SCP Title: North Abbey Creek Natural Acre (Kate Holleran)

Approvals for Site Conservation Plan

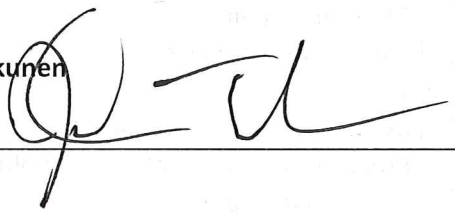
Date first routed: 10-10-16

Please return to Lori Hennings (Primary author: Kate Holleran)

Jonathan Soll

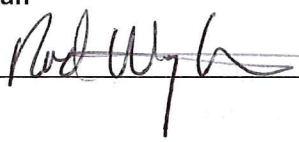
Signature  Date 10/27/16

Justin Takkunen

Signature  Date 11/14/16

Rod Hoytanik

~~Lisa Goorjian~~

Signature  Date 11/21/16

Dan Moeller

Signature  Date 11/28/16

SCP Title:

Primary Author:

Standard SCP Template Checklist* ☐

- ☒ **Introduction**
  - ☒ Context
  - ☒ Planning area
    - *Table X. Included properties*
  - ☒ Key Metro staff and partners
  - ☒ Existing planning documents
- ☒ **Existing conditions**
  - ☒ Physical environment (e.g., geology, soils, hydrology)
  - ☒ Major habitat types
  - ☒ Vegetation and wildlife
  - ☒ Recent management history
  - ☒ Natural resources of special interest
- ☒ **Conservation**
  - ☒ Conservation targets
  - ☒ Key ecological attributes
    - *Table X. KEA tables*
    - *Table X. Summary of current cover, conservation targets and status, and stewardship type*
  - ☒ Threats
    - *Table X. Threats and their sources*
    - ☒ Climate change considerations (see doc)
  - ☒ Prioritized strategies to address threats
    - *Table X. Threats and actions for KEAs*
- ☒ **Management actions** (10-year timeframe)
  - *Table X. Management actions tied to strategies with estimated cost and timing*
  - *Table X. Monitoring tied to maintaining or improving KEAs*
- ☒ **Access and recreation**
- ☒ **Coordination**
  - ☒ Key stakeholders
  - ☒ Public involvement
- ☒ Map – Vicinity map
- ☒ Map – Site map
- ☒ Map – Historical vegetation (optional)
- ☒ Map – Current cover
- ☒ Map – Conservation targets
- ☒ Map – Stewardship classes
- ☒ Map – Management status
- ☒ **References**

- For additional details, see *Site Conservation Plan Template JAS updated version 08-23-2012*

Outward Facing SCP Template Checklist* ☐

- ☐ **Introduction**
  - ☐ Context
  - ☐ Goals and objectives of the conservation plan
- ☐ **Planning process summary**
  - ☐ Planning area
  - ☐ Planning process
- ☐ **Existing conditions**
  - See Standard Template
- ☐ **Conservation**
  - ☐ Summary of Appendix content
    - ☐ Conservation targets
    - ☐ Key ecological attributes
    - ☐ Threats and sources
    - ☐ Climate change considerations
- ☐ **Strategic restoration and stewardship**
  - ☐ Prioritized actions linked to KEAs and threats
  - ☐ Ongoing stewardship and restoration programs
  - ☐ Estimated cost
  - ☐ Monitoring plan
  - ☐ Long-term strategies
- ☐ **Visitor experience**
  - ☐ Existing site use by public
  - ☐ Programmatic (education and volunteers)
  - ☐ Site management
  - ☐ Strategic actions (access and site management)
- ☐ **Coordination**
  - ☐ Key Partners
  - ☐ Key stakeholders
  - ☐ Public involvement
- ☐ Map – Vicinity map
- ☐ Map – Site map
- ☐ Map – Topography
- ☐ Map – Soils
- ☐ Map – Hydrology
- ☐ Map – Historical vegetation
- ☐ Map – Current cover
- ☐ Map – Conservation targets
- ☐ Map – Stewardship classes
- ☐ Map – Management status
- ☐ Map – Access
- ☐ Appendix A – Historical context
- ☐ Appendix B – Conservation in detail
  - Relationship to other conservation plans
  - Key ecological attributes
  - Threats and sources
  - Invasive species
  - Monitoring framework
- ☐ Appendix D – References and Additional Resources

SITE CONSERVATION PLAN

North Abbey Creek Natural Area



September 2016

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Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy, and sustainable transportation and living choices for people and businesses in the region. Voters have asked Metro to help with the challenges and opportunities that affect the 25 cities and three counties in the Portland metropolitan area.

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MAKING A GREAT PLACE

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NORTH ABBEY CREEK NATURAL AREA

INTRODUCTION

The 213-acre North Abbey Creek Natural Area is part of the North Tualatin Mountains naturehood and is located on the western face of the northern end of the naturehood, north of Forest Park and south of Skyline Road in west Multnomah County.

The area surrounding North Abbey Creek Natural Area (see Vicinity map) contains a mixture of land uses including residential, schools, and agriculture and timber harvest. Metro's McCarthy Creek Natural Area is to the north, and Burlington Creek Forest and Ennis Creek Forest natural areas are to the east. The City of Portland's Forest Park lies southeast of the site.

PLANNING AREA

North Abbey Creek Natural Area's planning area is defined by the site's boundaries, i.e., Metro ownership. There are large expanses of privately- and publicly-owned properties nearby that share habitat features with the forest and influence its potential ecological viability and larger landscape value. These properties are important to the development of effective conservation strategies for North Abbey. Detailed evaluations of their stewardship classification, targets, etc. are beyond the scope of this plan but should be considered as part of regional planning discussions.

Metro properties within North Abbey Creek Natural Area

FILE NO.	NAME	CLOSE DATE	ACRES
13.044	Chang	09/14/2009	20.0
13.043	Keystone Construction	04/12/2010	20.6
13.046	Cho	06/04/2010	40.0
13.048	Fernald	04/21/2011	37.4
13.04	Steinberg	09/30/2011	39.5
13.047	Lorenzen	09/27/2013	55.6
			213.1

Key staff

Kate Holleran, senior natural resources scientist
Adam Stellmacher, lead natural resources specialist
Nathaniel Marquiss, natural resources technician
Jonathan Soll, science manager
Justin Takkunen, land manager
Katy Weil, wildlife monitoring coordinator
Olena Turula, parks and natural areas planner
Laurie Wulf, property management specialist
Bonnie Lyn Shoffner, restoration volunteer coordinator

EXISTING PLANNING DOCUMENTS

The North Abbey Creek Natural Area is part of the North Tualatin Forests Master Plan completed in April 2016. North Abbey Creek Forest was acquired to meet the goals of the Rock Creek target area, including protecting the riparian corridors and important upland habitat in the Abbey Creek headwaters, and acquiring and protecting a natural corridor along the main stem of Abbey Creek linking its confluence at Rock Creek to the Westside Trail and to Forest Park.

The master plan preserves the North Abbey Creek Forest site as a relatively undisturbed core habitat area. Roads not needed for natural area management will be decommissioned and public use will be directed toward other natural areas more appropriate for increased public use. The master plan is available on Metro's website.

Specific project implementation plans include the following:

- Stringer, Darren, 2015. Silvicultural Prescription for Forest Restoration at the Lorenzen Property.
- Trask, Steve, 2015. Hydrological Site Review.

SITE DESCRIPTION

The entire site sits within the North Abbey Creek sub-basin of the Rock Creek watershed, which drains to the Tualatin River. The site is dominated by hardwood, Douglas fir and mixed conifer/hardwood forests. Most of the forests at the site are 25-60 years old, and include areas replanted after clearcut and selective logging, as well as former pastures that have been recently planted with native plants. Slightly older forest structure exists in the narrow riparian zones protected from previous logging. Slopes are steep (30-60 percent) along most of the stream channels. Standing dead and down wood are very uncommon. The absence of down wood has contributed to the ongoing degradation in North Abbey Creek.

The primary management access points for the North Abbey Creek Natural Area are along Skyline Blvd. on the north end, and from Northwest Kaiser Road on the south end (see Site map).

Soils present at North Abbey (also see Soils map)

MAP SOIL SYMBOL	MAP UNIT NAME	DESCRIPTION
17 E	Goble silt loam	Moderately well-drained soils on low terraces, rolling ridgetops and convex side slopes of ridgetops
7 C, D,	Cascade silt loam	8-30% slopes, highly erodible
10 C	Cornelius silt loam	Moderately deep to a fragipan, moderately well drained soil formed from loess material
	Saum silt loam	Deep, well drained silty soils, variable surface runoff rates

Historic habitats at North Abbey

~ % COVER	HABITAT TYPE	HISTORIC HABITAT DESCRIPTION BY GLO SURVEYOR NOTES
100%	Closed forest; upland	Mesic mixed conifer forest with mostly deciduous understory. May include Douglas fir, western hemlock, red cedar, grand fir, bigleaf maple, yew, dogwood, white oak, red alder.

The Oregon Natural Heritage Program has compiled a statewide composite GIS shapefile of historic vegetation based on 1851 General Land Office survey records. This data set identifies one vegetation type for the natural area, upland closed forest. Reviewers should be aware that a known weakness of the "pre-settlement map" is that due to scale (1:100,000) it fails to represent riparian corridors and small patches of other habitat types within the matrix. In addition to closed upland forests, North Abbey Creek Natural Area includes riparian forests associated with the streams, a small forested wetland, and Oregon white oak, although this species is uncommon at the site (see Historic Vegetation map).

RECENT MANAGEMENT HISTORY

Recent site management has focused on implementation of the stabilization plan with an emphasis on weed control, re-vegetation, structure removal and stream and forest assessments. Individual property records will provide a complete record of treatments. Below is a partial list of routine actions on the properties after acquisition.

Management summary 2009-2015

YEAR	TREATMENT
2009	Chang well decommission Chang invasive plant control Chang boundary marking
2010	Cho structure removal Cho well decommission Cho and Keystone invasive plant control Chow and Keystone boundary marking
2011	Cho and Keystone planting Fernald and Steinberg boundary marking Fernald and Steinberg weed control
2012	Follow-up weed treatments on all properties Fernald bare-root planting
2013	Follow-up weed treatments on all planting sites Lorenzen structure removal Lorenzen boundary survey and marking Lorenzen field mow
2014	Follow-up weed treatment on Fernald and Steinberg
2015	Lorenzen bare-root planting in pasture Lorenzen forest thinning, seventeen acres Large wood placement in North Abbey Creek
2016	Follow-up weed treatments at Lorenzen

ACCESS AND RECREATION

Current use

Metro is in the process of reducing the use of the natural area for education purposes. The nearby McCarthy Creek Forest and Burlington Creek Forest natural areas have been designated through the North Tualatin Mountains master planning process as more appropriate for public use.

NATURAL RESOURCES OF SPECIAL INTEREST

In general, upland forests, particularly young forests, are not a regionally rare habitat type. However, the size of this natural area (213 acres) and its proximity to other large blocks of forested habitat along the rural/urban interface make it a regionally important site. Within the 213-acre site there are over 150 acres of interior forest habitat. Interior forest habitats have relatively stable habitat and low disturbance conditions and provide critical habitat for species sensitive to edge conditions such as predation and parasitism. The natural area also includes the headwaters and over a mile of North Abbey Creek, as well as multiple ephemeral drainages.

A resident elk herd is frequently seen in the natural area and many neighbors consider the elk herd a significant local resource. Oregon Fish & Wildlife considers the area an elk de-emphasis area. Birthrates and calf survival appear to be low, perhaps due to a lack of high-quality spring forage. Coho and winter steelhead are present in lower North Abbey Creek Natural Area. Avian surveys were initiated in 2015 but insufficient data has been collected to discuss trends.

Rare species known to occur at North Abbey Creek Natural Area

	ORBIC LIST	FEDERAL STATUS	URBANIZING FLORA (2009)
TBD – No documented occurrences of rare species occur at North Abbey Creek Natural Area; more investigation is needed.			

There are no documented occurrences of state or federally listed species. Red-legged frogs (*Rana aurora aurora*) are present at the natural area.

CURRENT AND DESIRED FUTURE CONDITION OF CONSERVATION TARGETS

Non-technical status and desired future condition of targets at North Abbey Creek Natural Area*

TARGET	CURRENT CONDITION	DESIRED FUTURE CONDITION
Upland closed forest	Simplified habitat structure due to previous management including farming and timber harvest. Site lacks large trees, snags and down wood, but in general retains a mosaic of native understory with patches dominated by invasive plants.	Late-successional forest habitat within forest floor wood accumulations, native understory diversity and cover, and increased snag and wildlife trees. Reduced edge weed cover and control of ivy and other shade-tolerant system modifying weeds.
Riparian forest	Fair. The canopy cover and native diversity is generally good; however, down dead wood along the banks and keyed wood pieces are at very low levels. Metro installed 17 large wood features along North Abbey Creek in 2015, increasing the presence of large down wood.	Late-successional forest habitat with increases in forest floor wood accumulations, native understory diversity and cover, and increased snag and wildlife trees. Opportunities to improve in-stream structure are abundant. Further investigation and planning are necessary before associated projects can be implemented.
Upland, early seral shrub	These patches are a minor component of the site and include approximately 30 acres of abandoned pastures that were recently planted to shrubs with a minor component of Oregon white oak.	Desired conditions are for native shrubs and herbs to dominate cover with a limited presence of non-native plant species that are not displacing natives, and can be controlled with occasional weed abatement every 3-5 years.

*See Conservation Target, Conservation Target Status, Current Cover and Stewardship Classification maps.

Key ecological attributes for upland forest at North Abbey Creek Natural Area

CATEGORY	KEA	INDICATOR	---------- INDICATOR RATING ---------- POOR	FAIR	GOOD	VERY GOOD	CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
Size	Forested habitat patch size	Patch size (includes native shrub patches or natural clearings)	<12 ha (30 ac)	12-40 ha (30-100 ac)	40-61 ha (100-150 ac)	>61 ha (150 ac)	Very Good	Very Good	Very Good	Calculate by delineating forest patch in GIS. If more than one patch present, rank based on a composite. In the Puget Sound, most native forest birds were present in patches ≥42 ha (104 ac). Local studies suggest a lowest threshold for birds and mammals of about 12 ha (30 ac) (Environmental Law Institute 2003; Donnelly and Marzluff 2004; Soll and Hennings 2010).
Condition	Native tree and shrub richness	Number of native tree and shrub species per acre	<5 species per 0.4 ha (1 ac)	5-8 species 0.4 ha (1 ac)	8-12 species per 0.4 ha (1 ac)	>12 species per 0.4 ha (1 ac)	Good	Good	Very Good	Estimate overall via site walk. Native wildlife species diversity is associated with native vegetation. A diversity of shrubs is more likely to provide food and shelter for species over the seasons. Shrub diversity is particularly important to pollinators and songbirds. (Hagar 2003; Hennings 2006; Burghardt et al. 2009).
Condition	Mature trees	Number and size (dbh) of species such as Douglas fir, western red cedar, western hemlock and grand fir	Mature trees lacking	<3 per ac with dbh >24 in	3-5 per ac with dbh >24 in	>5 per ac with dbh >24 in	Poor	Poor**	Very good	Recruitment of native trees necessary for long-term health of upland forests. Saplings are < 2m tall. Based on PIF (2000) biological objective for WV large-canopy trees in riparian deciduous woodland. **It will likely take decades to achieve a 24" DBH
Condition	Standing and downed dead trees	Average # snags and large wood (> 50 cm, or 20 in, DBH) per acre	< 5 snags and <5% down wood	5-11 snags and 5-10% down wood	12-18 snags and 10-20% down wood with moderate variety of size and age classes	>18 snags and >20% cover down wood in a good variety of size and age classes	Poor	Fair***	Very Good	Estimate via site walk. Rankings distilled from multiple references and particularly from *Habitat Conservation for Landbirds in Lowlands and Valleys of Western Oregon and Washington* (Altman and Alexander 2012) and DecAID results for species' use of dead wood in Westside Lowland Conifer-hardwood forests. ***There will be a limited improvement in snags and down wood even where thinning is implemented. Snags and down wood accumulate over time and require the development of large diameter trees (32+ inches diameter) to replicate reference conditions.

*Desired future condition

Key ecological attributes for riparian forest (streams or rivers) at North Abbey Creek Natural Area

CATEGORY	KEA	INDICATOR	---------- INDICATOR RATING ---------- POOR	FAIR	GOOD	VERY GOOD	CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
Condition	Vegetative structure: shrub layer	% native shrub cover	<10% cover	10-25% cover	25-50% cover	>50% cover	Good	Good	Very Good	Estimate via site walk. Indicator categories based on data from local study at 54 riparian study sites. Abundance and species richness of many bird and mammal species is associated with native shrub cover and woody vegetation volume. Puget Sound studies suggest that the fragmentation of upland vegetation and the total amount of riparian vegetation explain the greatest amount of variability in riparian bird communities (Carey and Johnson 1995; Hennings 2001; Hagar 2003; Shandas and Alberti 2009; Hagar 2011).
Condition	Standing and downed dead trees	Average # snags and large wood (> 50 cm, or 20 in, DBH) per 0.4 ha (1 ac)	< 5 snags and <5% down wood	5-11 snags and 5-10% down wood	12-18 snags and 10-20% down wood with moderate variety of size and age classes	> 18 snags and >20% cover down wood in a good variety of size and age classes	Poor	Poor****	Very Good	Estimate via site walk. Rankings distilled from multiple references and particularly from *Habitat Conservation for Landbirds in Lowlands and Valleys of Western Oregon and Washington* (Altman and Alexander 2012) and DecAID results for species' use of dead wood in Westside Lowland Conifer-hardwood forests. **** Snags and down wood accumulate over time and require the development of large diameter trees (32+ inches diameter) to replicate reference conditions.

*Desired future condition

Key ecological attributes for upland shrub habitat at North Abbey Creek Natural Area

CATEGORY	KEA	INDICATOR	---------- INDICATOR RATING ----------				CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
			POOR	FAIR	GOOD	VERY GOOD				
Condition	Vegetative structure: shrub layer	% native shrub canopy cover	<10% cover	10-25% cover	25-50%	>50%	Fair*****	Good	Very Good	Native shrubs and herbaceous plants provide food and ovipositing sites, as well as structural complexity to the habitat that is associated with increased wildlife diversity (Hagar 2003; Hennings and Edge 2004; Ares et al. 2010; Pendergrass et al. 2012). ****Native shrub plantings in two former fields will increase shrub cover in designated upland shrub habitats
Condition	Native shrub richness	# native shrub species per acre	<2 species per 0.4 ha (1 acre)	2-5 species per 0.4 ha (1 acre)	6-9 species per 0.4 ha (1 acre)	>10 species per 0.4 ha (1 acre)	Good	Good	Very Good	Estimate via site walk. Native wildlife species diversity is associated with native vegetation. Shrub diversity is important to long-distance migratory songbirds. Partners in Flight biological objective for yellow warbler (sub-canopy, tall shrub foliage in riparian woodland) (Altman 2000).

*Desired future condition

THREATS TO CONSERVATION TARGETS

North Abbey Creek Natural Area is threatened by factors that limit forest stand health (overstocking and non-native species). Notable features that magnify these issues occur along property edges. The site also has a moderate and concentrated level of public use, which may increase in the future following a comprehensive plan, currently in progress. Resulting public access increases and associative infrastructure, if they occur, would also likely result in increases in weed and human disturbance threats to native vegetation and wildlife.

Threats to conservation targets at North Abbey Creek Natural Area

CONSERVATION TARGET	STRESS (DEGRADED KEA)	SEVERITY	SCOPE	OVERALL STRESS RANK	SOURCE (THREAT)	CONTRIBUTION	IRREVERSIBILITY	OVERALL SOURCE RANK	OVERALL THREAT RANK	COMMENTS
Upland forest	Forest stand structure – mature trees	High	Low	Moderate	Overstocking competition	Very High	Low	Moderate	Moderate	This threat can be mitigated with thinning that includes snag, down wood and wildlife pile creation.
Upland shrub habitat	Vegetative structure: shrub layer	Very High	High	Very High	Overstocking competition, non-native shrub species (e.g., Scotch broom, blackberry)	Very High	Low	Moderate	Very High	This threat can be addressed with selective woody weed abatement and targeted revegetation.
Riparian vegetation	Vegetative structure	Moderate	Moderate	Moderate	Previous land management for farming and timber harvest	High	Low	Moderate	Moderate	Thinning and snag creation will create gaps and likely stimulate shrub growth.

Climate change considerations

Climate change is anticipated to affect summer temperatures and availability of water in summer. Other indirect effects of climate change may include range shifts of plants and animals, some native to North America and some not, and increased competition by these species. It is possible that climate change may touch every key ecological attribute, though effects on some KEAs may be more important than others.

Direct effects that may occur

- Increased summer temperatures
- Increased severity of winter rain events
- Decreased water availability in summer

Indirect effects that may occur

- Increased risk of wildfire in hotter, dryer summers
- Range shifts by undesirable plants increasing competition
- Disease introductions and/or increased vulnerability to disease
- Loss of synchronicity of plant reproduction and pollinators
- Loss of synchronicity of resident and migratory animals and food sources (e.g., insect hatches)
- Increased erosion in streams caused by the flashier winter rain events
- In upland forests, plant growth and survival may be affected by increased summer temperatures and reduced water availability in summer.

STRATEGIC ACTIONS

Enhancement and management strategies recommended for the site target improvements to forest structure, vegetation diversity and non-native species suppression. Priority actions are described below.

Proposed strategies at North Abbey Creek Natural Area

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IS IT IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Treat exotics, especially *Rubus armeniacus*, *Hedera helix and Daphne laureola* Survey and treat EDRR species and system-changing invasives.	Competition from exotic plants	Riparian forest: % native shrub and herbaceous cover (combined) Upland shrub: % native shrub canopy cover	Periodic treatments of certain exotics are essential to avoid losing native plants.	Establish and maintain KEA rating of Good	Medium
Selectively thin upland forest patches that are accessible to machine harvest or affordable chainsaw thinning during the next 5 years.	Reduces overstocking that is causing a loss of living tree canopy and understory native vegetation diversity	Upland forest: Number and size of native tree and shrub species per acre	This strategy will prevent loss of understory diversity and accelerate development of late-successional features such as large diameter trees.	Visual assessment/ KEA	High

STRATEGY	SOURCES OF STRESS IT ADDRESSES	FOCAL CONSERVATION TARGETS/KEAS AFFECTED	WHY IS IT IMPORTANT AND ANY TIMING ISSUES	MEASURE(S) OF SUCCESS	RANK
Decommission legacy logging roads not needed for site management.	Delivery of sediment to streams, barriers to wildlife movement, human disturbance	Native fish and wildlife	Legacy roads and failing culverts are a source of sediment to North Abbey.	Miles of road decommis-sioned and number of culverts removed or improved	High
Increase forest understory diversity of upland forests.	Habitat simplicity; resiliency to climate change	% native tree and shrub richness	Enhances resiliency to climate change while providing better wildlife habitat, forest soil benefits, weed suppression.	Visual assessment/ KEA	Medium
Reduce non-native cover in upland shrublands.	Non-native species competition	% native canopy cover	Increases wildlife habitat, reduces internal site fragmentation	Visual assessment/ KEA	Medium

Strategy ranking:
High: must do within 5 years to protect target viability
Medium: target will persist without it but will degrade over 5-10 years or require additional future management
Low: addresses a non-critical threat or one that is unlikely to threaten target viability within 10 years

SPECIFIC ACTIONS AND FUNDING REQUIREMENTS

Enhancement and management strategies, as they pertain to the conservation targets, are described below.

Specific actions to implement strategies tied to conservation targets at North Abbey Creek Natural Area

STRATEGY	TARGET	PRIORITY (HOW SOON)	SPECIFIC TASKS	ESTIMATED COST
Selectively thin forest stands to promote late-successional structure and improve function.	Upland	High – next 5 years	Implement combination of machine and chainsaw thinning to selectively open overstocked forests to increase forest stand structure, diversity and resiliency to climate change. Include snag and wildlife pile creation. Research supports thinning at upland sites to accelerate late successional forest conditions and the creation of resilient forests in the face of climate change. Note: 17 acres of thinning was completed in 2015.	$40,000 to $65,000
Decommission legacy roads, repair or replace any remaining culverts.	Native fish and water quality*	High	Implement road decommissioning as part of thinning project. Research indicates that legacy logging roads are a significant source of sedimentation in streams. Road decommissioning is scheduled for 2017.	$20,000
Treat exotics, especially the non-native ivies, clematis and holly.	All	Moderate	Weed mapping assessment currently in progress may provide more information about ivy and holly presence. Sweep entire site to treat invasive plants.	$30,000 for the first five years

STRATEGY	TARGET	PRIORITY (HOW SOON)	SPECIFIC TASKS	ESTIMATED COST
Interplant to increase understory diversity.	Upland forest	High	Establish understory conifers in hardwood-dominated stands and in Douglas-fir stands after thinning. This action is currently scheduled for 2017.	$35,000
Interplant to increase shrub diversity.	Upland shrub	Moderate	Re-vegetation and continued competition control.	$20,000
Increase snags and downed wood.	Upland forest	Low	Selective topping and girding/tree-falling, create wildlife piles outside of thinning units.	$15,000
Increase instream complexity.	Riparian forest	High	Instream LWD placement to mitigate near total removal of key pieces and down wood along the stream during previous land management activities.	$55,000

MONITORING PLAN

Monitoring for key ecological attributes associated with the site's conservation targets will largely be done via periodic visual assessment documented in a status update report at least every five years. In addition, periodic wildlife monitoring may be appropriate for the North Tualatin Mountains sites, focusing on long-term tracking of the avian community.

KEY STAKEHOLDERS

- Skyline Ridge Neighbors, Laurel.Erhardt@gmail.com
- West Multnomah Soil and Water Conservation District: Michael Ahr, michael@wmswcd.org
- City of Portland: Kendra Peterson-Morgan, kendra.peterson-morgan@portlandoregon.gov
- Forest Park Conservancy: Renee Meyers, renee@forestparkconservancy.org

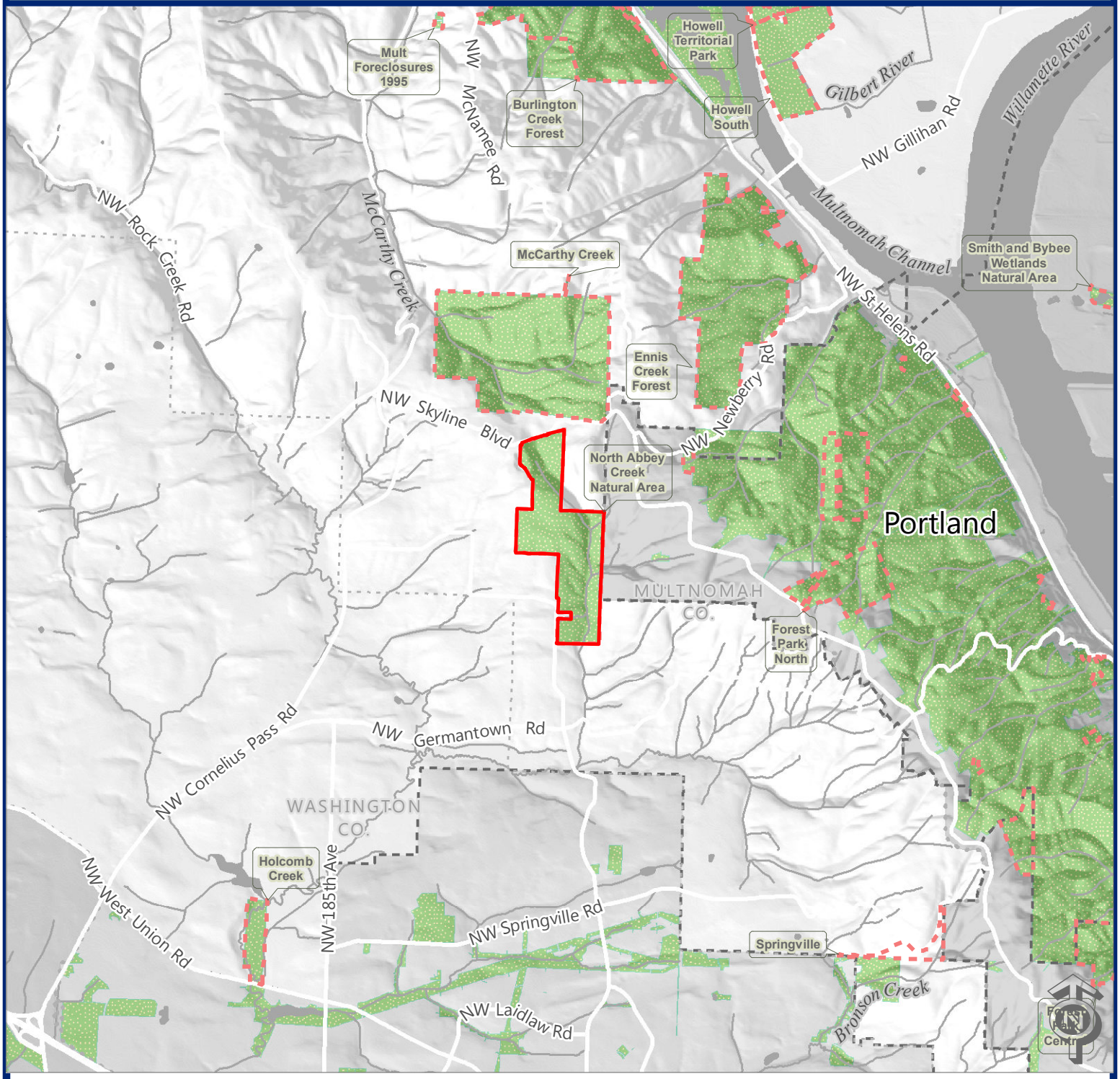
PUBLIC INVOLVMENT AND OUTREACH

As part of the access planning process and the stabilization activities, multiple neighbor letters have been sent to neighbors within a one-mile radius of the natural area. In addition, information about the access planning and stabilization activities has been presented at two public meetings held in 2014-2015.

MAPS

VICINITY MAP

Metro

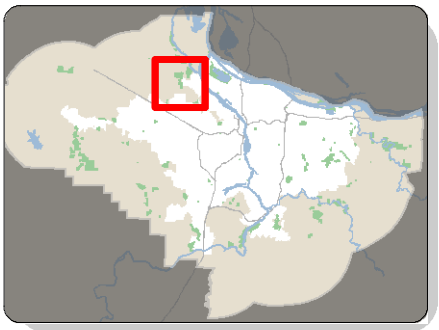


North Abbey Creek Natural Area site

Other Metro sites

Parks and/or Natural Areas

0 1 2 Miles

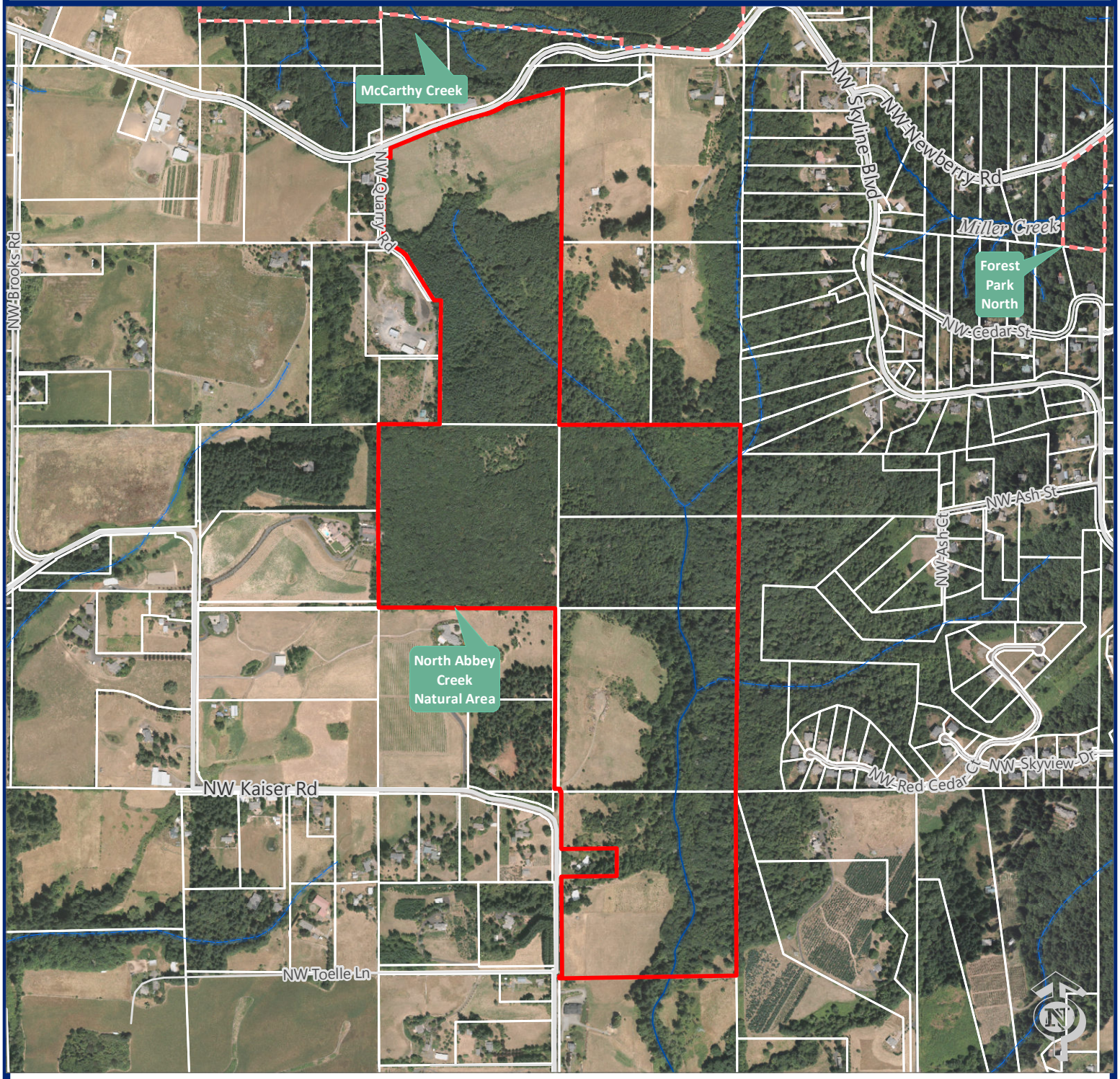


North Abbey Creek Natural Area Site Conservation Plan

map date: 9/6/2016

SITE MAP

Metro



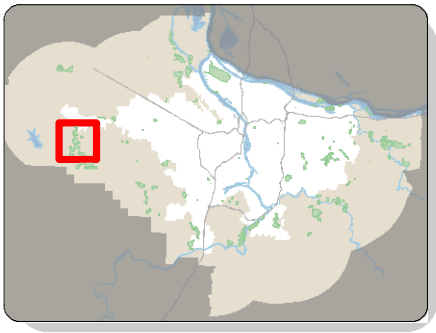
North Abbey Creek Natural Area site

Other Metro sites

NHDplusStrmFlowline

Intermittent stream

Perennial stream



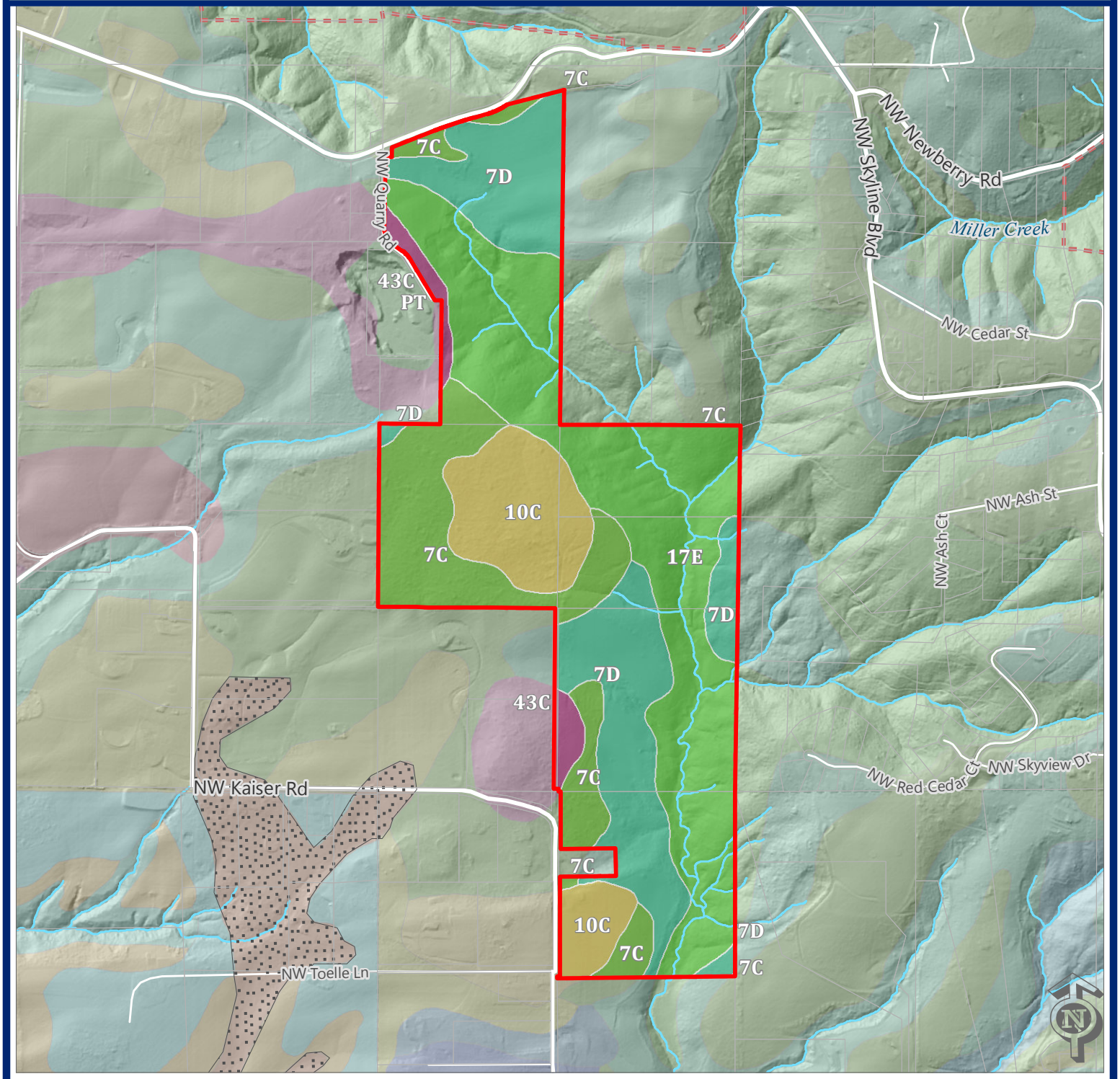
0 1,400 2,800 Feet

North Abbey Creek Natural Area Site Conservation Plan

map date: 8/24/2016

SOILS

Metro



North Abbey Creek Natural Area site

Other Metro sites

Hydric soils

NRCS soils on featured site

- Cascade silt loam, 15 to 30 percent slopes
- Cascade silt loam, 8 to 15 percent slopes
- Cornelius silt loam, 8 to 15 percent slopes
- Goble silt loam, 30 to 60 percent slopes
- Pits
- Saum silt loam, 8 to 15 percent slopes

0 1,250 2,500 Feet

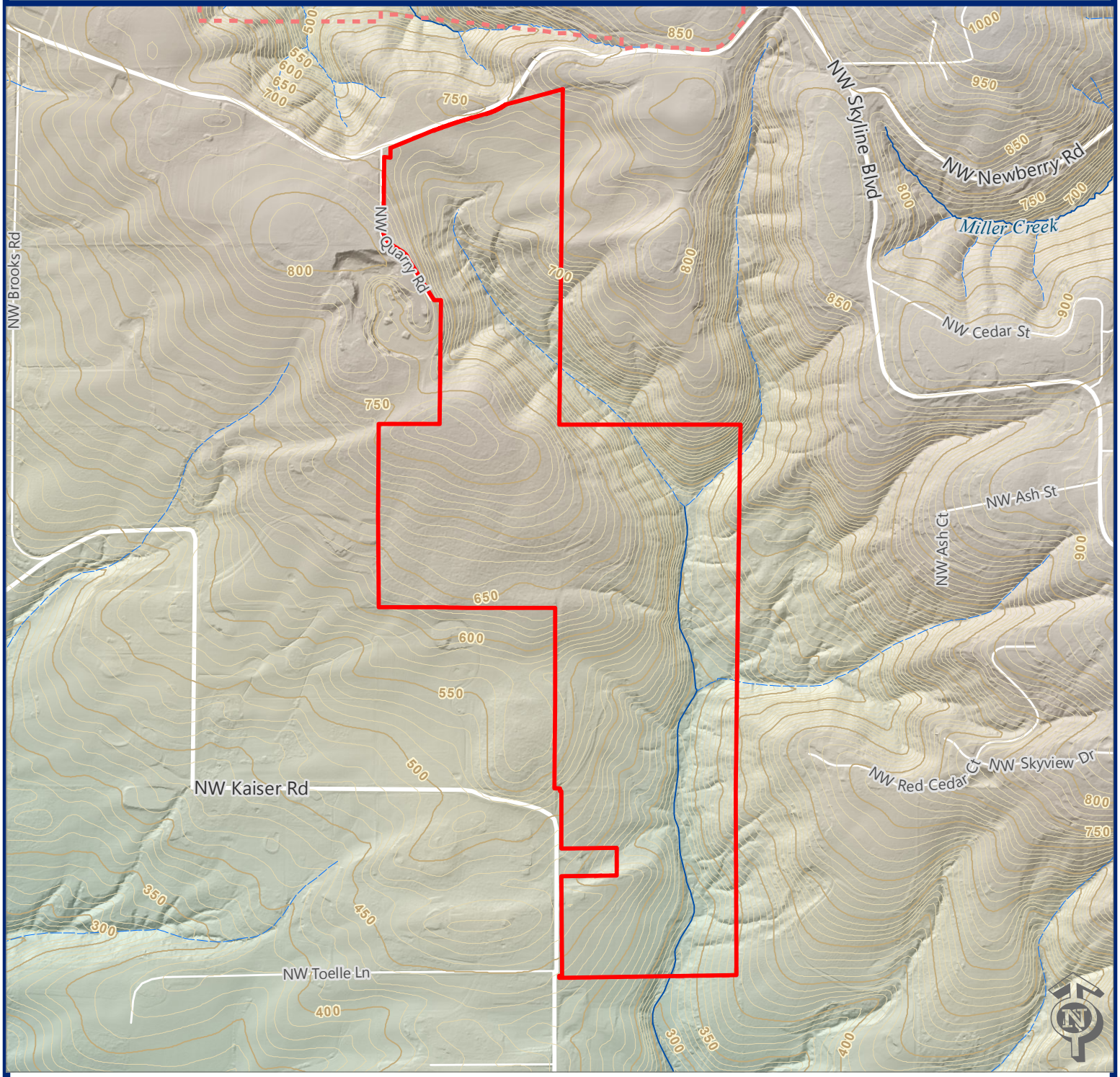
Metro

North Abbey Creek Natural Area Site Conservation Plan

map date: 9/6/2016

TOPOGRAPHY

Metro



North Abbey Creek Natural Area site

Other Metro sites

NHDplusStrmFlowline

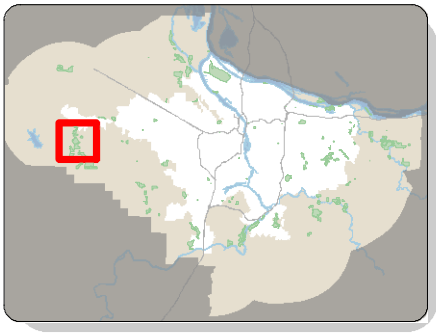
Intermittent stream

Perennial stream

10 ft contour

50 ft contour

0 1,400 2,800 Feet

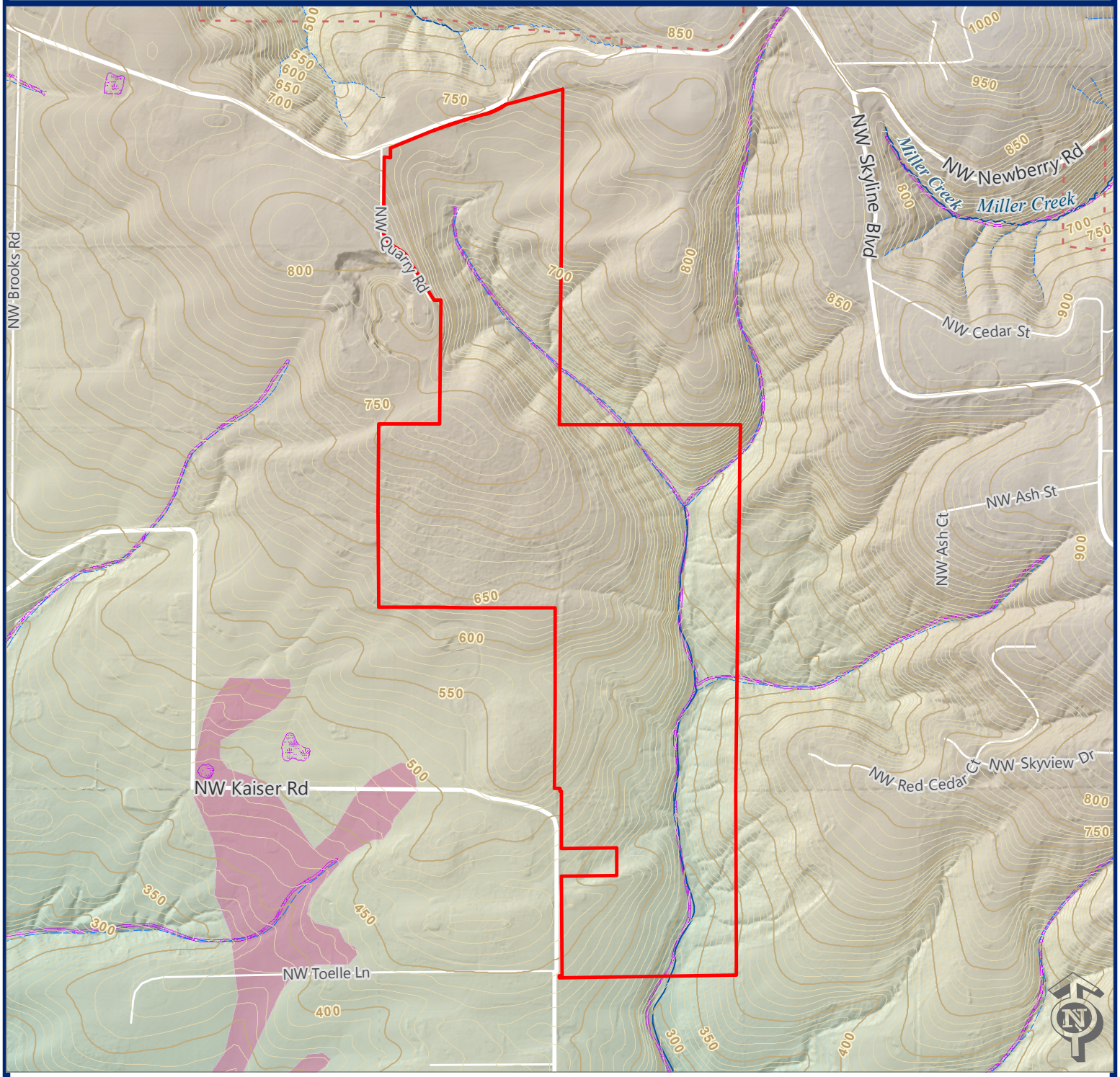


North Abbey Creek Natural Area Site Conservation Plan

map date: 9/6/2016

HYDROLOGY

Metro



North Abbey Creek Natural Area site

Other Metro sites

Wetlands (Wetlands Conservancy data)

NHD Flowlines

Intermittent stream

Perennial stream

Hydric soils

0 1,300 2,600 Feet

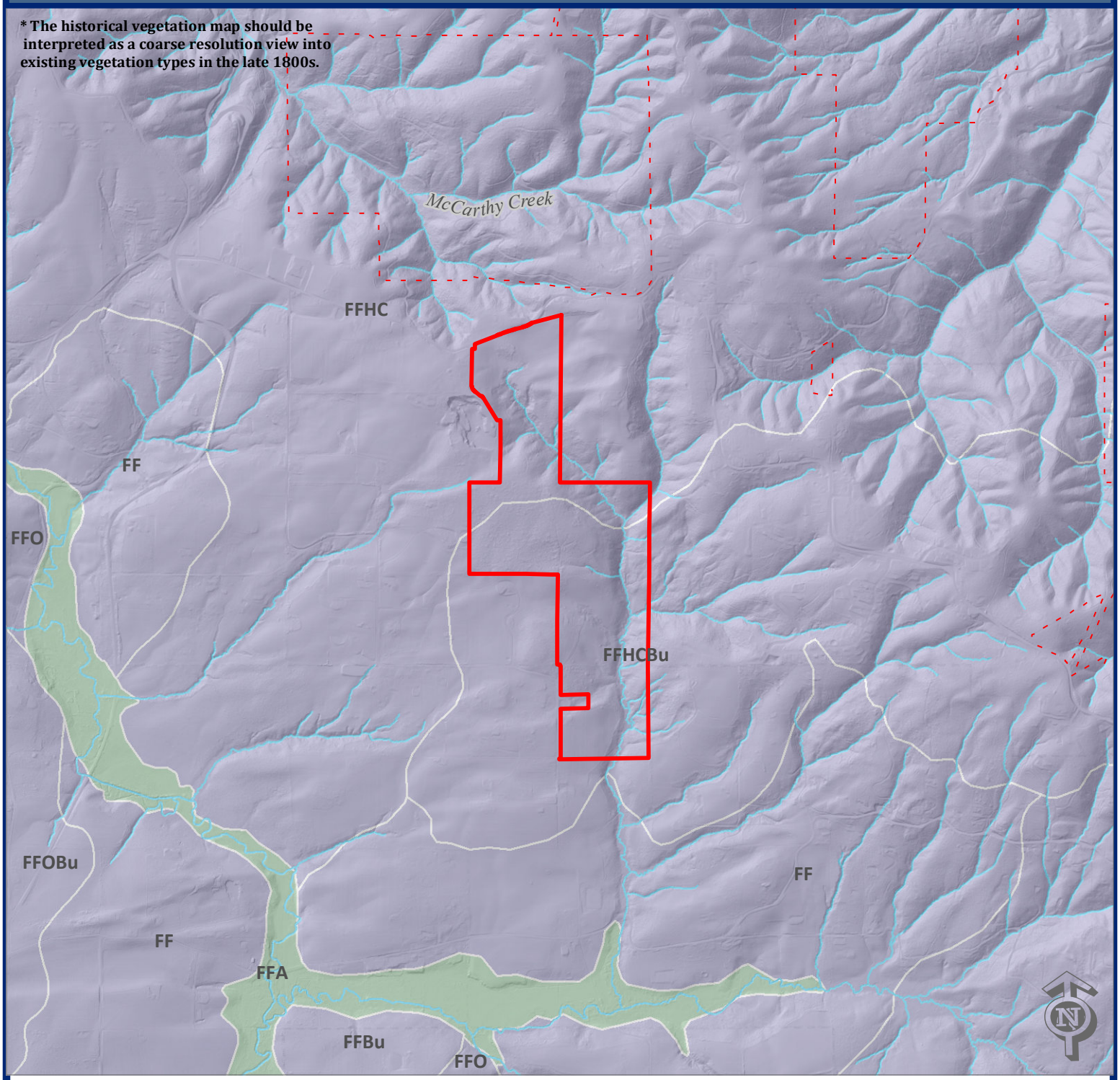
North Abbey Creek Natural Area Site Conservation Plan

map date: 8/24/2016

HISTORICAL VEGETATION

Metro

* The historical vegetation map should be interpreted as a coarse resolution view into existing vegetation types in the late 1800s.



North Abbey Creek Natural Area site

Other Metro sites

Historical vegetation

Closed forest; Riparian & Wetland

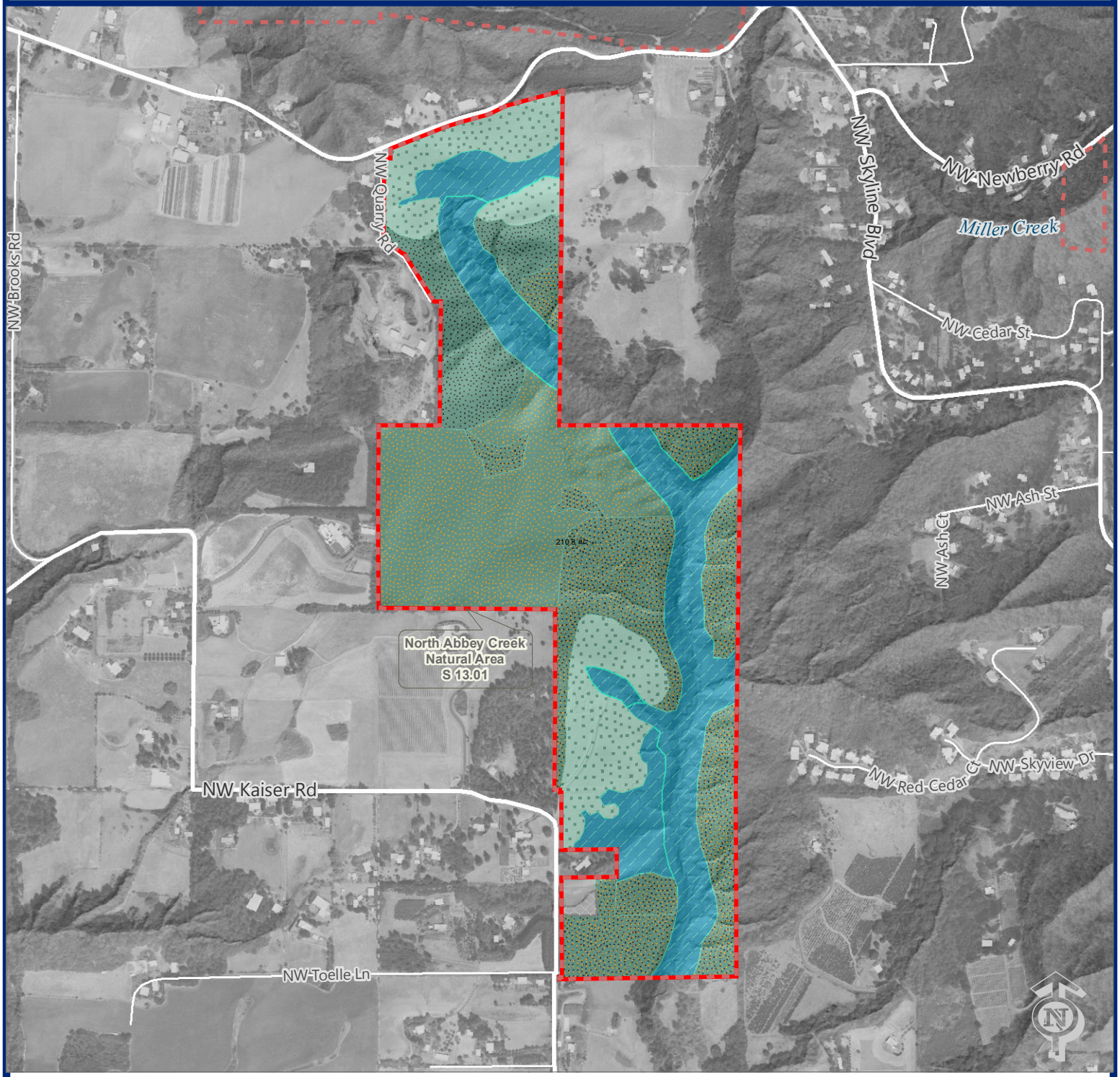
Closed forest; Upland

* Labels refer to vegetation subclasses. Detailed descriptions can be found in T:\OBMO\GIS\DATA_V\vegetation\Historical

0 2,000 4,000 Feet

CURRENT COVER

Metro



North Abbey Creek Natural Area site

Other Metro sites

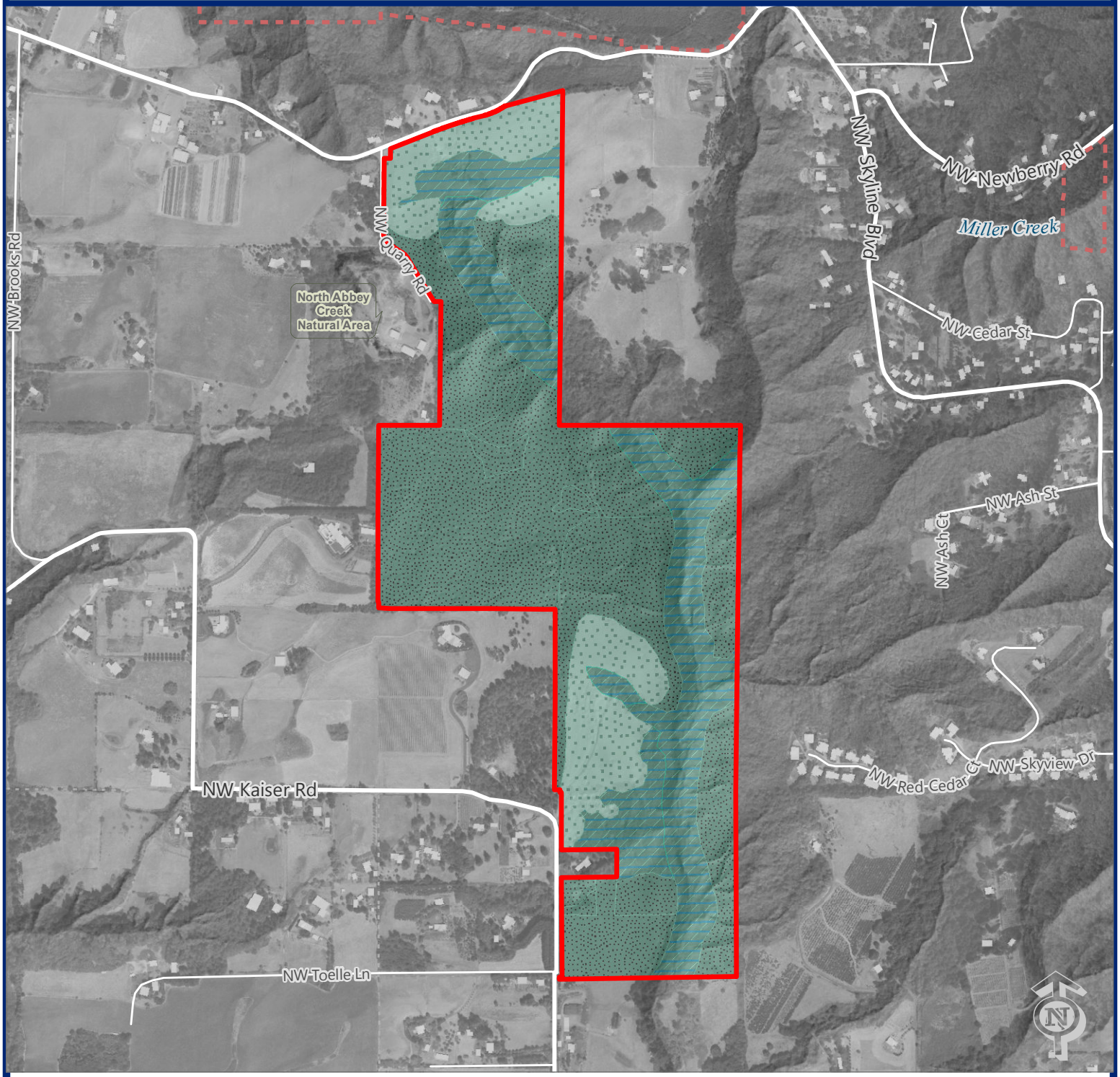
- Developed - (impervious)
- Developed - (pervious/non ag)
- Riparian forest
- Upland forest - coniferous
- Upland forest - deciduous
- Upland forest - mixed
- Upland forest - shrub (stage)

0 1,250 2,500 Feet

North Abbey Creek Natural Area Site Conservation Plan

CONSERVATION TARGETS

Metro



NORTH ABBEY CREEK NATURAL AREA SITE

Other Metro sites

Riparian forest

Upland forest

Upland forest - shrub (early successional)

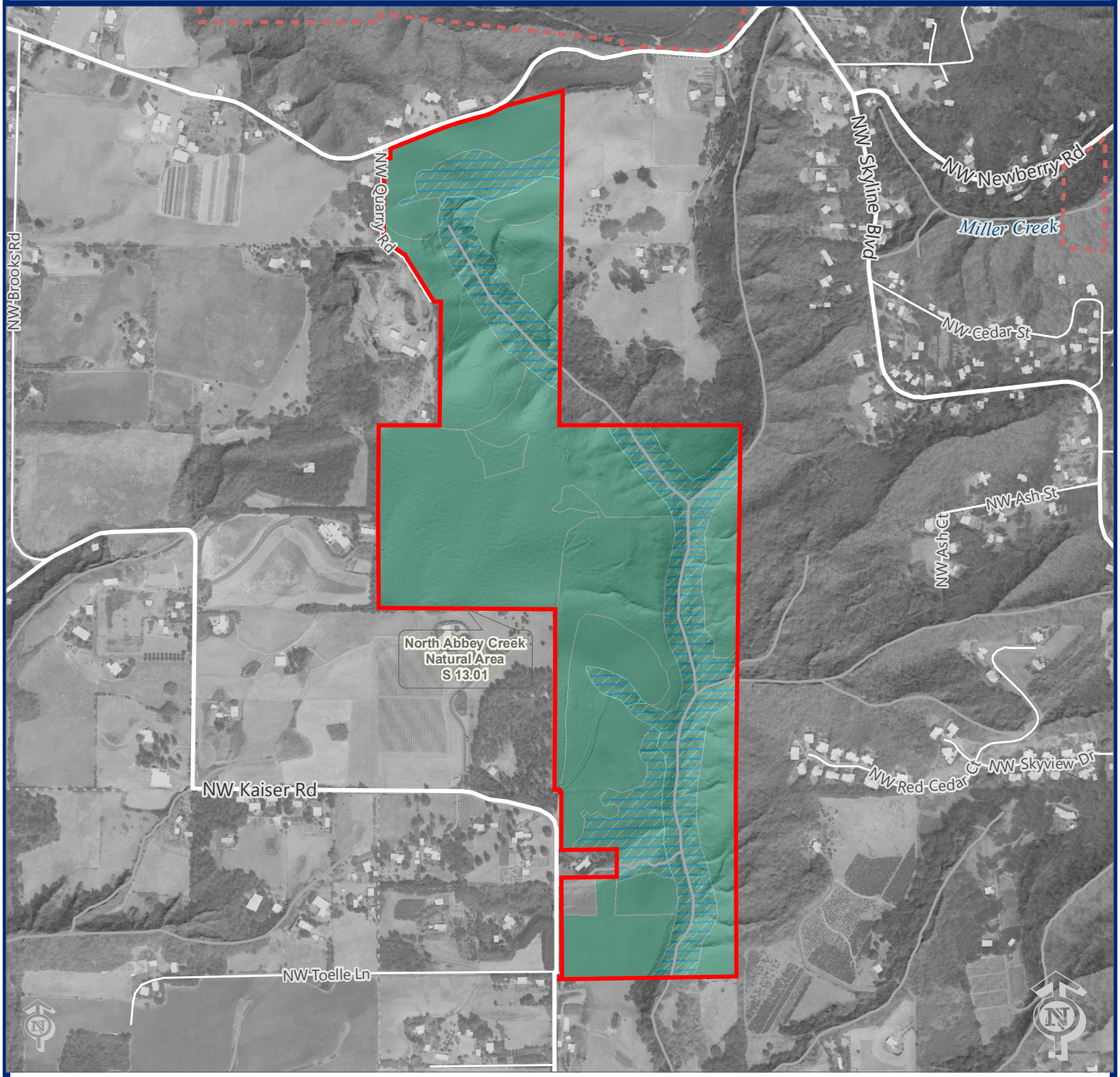
0 1,250 2,500 Feet

North Abbey Creek Natural Area Site Conservation Plan

map date: 8/24/2016

STEWARDSHIP CLASS

Metro



North Abbey Creek Natural Area

Other Metro sites

Stewardship Class

- Agriculture
- Beaches, bars and mudflats
- Developed
- Prairie
- Riparian forest
- Savanna
- Upland forest
- Water
- Wetland
- Woodland
- Undeclared

0 1,250 2,500 Feet

North Abbey Creek Natural Area Site Conservation Plan

map date: 8/24/2016