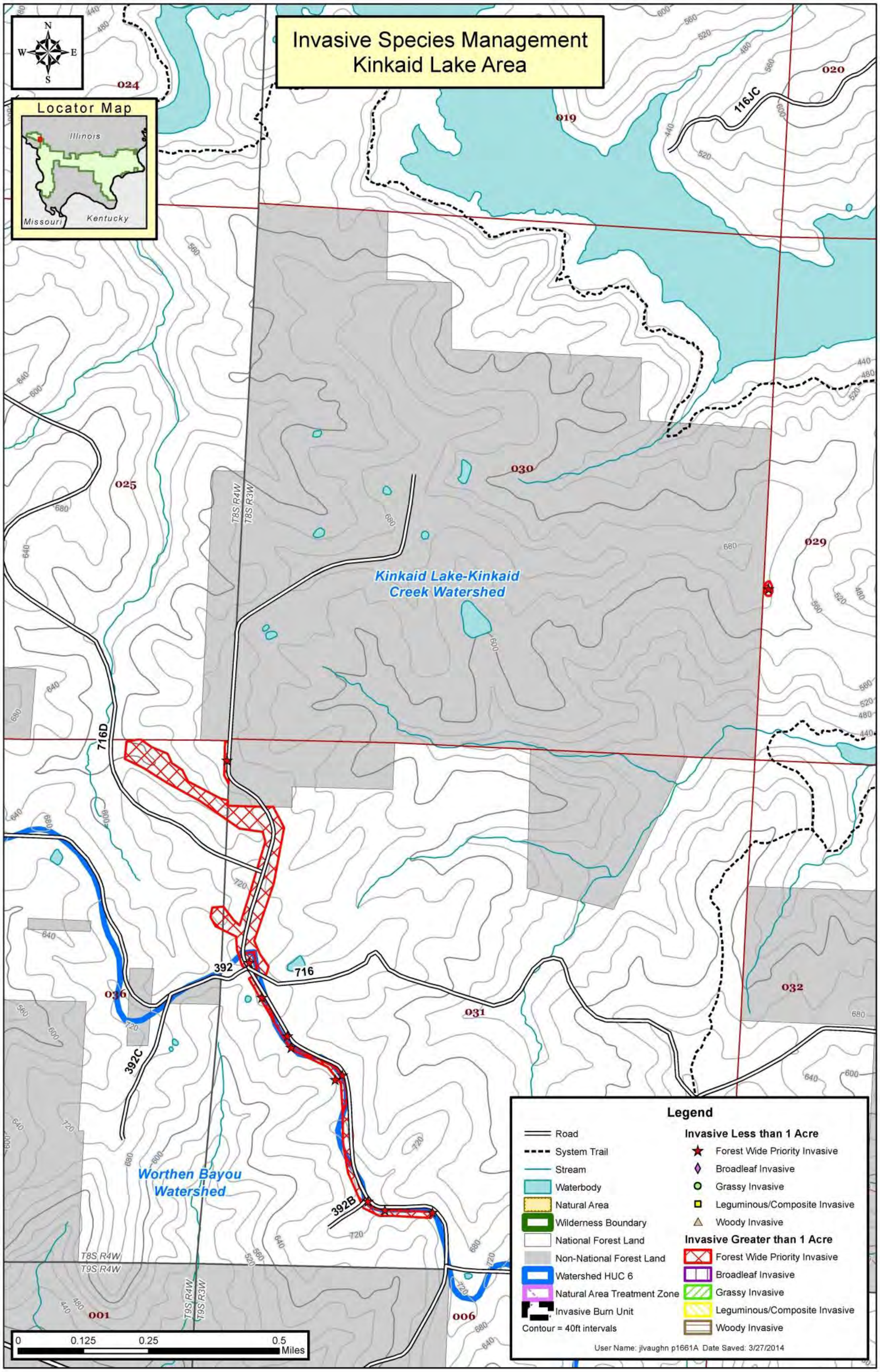

Invasive Species Management
Herman Hill Area
Locator Map
Illinois
Missouri
Kentucky
Threemile Creek-Ohio River Watershed
Little Grand Pierre Creek Watershed
Big Grand Pierre Creek Watershed
706
1483
82AA
855
855C
855B
021
022
023
014
015
1480A
IT63PC
1404
1408
146
480
029
028
174PC
027
026
1768B
1768
1768C
1485A
032
033
117HC
119BB
119BA
119HC
034
035
119DA
119PC
T12S R7E
T13S R7E
003
004
005
470A
470
470C
0 0.2 0.4 0.8 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

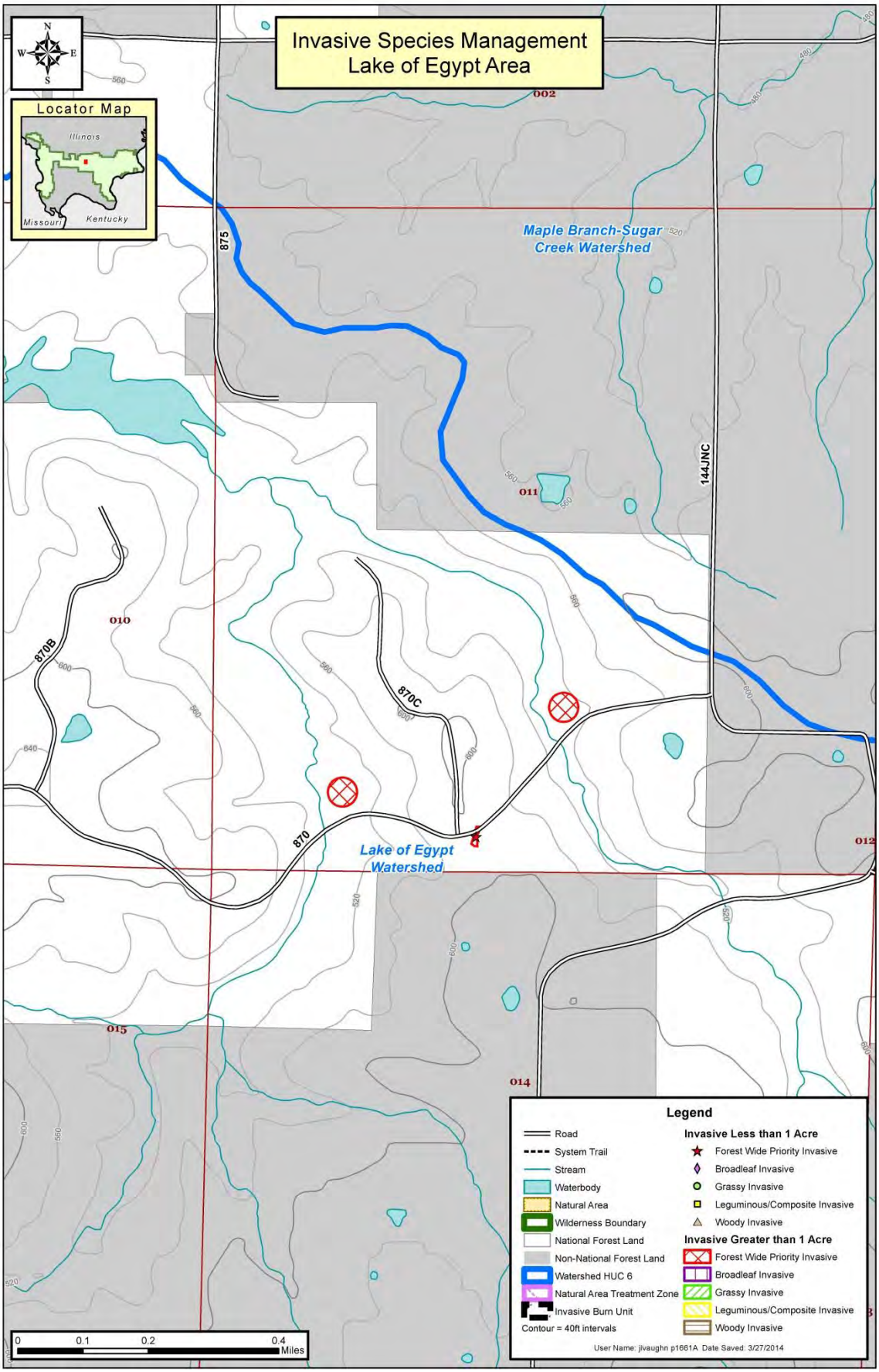

Invasive Species Management
High Knob Area
Locator Map
Illinois
Missouri
Kentucky
N
S
E
W
029
032
033
005
004
1799A
1794
2GC
1787
1717
114
117GC
2HC
T10S R8E
T11S R8E
Little Eagle
Creek Watershed
Pinhook Creek-Big Grand
Pierre Creek Watershed
0 0.1 0.2 0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

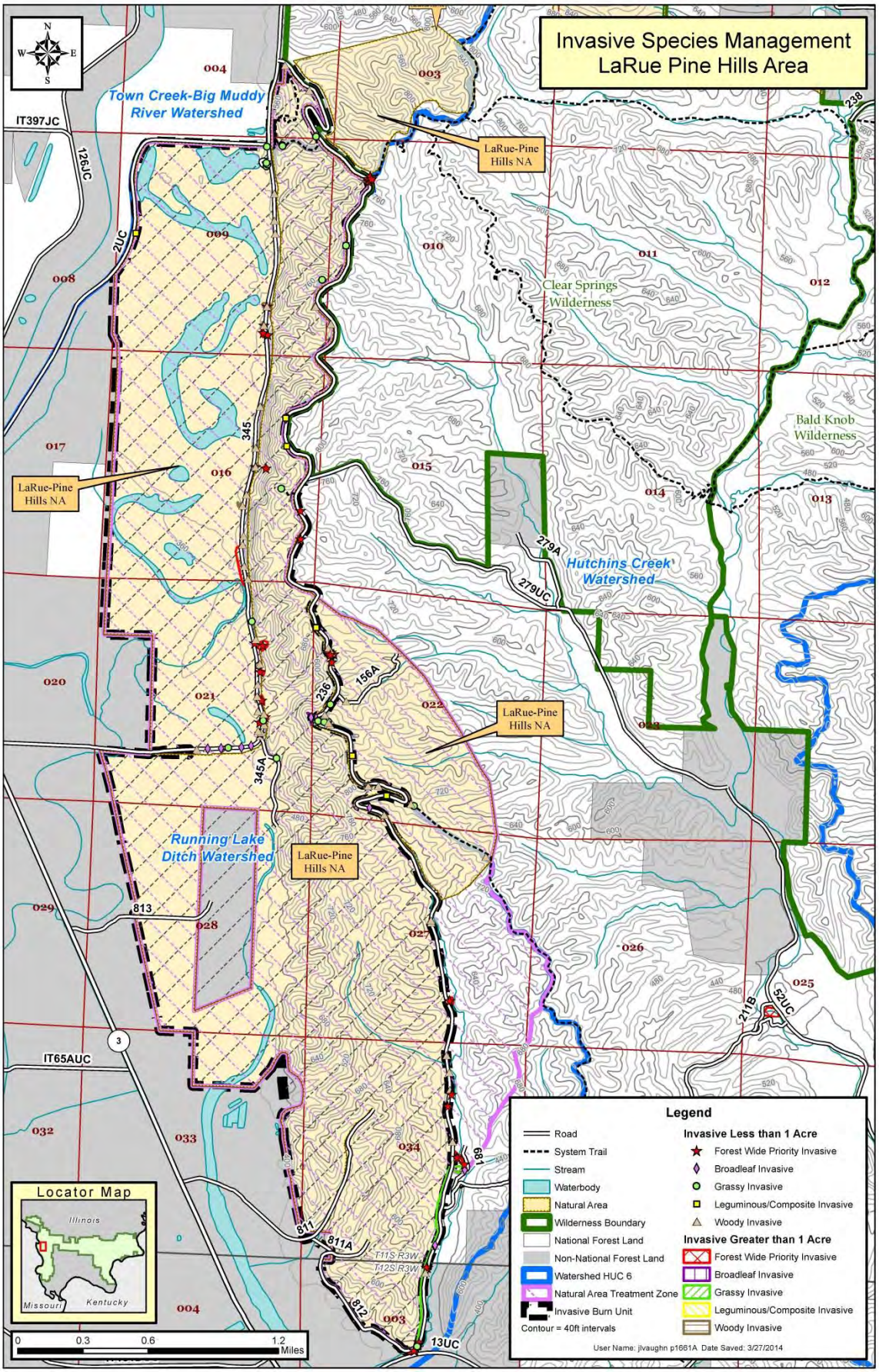

Invasive Species Management
Jackson Falls Area
Locator Map
Illinois
Missouri
Kentucky
032
033
T11S R5E
T12S R5E
005
006
004
007
008
494
494B
494A
Little Bay Creek-Bay Creek Watershed
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

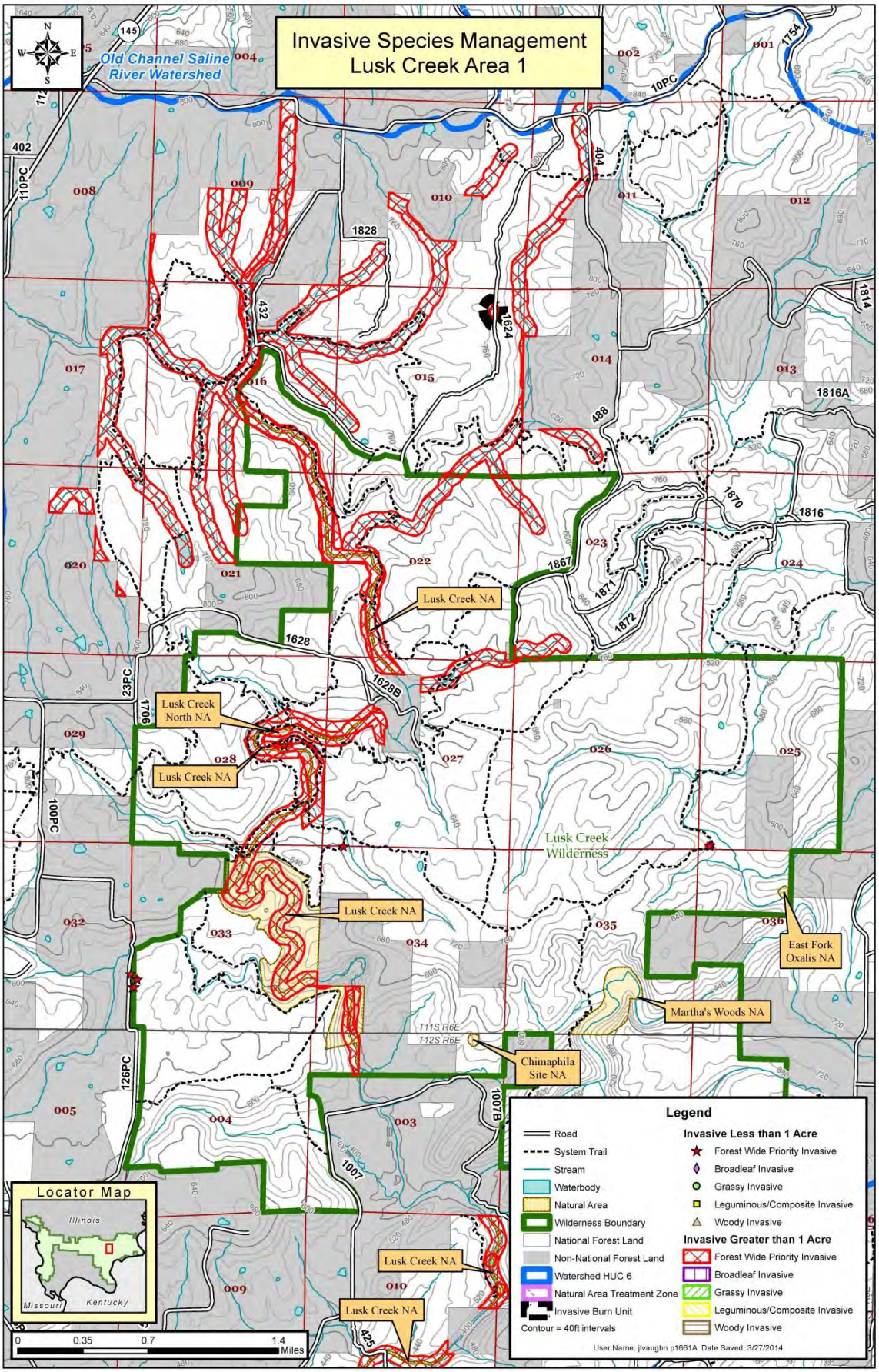

Invasive Species Management
Johnson Creek Area
Locator Map
Illinois
Missouri
Kentucky
Little Kinkaid Creek-Kinkaid Creek Watershed
Kinkaid Lake-Kinkaid Creek Watershed
010
011
012
013
014
015
016
022
023
395
394
823
151
396
793
825
825A
825B
768
IT60JC
151JC
T8S R4W
T8S R3W
0 0.15 0.3 0.6 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014

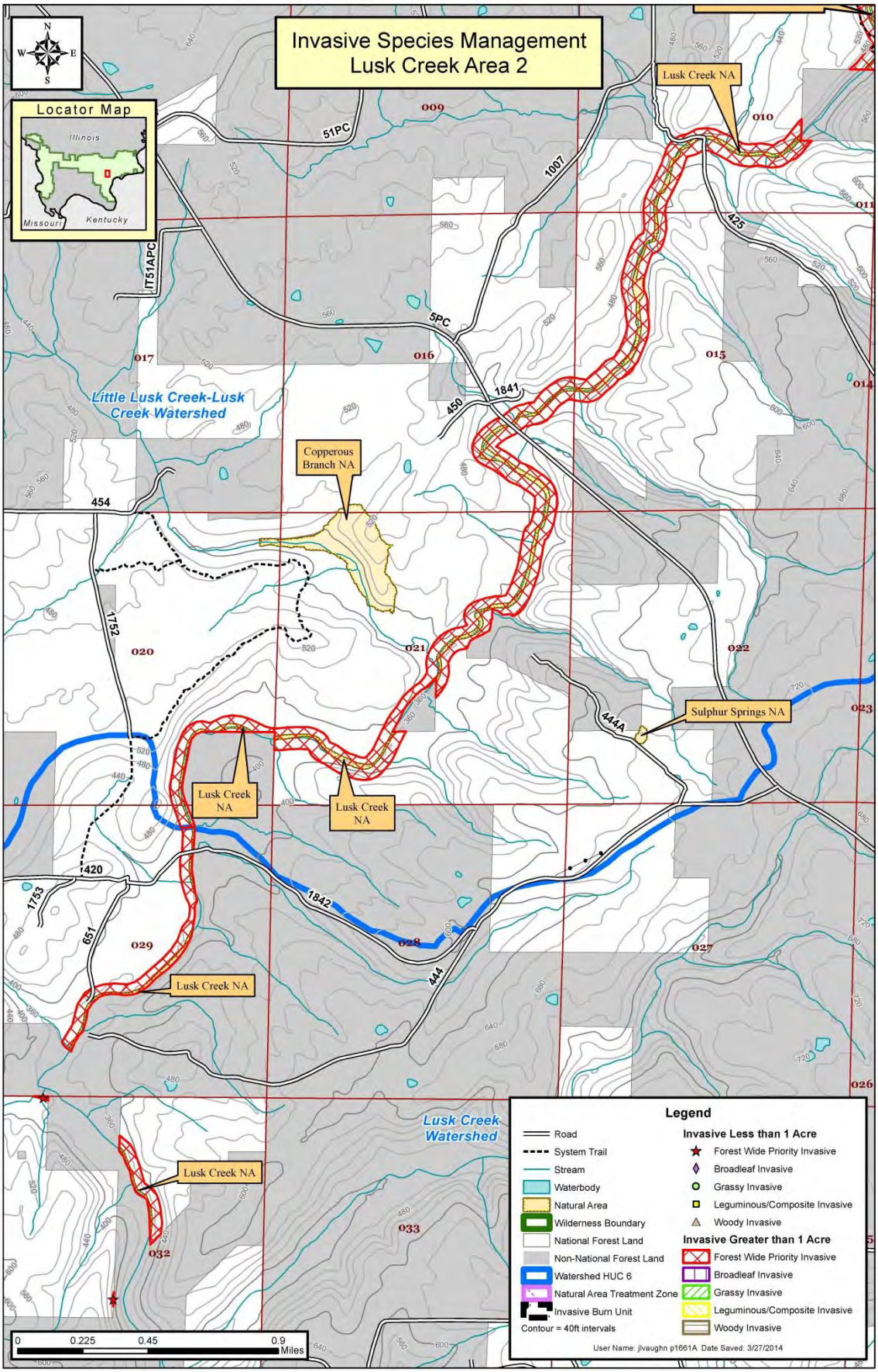

Invasive Species Management
Keeling Hill Area
Locator Map
Illinois
Missouri
Kentucky
Big Creek Watershed
Keeling Hill North NA
Keeling Hill South NA
Peters Creek-Ohio River Watershed
002
001
011
012
014
1733B
3HC
596
1403
52AHC
1734
1457
101BHC
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.1 0.2 0.4 Miles

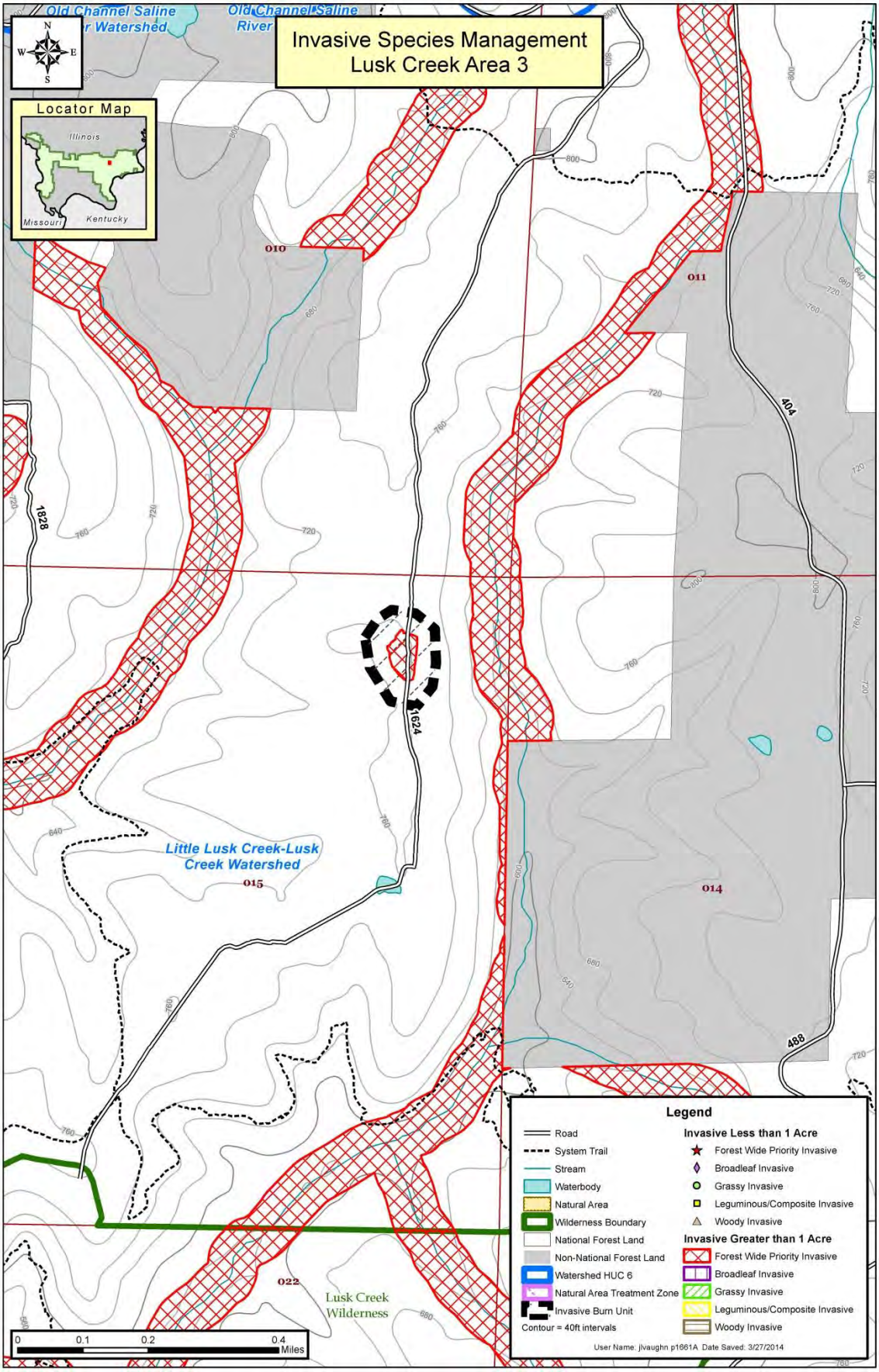

Invasive Species Management
Kinkaid Lake Area
Locator Map
Illinois
Missouri
Kentucky
Kinkaid Lake-Kinkaid Creek Watershed
Worthen Bayou Watershed
716D
392
716
392C
392B
116JC
T8S R4W
T8S R3W
T9S R4W
T9S R3W
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.125 0.25 0.5 Miles

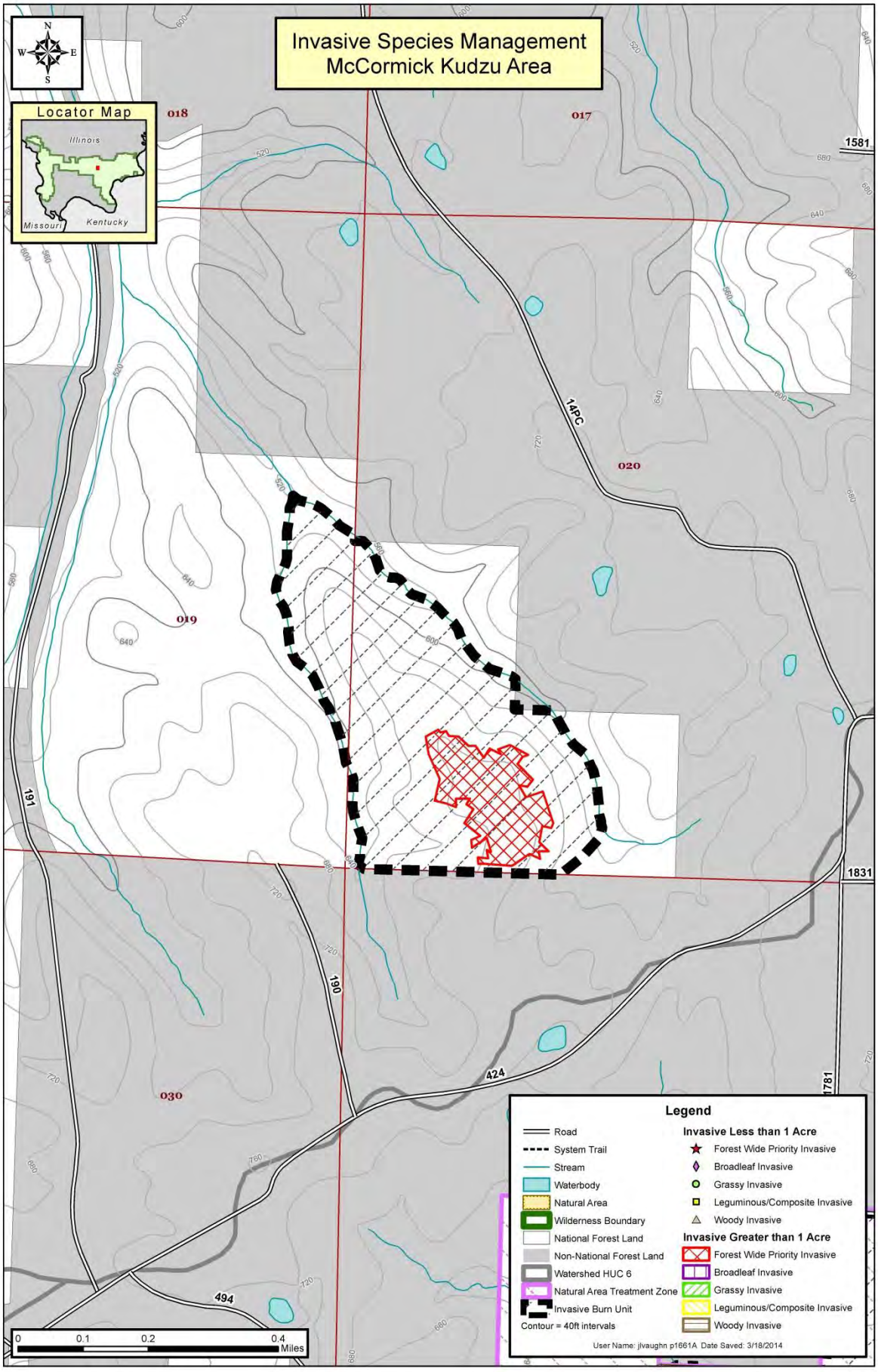

Invasive Species Management
Lake of Egypt Area
Locator Map
Illinois
Missouri
Kentucky
Maple Branch-Sugar Creek Watershed
Lake of Egypt Watershed
875
144JNC
870B
870C
870
002
011
010
012
015
014
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.1 0.2 0.4 Miles

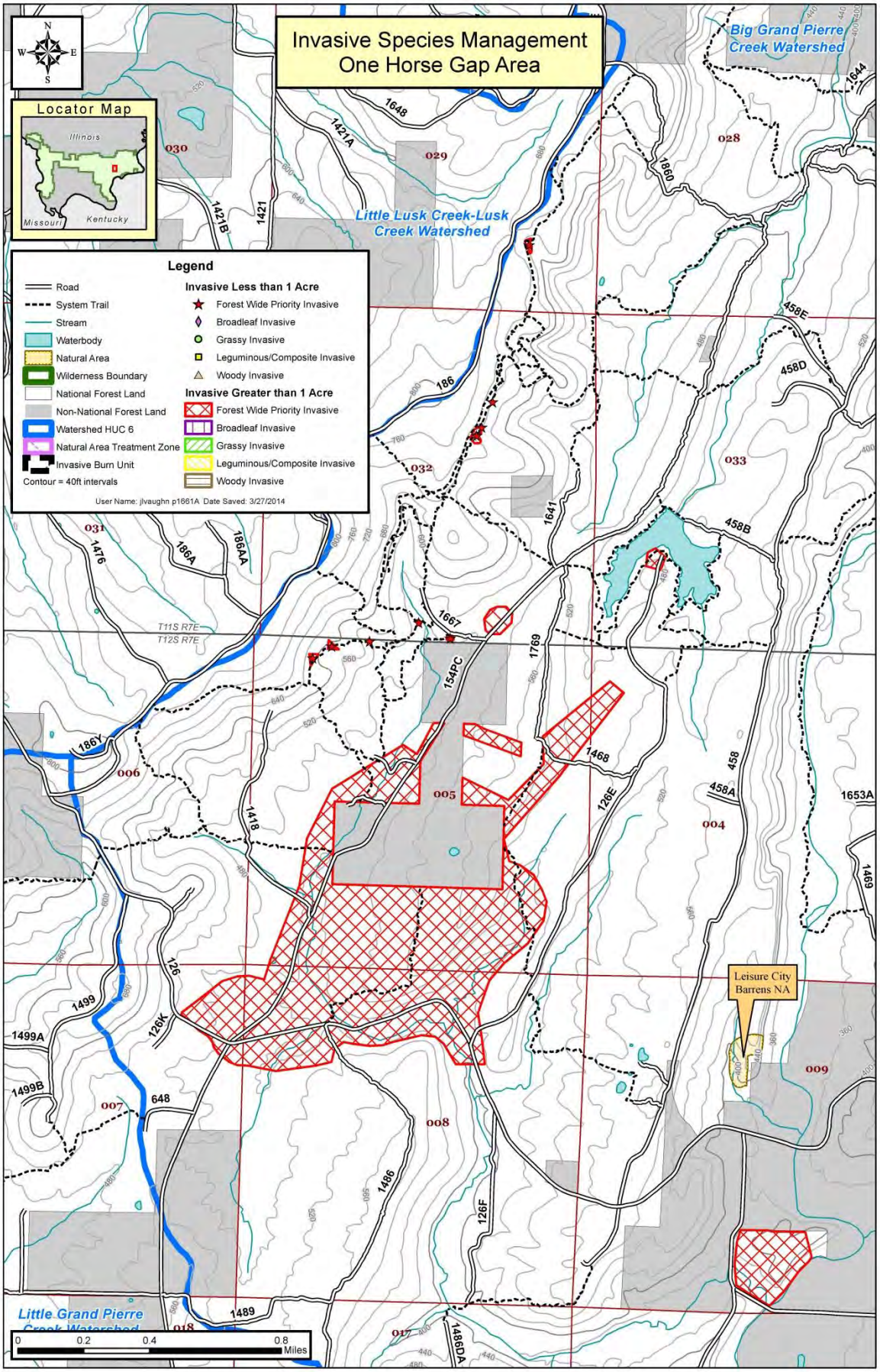

Invasive Species Management
LaRue Pine Hills Area
Town Creek-Big Muddy River Watershed
Hutchins Creek Watershed
Running Lake Ditch Watershed
LaRue-Pine Hills NA
Clear Springs Wilderness
Bald Knob Wilderness
IT397JC
IT65AUC
126JC
2UC
345
345A
156A
235
279A
279UC
238
211B
52UC
681
811
811A
812
813
13UC
T11S R3W
T12S R3W
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
Locator Map
Illinois
Missouri
Kentucky
0 0.3 0.6 1.2 Miles

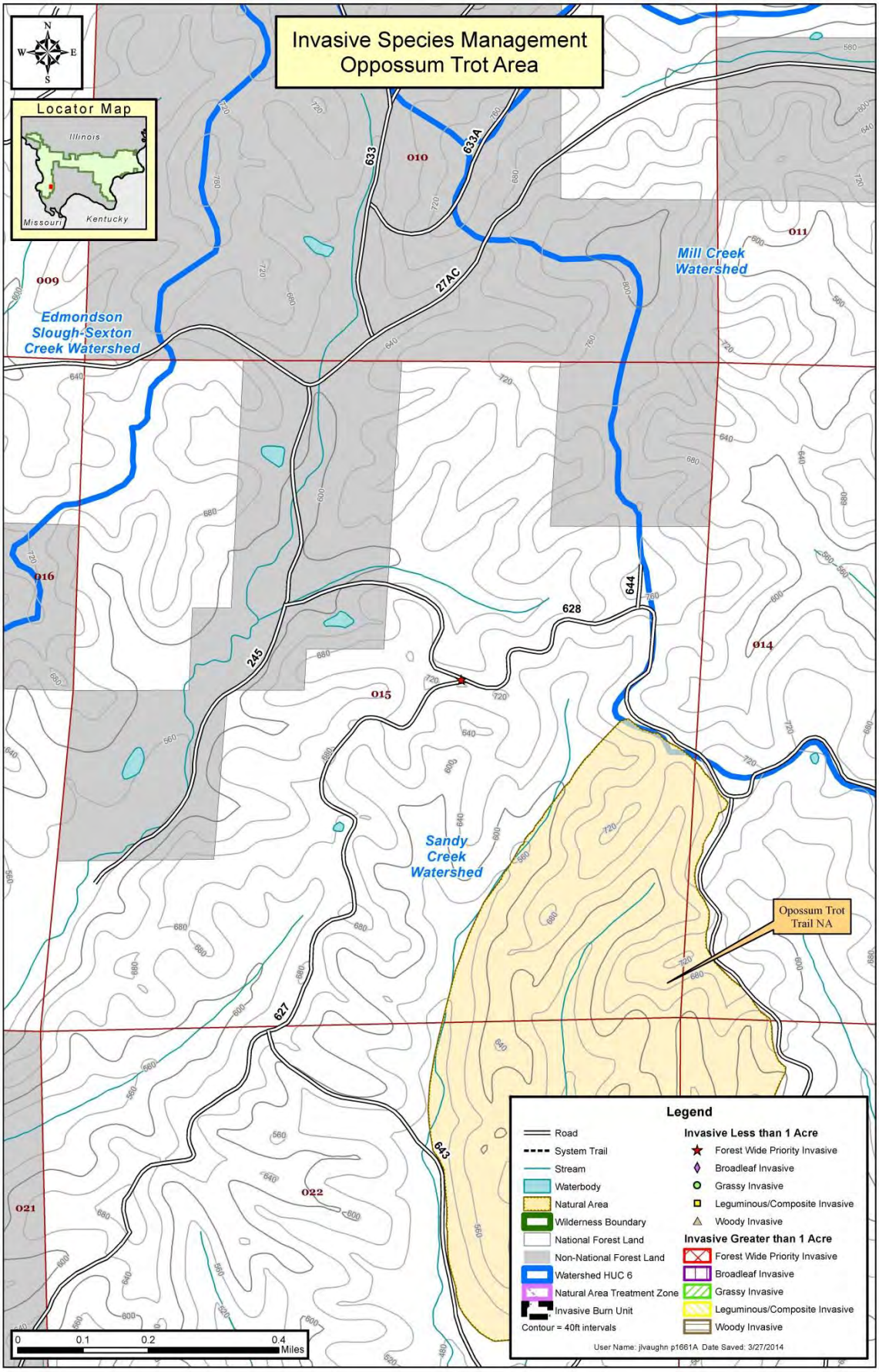

Invasive Species Management
Lusk Creek Area 1
Old Channel Saline River Watershed
Lusk Creek NA
Lusk Creek North NA
Lusk Creek NA
Lusk Creek NA
Lusk Creek NA
Lusk Creek NA
Lusk Creek Wilderness
East Fork Oxalis NA
Martha's Woods NA
Chimaphila Site NA
T11S R6E
T12S R6E
Locator Map
Illinois
Missouri
Kentucky
0 0.35 0.7 1.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

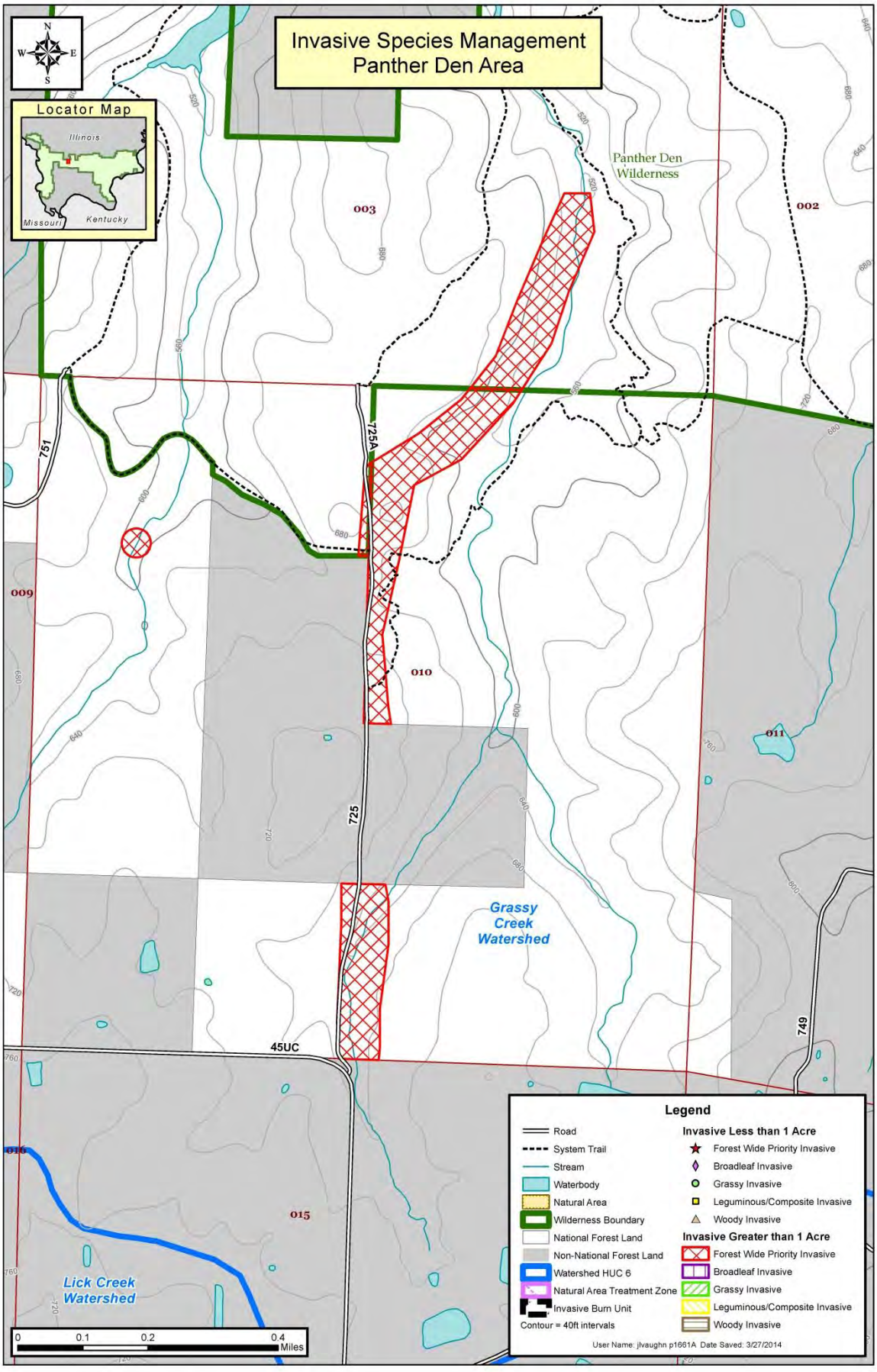

Invasive Species Management
Lusk Creek Area 2
Locator Map
Illinois
Missouri
Kentucky
Lusk Creek NA
Copperous Branch NA
Sulphur Springs NA
Little Lusk Creek-Lusk Creek Watershed
Lusk Creek Watershed
51PC
1007
425
IT51APC
5PC
1841
450
454
1752
444A
420
1753
651
1842
444
009
010
011
014
015
016
017
020
021
022
023
026
027
028
029
032
033
0 0.225 0.45 0.9 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

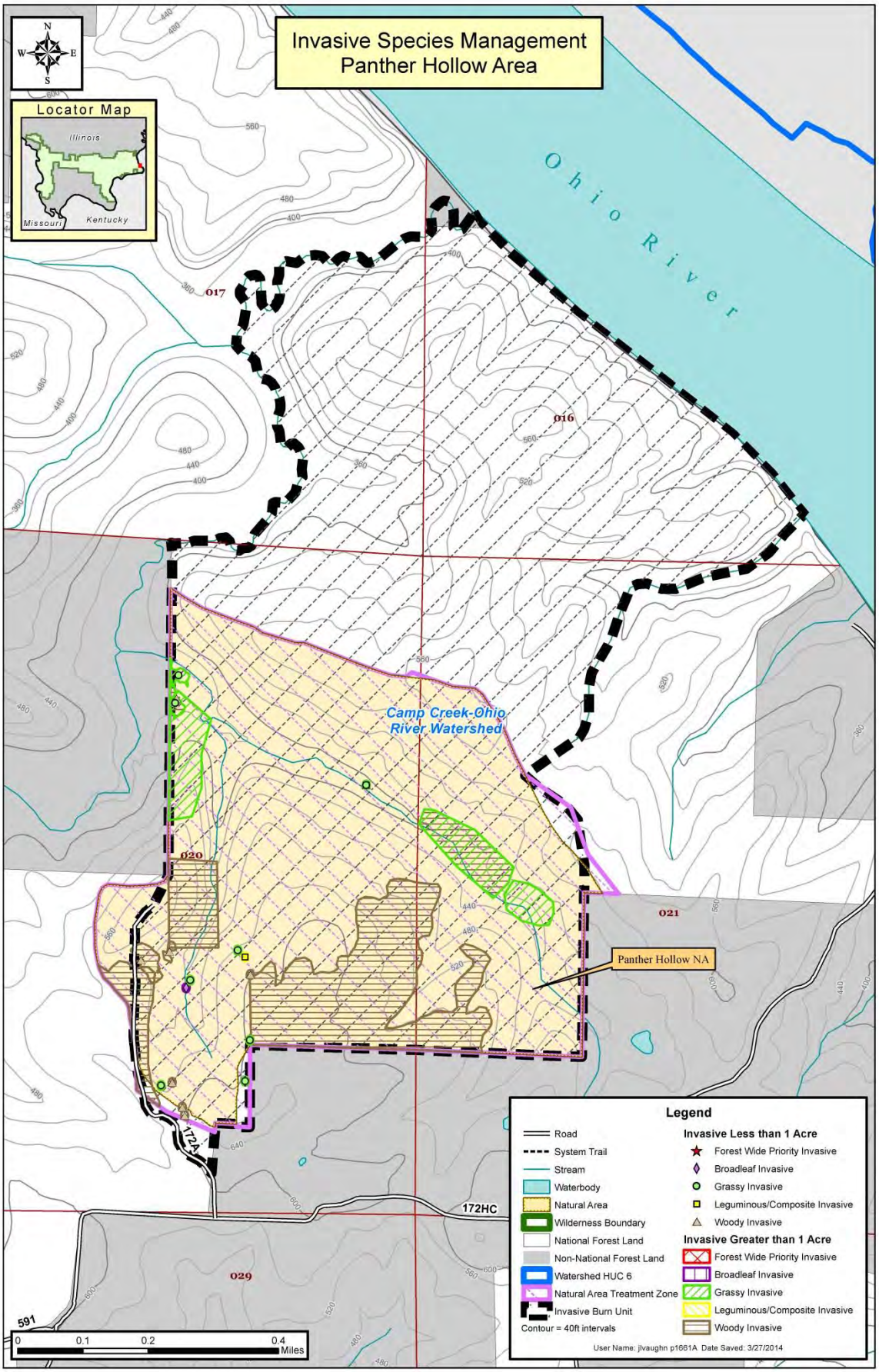

Invasive Species Management
Lusk Creek Area 3
Locator Map
Illinois
Missouri
Kentucky
Old Channel Saline
Old Channel Saline River
Little Lusk Creek-Lusk Creek Watershed
Lusk Creek Wilderness
010
011
014
015
022
404
488
1828
1624
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
0 0.1 0.2 0.4 Miles

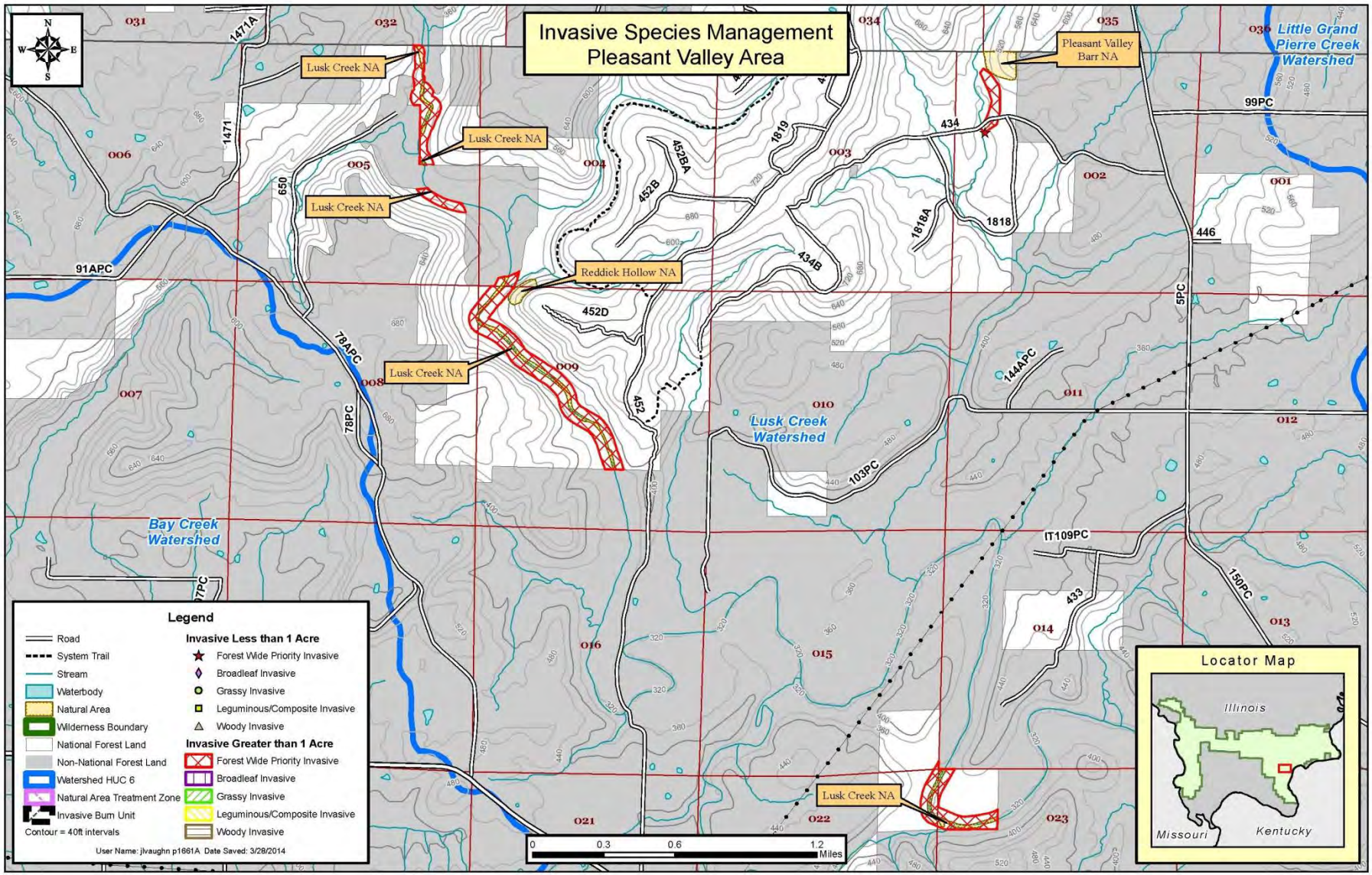

Invasive Species Management
McCormick Kudzu Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
018
017
020
019
030
1581
1831
1781
14PC
191
190
424
494
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/18/2014

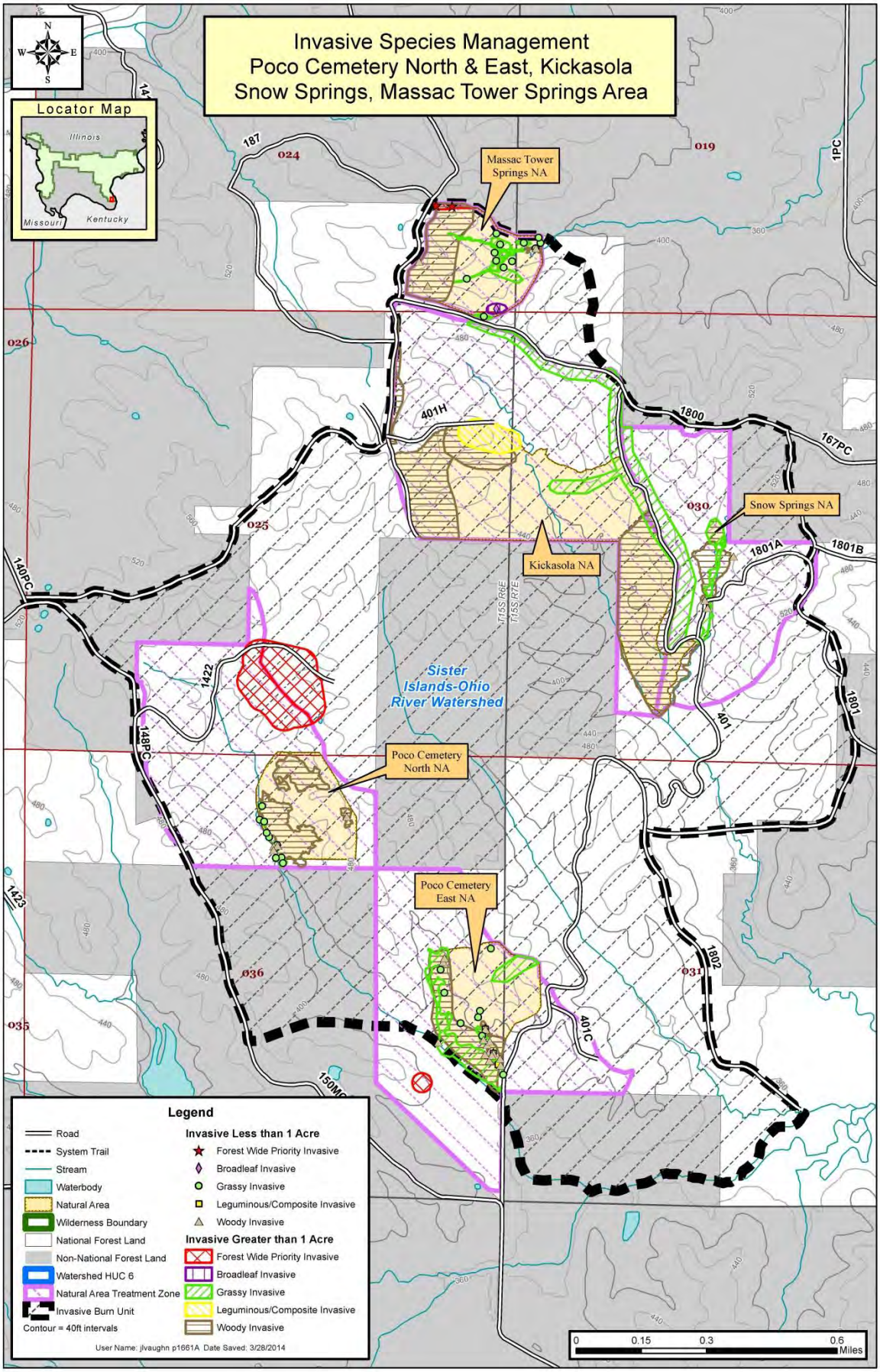

Invasive Species Management
One Horse Gap Area
Locator Map
Illinois
Missouri
Kentucky
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014
Big Grand Pierre Creek Watershed
Little Lusk Creek-Lusk Creek Watershed
Little Grand Pierre Creek Watershed
T11S R7E
T12S R7E
Leisure City Barrens NA
0 0.2 0.4 0.8 Miles

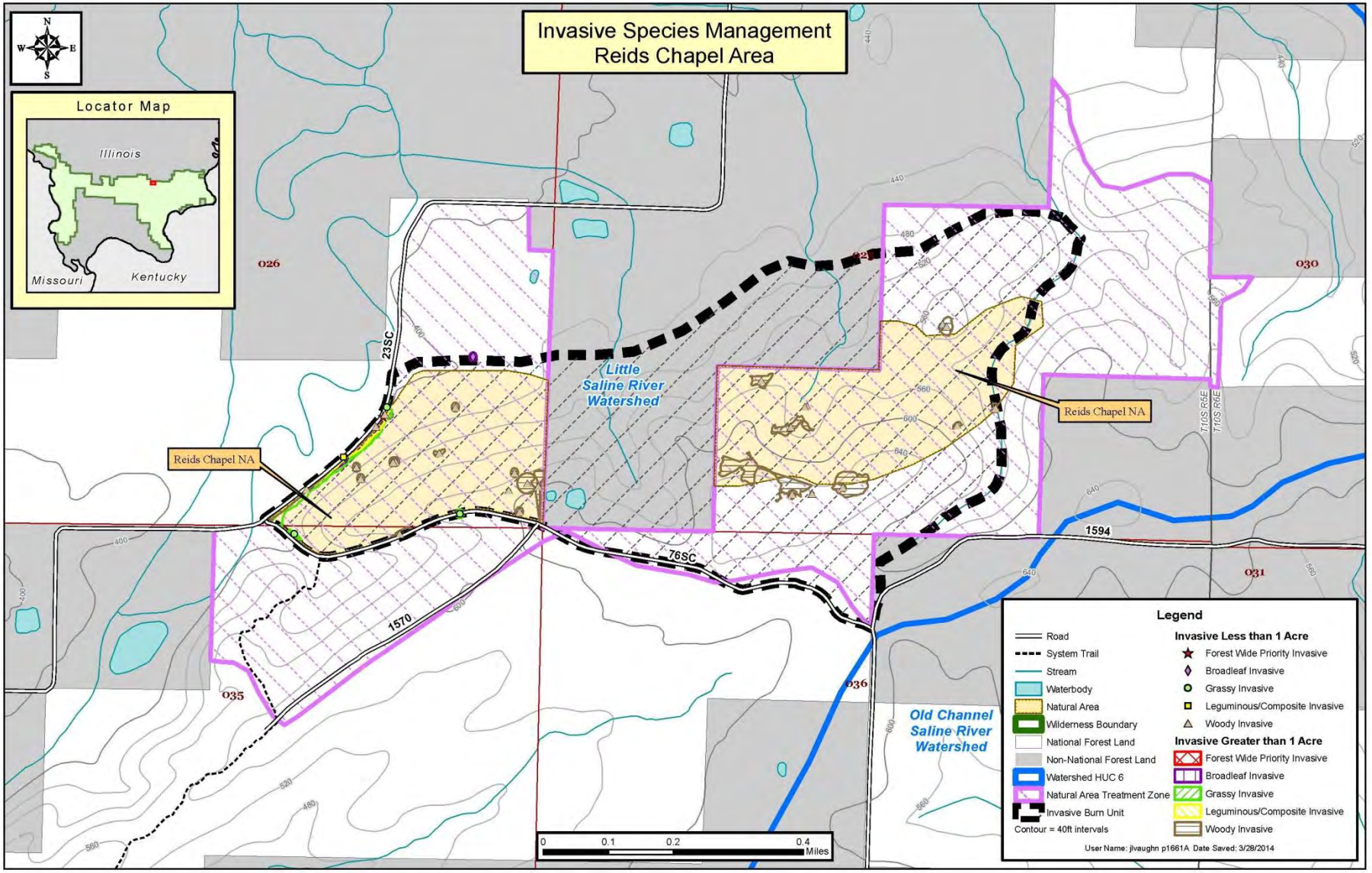

Invasive Species Management
Oppossum Trot Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
633
633A
010
011
27AC
Mill Creek
Watershed
009
Edmondson
Slough-Sexton
Creek Watershed
016
628
644
245
014
015
Sandy
Creek
Watershed
Opossum Trot
Trail NA
627
643
022
021
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

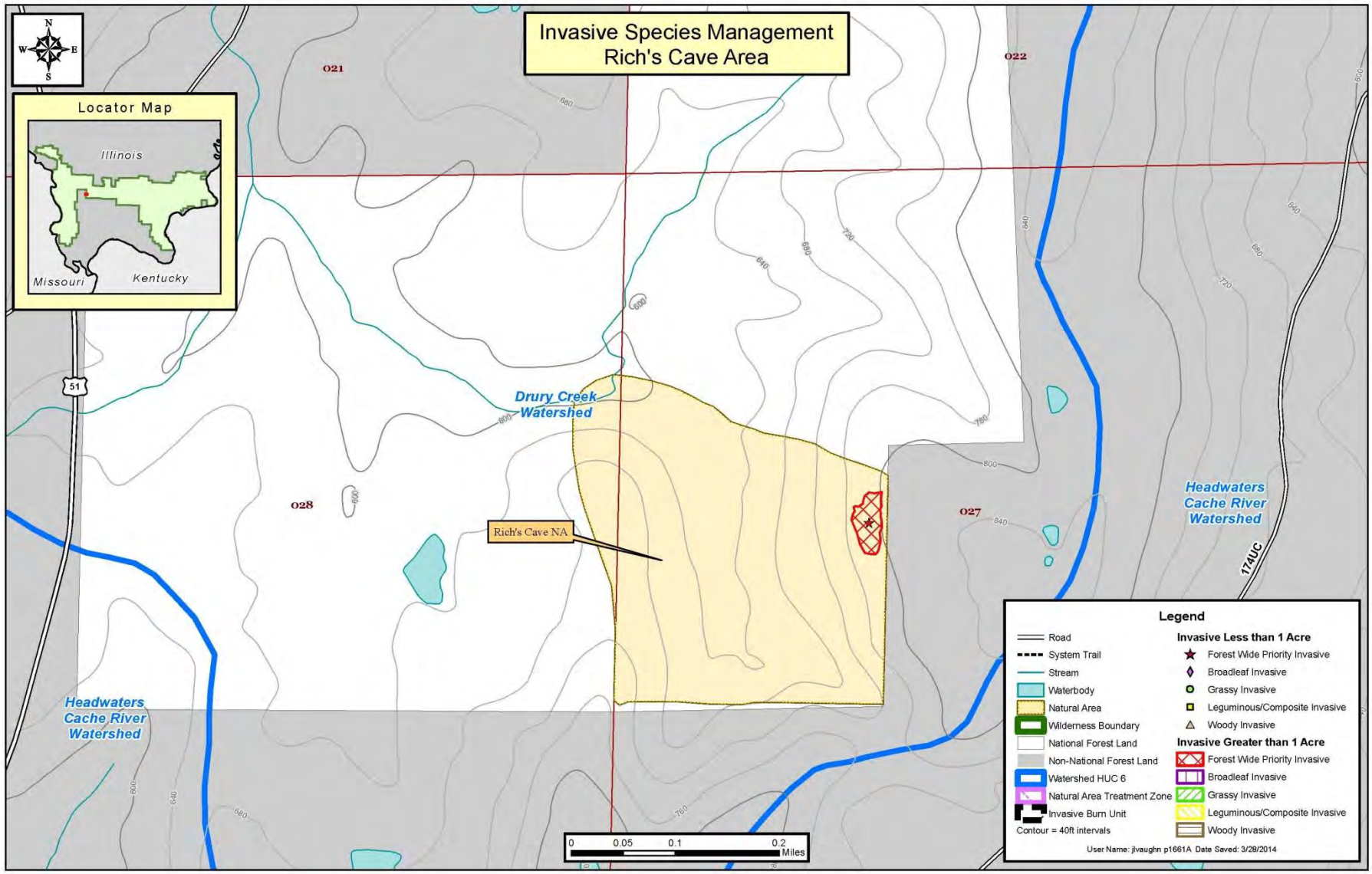

Invasive Species Management
Panther Den Area
Locator Map
Illinois
Missouri
Kentucky
Panther Den
Wilderness
003
002
009
010
011
015
016
751
725A
725
749
45UC
Grassy
Creek
Watershed
Lick Creek
Watershed
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

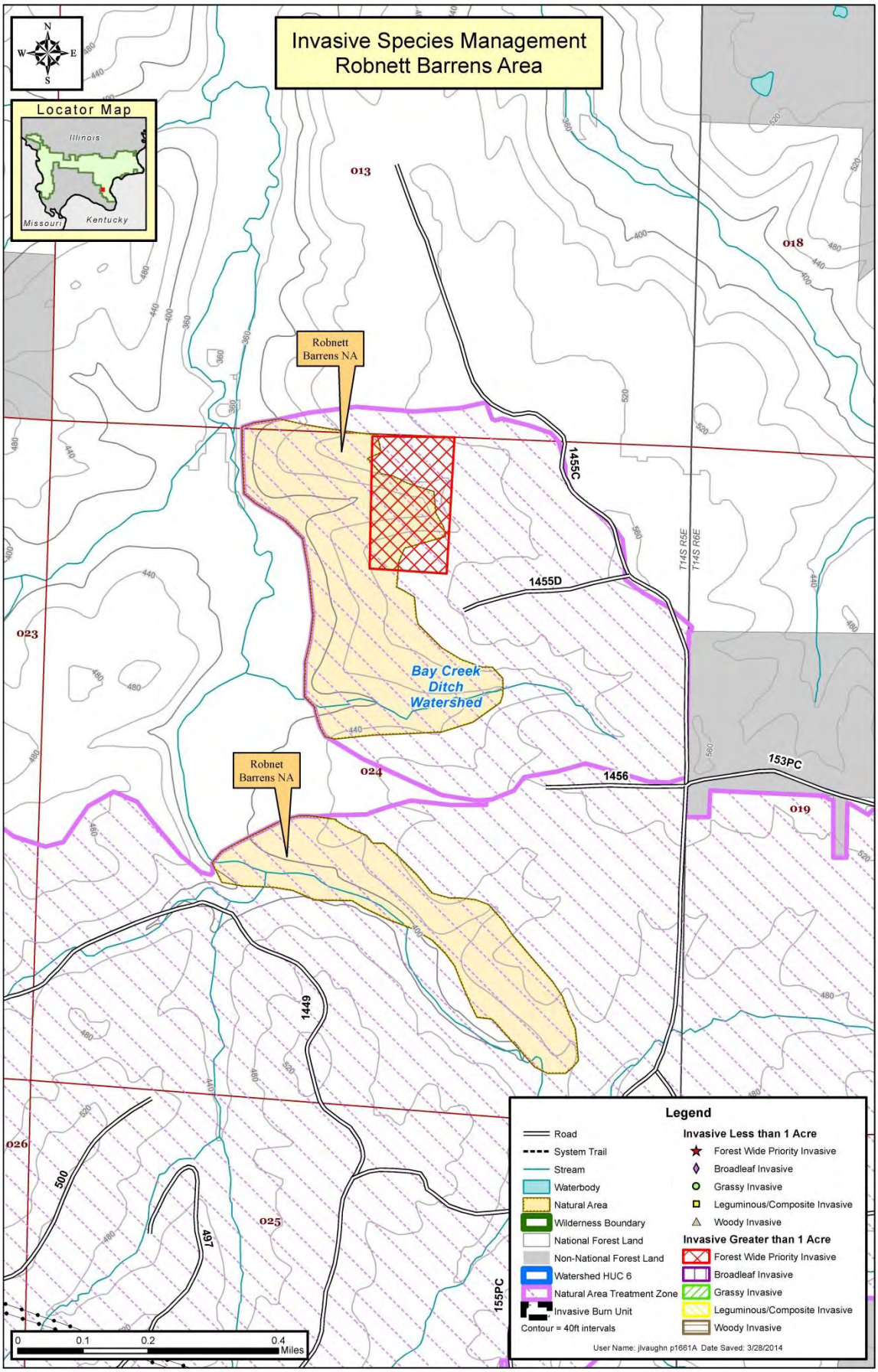

Invasive Species Management
Panther Hollow Area
Locator Map
Illinois
Missouri
Kentucky
Ohio River
017
016
020
021
029
Camp Creek-Ohio River Watershed
Panther Hollow NA
172A
172HC
591
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/27/2014

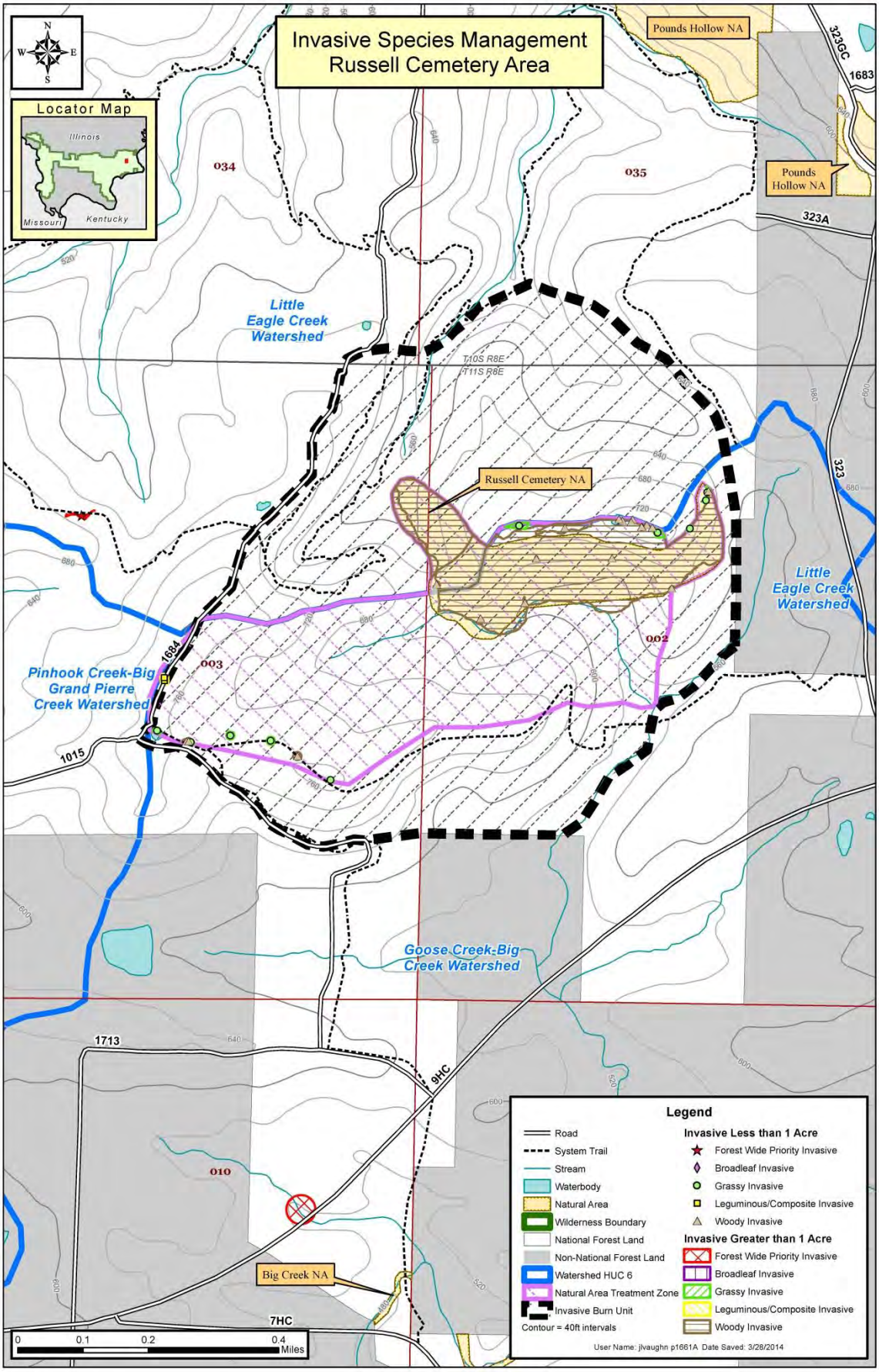

Invasive Species Management
Pleasant Valley Area
Lusk Creek NA
Lusk Creek NA
Lusk Creek NA
Reddick Hollow NA
Lusk Creek NA
Pleasant Valley Barr NA
Lusk Creek NA
Little Grand Pierre Creek Watershed
Lusk Creek Watershed
Bay Creek Watershed
1471A
1471
650
91APC
78APC
78PC
452B
452BA
452D
452
434B
1819
1818A
1818
434
99PC
446
5PC
144APC
103PC
IT109PC
150PC
433
031
032
034
035
036
006
005
004
003
002
001
007
008
009
010
011
012
013
014
015
016
021
022
023
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014
0
0.3
0.6
1.2
Miles
Locator Map
Illinois
Missouri
Kentucky

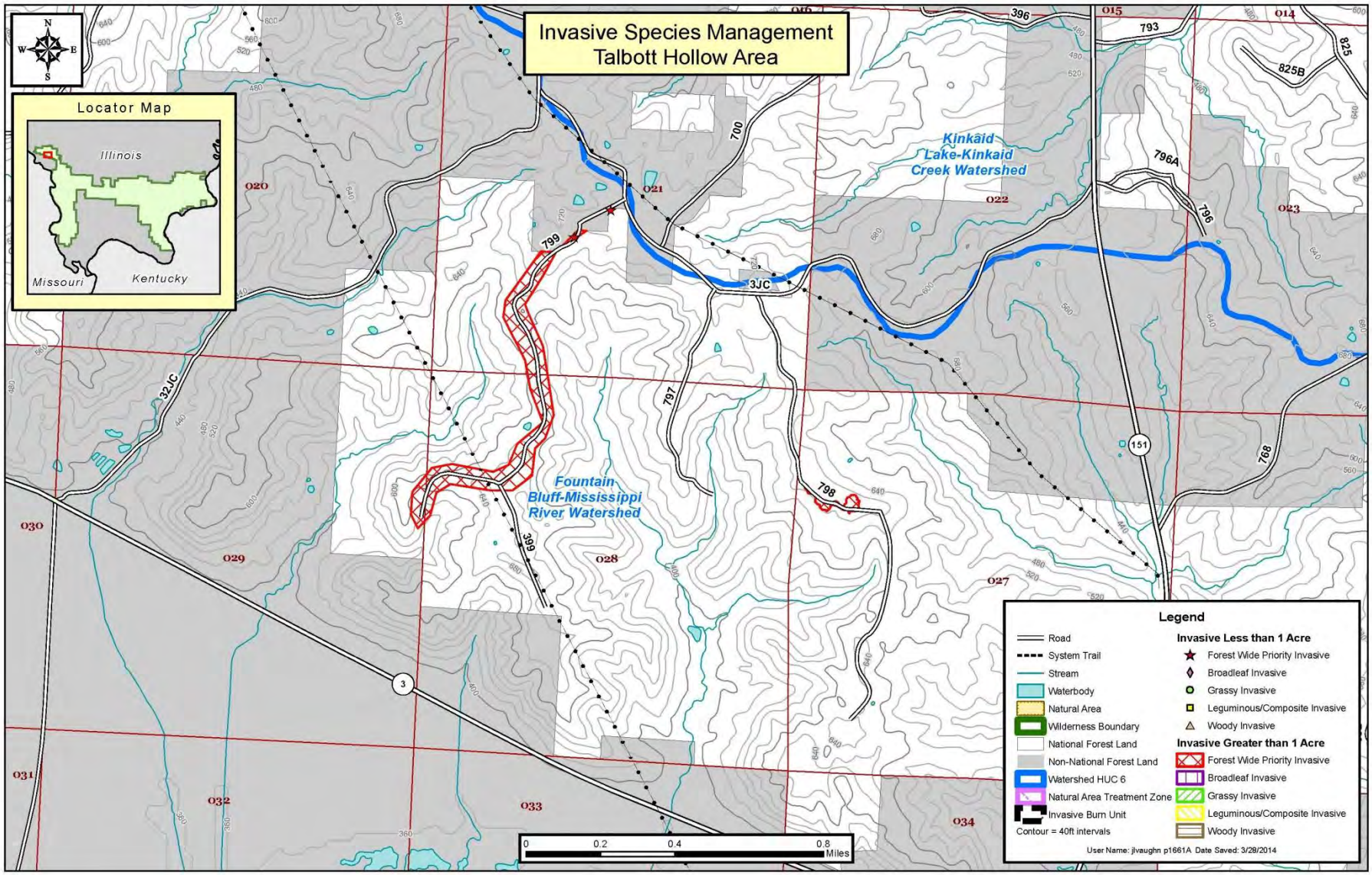

Invasive Species Management
Poco Cemetery North & East, Kickasola
Snow Springs, Massac Tower Springs Area
Locator Map
Illinois
Missouri
Kentucky
Massac Tower Springs NA
Kickasola NA
Snow Springs NA
Poco Cemetery North NA
Poco Cemetery East NA
Sister Islands-Ohio River Watershed
T15S R6E
T15S R7E
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014
0 0.15 0.3 0.6 Miles

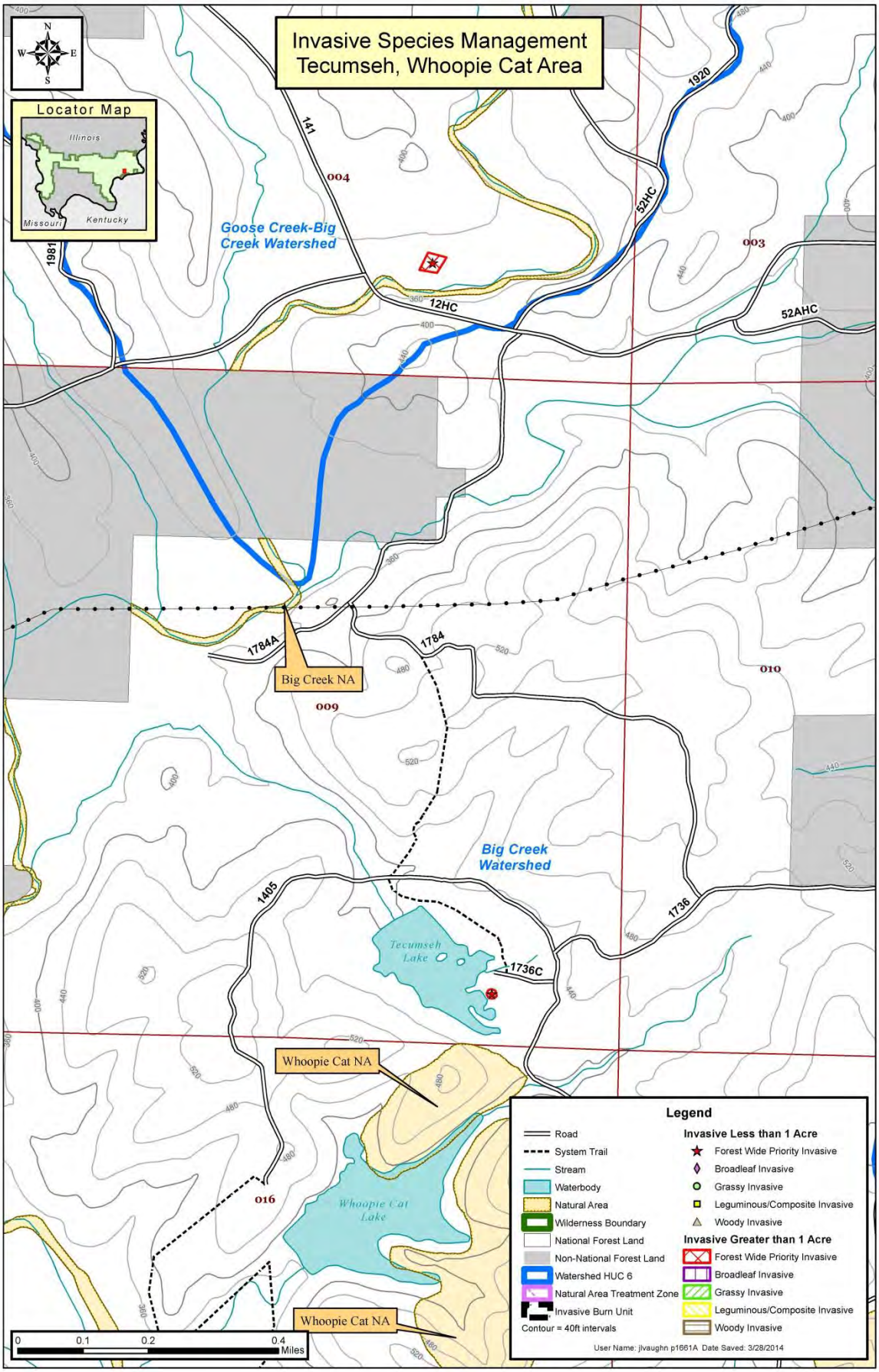

Invasive Species Management
Reids Chapel Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
026
030
031
035
036
23SC
76SC
1570
1594
Little
Saline River
Watershed
Old Channel
Saline River
Watershed
Reids Chapel NA
Reids Chapel NA
T10S R5E
T10S R6E
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014

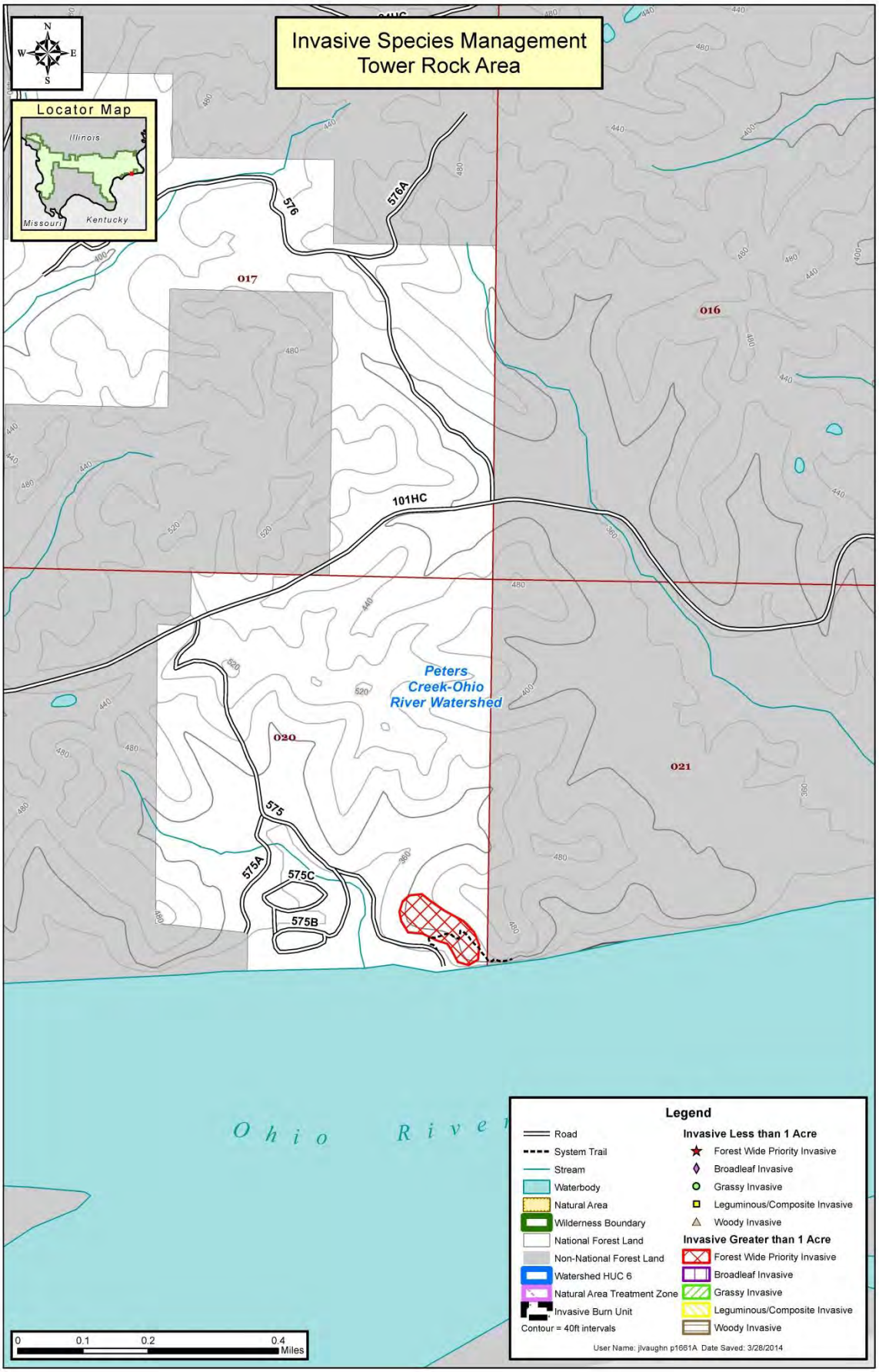

Invasive Species Management
Rich's Cave Area
Locator Map
Illinois
Missouri
Kentucky
021
022
028
027
Drury Creek Watershed
Rich's Cave NA
Headwaters Cache River Watershed
Headwaters Cache River Watershed
174UC
51
0 0.05 0.1 0.2 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014

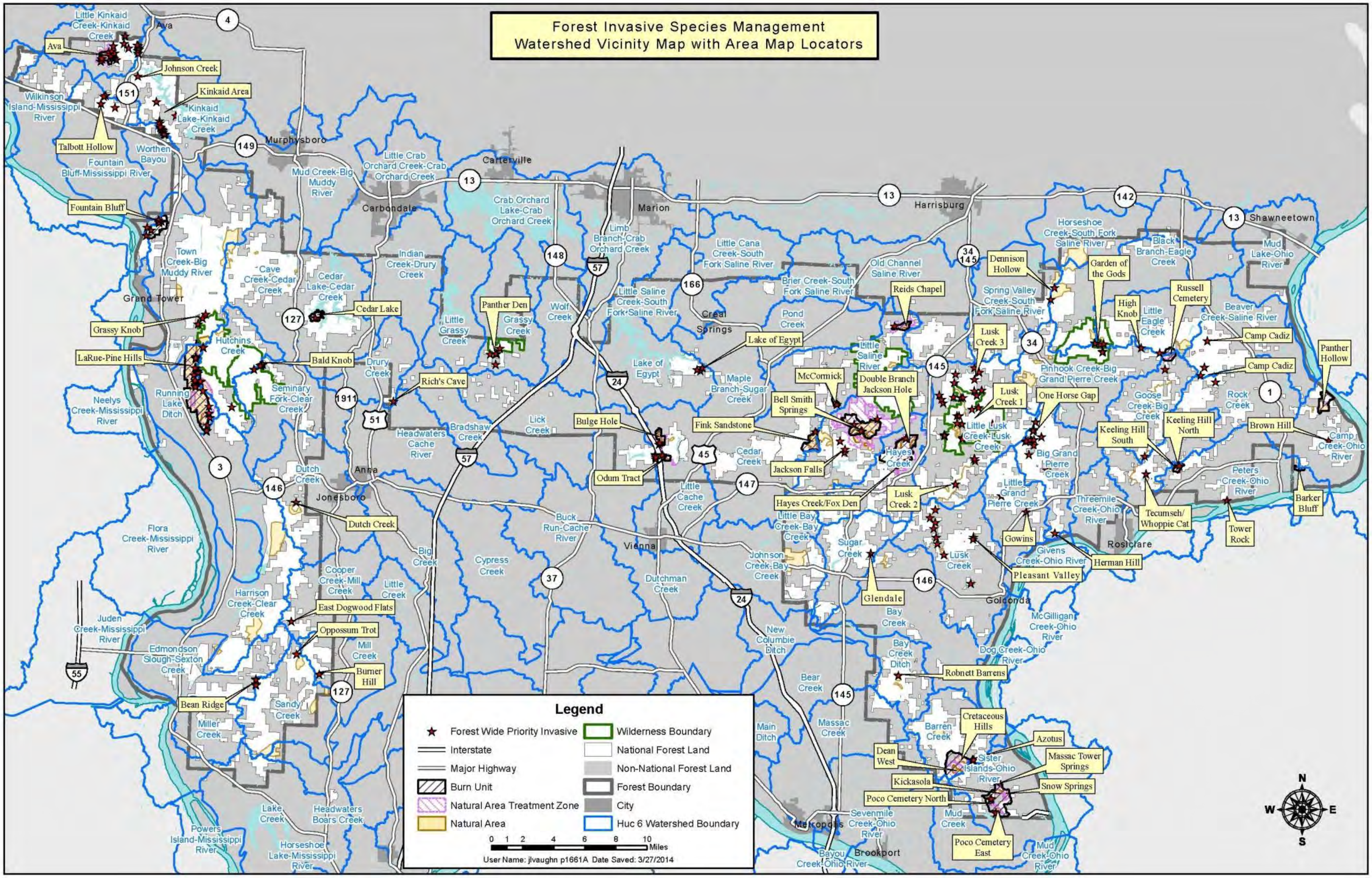

Invasive Species Management
Robnett Barrens Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
013
018
023
024
025
026
019
Robnett Barrens NA
Robnet Barrens NA
Bay Creek Ditch Watershed
1455C
1455D
1456
153PC
1449
500
497
155PC
T14S R5E
T14S R6E
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014


Invasive Species Management
Russell Cemetery Area
Locator Map
Illinois
Missouri
Kentucky
N
S
E
W
Pounds Hollow NA
Pounds Hollow NA
323GC
1683
323A
323
034
035
Little Eagle Creek Watershed
T10S R8E
T11S R8E
Russell Cemetery NA
Little Eagle Creek Watershed
002
003
1684
Pinhook Creek-Big Grand Pierre Creek Watershed
1015
Goose Creek-Big Creek Watershed
1713
9HC
010
Big Creek NA
7HC
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014


Invasive Species Management
Talbott Hollow Area
Locator Map
Illinois
Missouri
Kentucky
Kinkaid
Lake-Kinkaid
Creek Watershed
Fountain
Bluff-Mississippi
River Watershed
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014
0 0.2 0.4 0.8
Miles


Invasive Species Management
Tecumseh, Whoopie Cat Area
N
W
E
S
Locator Map
Illinois
Missouri
Kentucky
Goose Creek-Big Creek Watershed
Big Creek Watershed
Big Creek NA
Whoopie Cat NA
Whoopie Cat NA
Tecumseh Lake
Whoopie Cat Lake
141
1920
52HC
12HC
52AHC
1981
1784A
1784
1405
1736
1736C
004
003
009
010
016
0 0.1 0.2 0.4 Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014


Invasive Species Management
Tower Rock Area
Locator Map
Illinois
Missouri
Kentucky
N
W
E
S
576
576A
017
016
101HC
Peters
Creek-Ohio
River Watershed
020
021
575
575A
575C
575B
Ohio River
0
0.1
0.2
0.4
Miles
Legend
Road
System Trail
Stream
Waterbody
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Watershed HUC 6
Natural Area Treatment Zone
Invasive Burn Unit
Contour = 40ft intervals
Invasive Less than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
Invasive Greater than 1 Acre
Forest Wide Priority Invasive
Broadleaf Invasive
Grassy Invasive
Leguminous/Composite Invasive
Woody Invasive
User Name: jlvaughn p1661A Date Saved: 3/28/2014


Forest Invasive Species Management
Watershed Vicinity Map with Area Map Locators
Legend
Forest Wide Priority Invasive
Interstate
Major Highway
Burn Unit
Natural Area Treatment Zone
Natural Area
Wilderness Boundary
National Forest Land
Non-National Forest Land
Forest Boundary
City
Huc 6 Watershed Boundary
0 1 2 4 6 8 10 Miles
User Name: jlvaughn p1661A Date Saved: 3/27/2014
Ava
Johnson Creek
Kinkaid Area
Talbott Hollow
Fountain Bluff
Grassy Knob
LaRue-Pine Hills
Bald Knob
Cedar Lake
Rich's Cave
Panther Den
Dutch Creek
East Dogwood Flats
Oppossum Trot
Burner Hill
Bean Ridge
Lake of Egypt
Bulge Hole
Odum Tract
Fink Sandstone
McCormick
Bell Smith Springs
Jackson Falls
Double Branch Jackson Hole
Hayes Creek/Fox Den
Reids Chapel
Lusk Creek 3
Lusk Creek 1
Lusk Creek 2
One Horse Gap
Dennison Hollow
Garden of the Gods
High Knob
Russell Cemetery
Camp Cadiz
Panther Hollow
Brown Hill
Keeling Hill South
Keeling Hill North
Tecumseh/ Whoppie Cat
Tower Rock
Barker Bluff
Gowins
Herman Hill
Pleasant Valley
Glendale
Robnett Barrens
Cretaceous Hills
Azotus
Dean West
Massac Tower Springs
Kickasola
Snow Springs
Poco Cemetery North
Poco Cemetery East
Murphysboro
Carbondale
Carterville
Marion
Harrisburg
Shawneetown
Grand Tower
Anna
Jonesboro
Vienna
Rosiclare
Golconda
Metropolis
Brookport
Creal Springs
N
S
E
W

APPENDIX C

General Implementation Priorities

Order of treatment may vary depending on the availability of personnel and resources and on the terms of agreements and/or contracts.

FY14
(Manual, Mechanical, and/or Herbicide)
See Appendix A for details.

- Cretaceous Hills
- Dean Cemetery West
- Kickasola Cemetery
- Massac Tower Springs
- Snow Springs
- Garlic Mustard

FY15
(Manual, Mechanical, and/or Herbicide)
See Appendix A for details.

- Garlic Mustard
- Kudzu (Bald Knob)
- Amur Honeysuckle
- Chinese Yam
- Continue treating natural areas listed in FY14
- Begin treatment of remaining priority natural areas