SOUTH SALT LAKE
CITY ON THE
MOVE

CITY COUNCIL

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South Salt Lake City Council
Work Meeting Agenda

Public notice is hereby given that the **South Salt Lake City Council** will hold a Work Meeting on **Wednesday, February 11, 2026** in the City Council Chambers, 220 East Morris Avenue, Suite 200, commencing at **6:30 p.m.**, or as soon thereafter as possible.

To watch the meeting live click the link below to join:
https://zoom.us/j/93438486912

Watch recorded City Council meetings at: youtube.com/@SouthSaltLakeCity

Conducting: Council Chair Bynum

Matters for Discussion:

1. Urban Forestry Inventory & Canopy Study, pt. 2 — Sharen Hauri

2. Discussion – A Resolution of the South Salt Lake City Council Authorizing Participation on the Central Valley Water Reclamation Facility Board and Receipt of Compensation for Board Membership — Sharla Bynum

Adjourn

Posted February 6, 2026

Those needing auxiliary communicative aids or other services for this meeting should contact Ariel Andrus at 801-483-6019, giving at least 24 hours' notice.

In accordance with State Statute and Council Policy, one or more Council Members may be connected electronically.

Have a question or concern? Call the connect line 801-464-6757 or email connect@sslc.gov

Urban Forestry Planning:
Tree Inventory and Canopy Study

SOUTH SALT LAKE DEPARTMENT OF NEIGHBORHOODS

February 11, 2026

Tree Inventory

- Species, size, health
- Sidewalk damage + utility conflict
- Hazard rating and pruning need

Also:

- Patterns and trends
- Areas of highest need for trees
- Benefits analysis (i-Tree)

Figure 5 A row of Honeylocust shading a South Salt Lake sidewalk.

All this data on *Public Trees* is now in GIS maps and spreadsheets—for data crunching and budgeting.

Tree Inventory Findings

- 3,347 trees on streets and at city parks and facilities
- 257 Trees at Fitts Park!
- Plus trees at county parks, and on Mill Creek and Jordan River
- 118 species
- Mostly smaller, newer trees
- Average Tree Condition = 74% (recommended goal = 75%)

By Condition

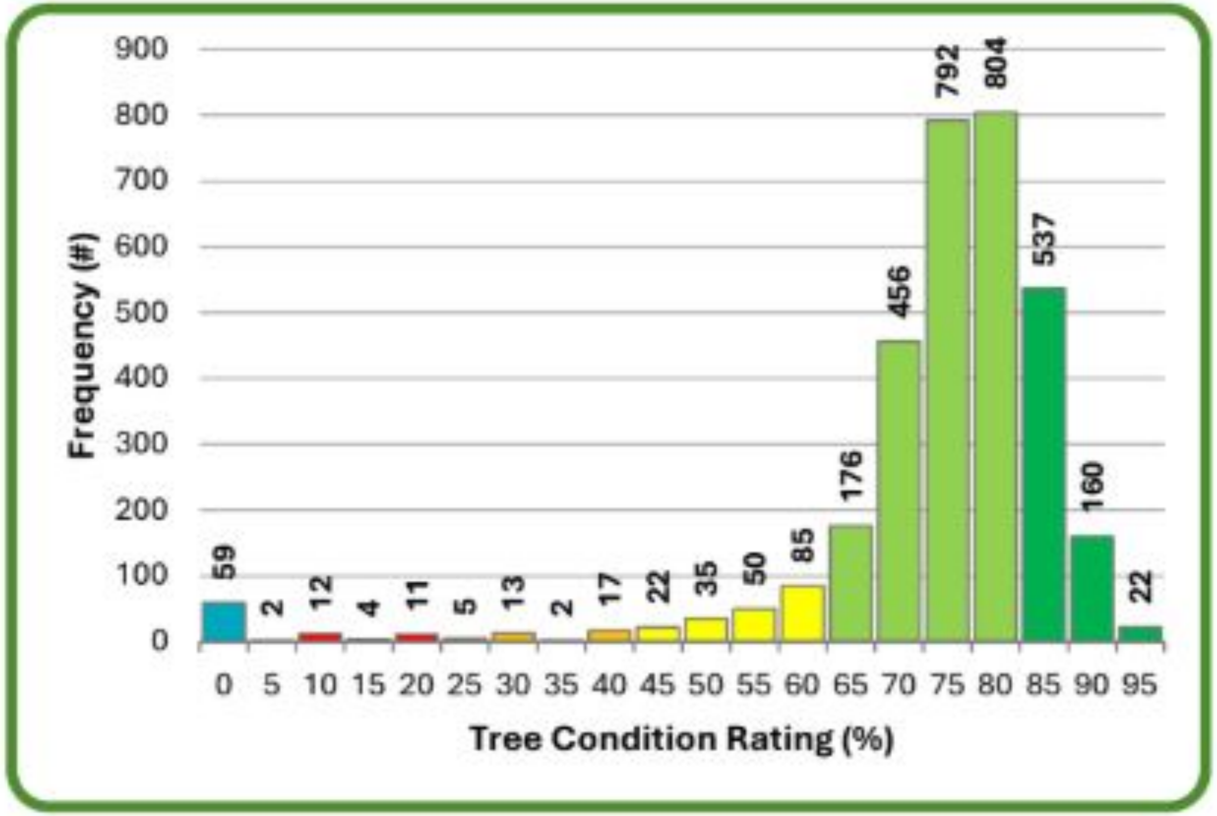


Figure 7 South Salt Lake public tree condition ratings using CTLA version 9 methodology.

Tree Inventory Findings

- Varies a lot by neighborhood
- 64.2% of public trees are east of State Street.
- Urban areas have few trees (Downtown and TODs).
- Lowest number is around Millcreek TRAX Station.
- Limited spots for additional tree plantings on streets/park strips.

By Neighborhood

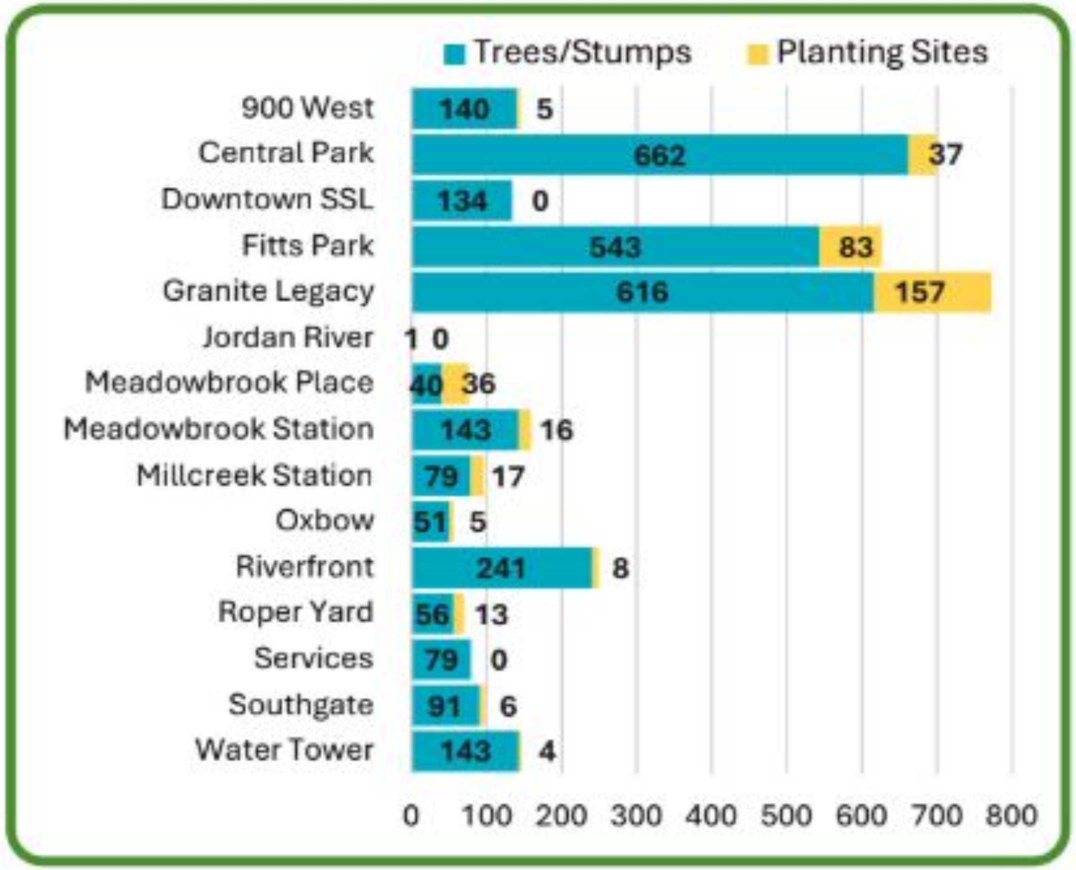


Figure 2 Total number of trees and planting sites inventoried, by neighborhood, in South Salt Lake.

How will we use this?

- Identify and monitor hazards
- Plan and track our work - pruning, removal, spraying
- Prioritize tree planting
- Update tree species recommendations

By Genus, Family and Species

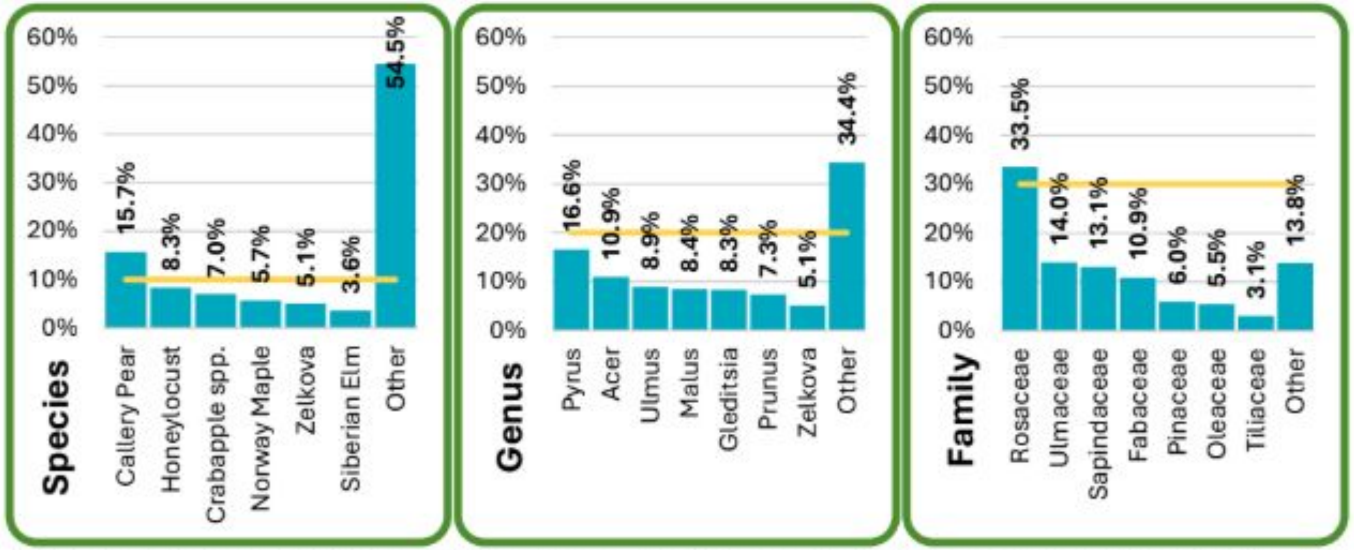


Figure 4 Diversity of South Salt Lake's public trees by Species (left), Genus (center), and Family (right), with target lines at 10%, 20%, and 30%.

Increase species diversity

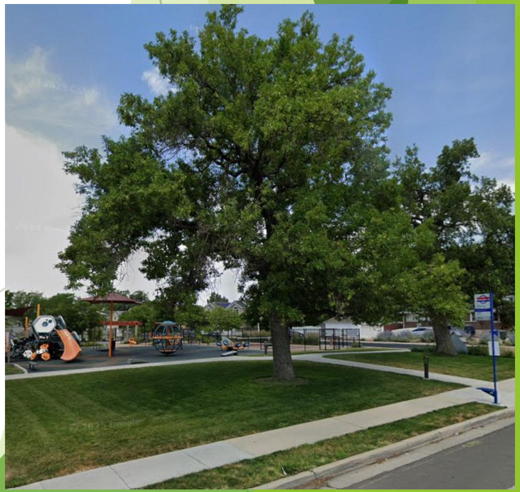
Species (Common Name)	Frequency (#)	% of Total
Total	**3264**	**100**
Apple	45	1.4
Apricot	7	0.2
Arborvitae	25	0.8
Ash, Arizona	1	0.0
Ash, European	13	0.4
Ash, Green	78	2.4
Ash, White	51	1.6
Aspen	38	1.2
Baldcypress	2	0.1
Beech, European	8	0.2
Birch, European White	1	0.0
Birch, Western Water	1	0.0
Boxelder	35	1.1
Buckeye, Red	1	0.0
Buckthorn, Alder	4	0.1
Catalpa	17	0.5
Cedar, Atlas	1	0.0
Cedar, Deodar	20	0.6
Cedar, Rocky Mountain	12	0.4
Cherry sp.	1	0.0
Cherry, Japanese Flowering	57	1.7
Chokecherry	53	1.6
Corneliancherry Dogwood	1	0.0
Cottonwood, Eastern	14	0.4
Cottonwood, Fremont	15	0.5
Cottonwood, Plains	1	0.0

Species (Common Name)	Frequency (#)	% of Total
Crabapple species	230	7.0
Cypress sp.	1	0.0
Desertwillow	1	0.0
Douglas-fir	2	0.1
Elm Species	30	0.9
Elm, American	48	1.5
Elm, English	24	0.7
Elm, Frontier	50	1.5
Elm, Lacebark	21	0.6
Elm, Siberian	119	3.6
European Mountain-Ash	1	0.0
Giant Sequoia	6	0.2
Ginkgo	2	0.1
Goldenrain	70	2.1
Hackberry, Common	40	1.2
Hawthorn sp.	26	0.8
Hazelnut sp.	1	0.0
Holly	1	0.0
Honeylocust	272	8.3
Hornbeam, American	10	0.3
Hornbeam, European	2	0.1
Horsechestnut	7	0.2
Horsechestnut, Red	1	0.0
Incense-Cedar	1	0.0
Japanese Pagoda Tree	8	0.2
Japanese Tree Lilac	18	0.6
Juniper, Rocky Mountain	9	0.3

Species (Common Name)	Frequency (#)	% of Total
Kentucky Coffeetree	8	0.2
Lilac, Common	14	0.4
Lilac, Peking	6	0.2
Linden, American	26	0.8
Linden, Littleleaf	74	2.3
Locust, Black	12	0.4
London Plane	72	2.2
Magnolia species	3	0.1
Maple, Amur	41	1.3
Maple, Bigtooth	25	0.8
Maple, Freeman	24	0.7
Maple, Hedge	1	0.0
Maple, Japanese	14	0.4
Maple, Norway	186	5.7
Maple, Red	8	0.2
Maple, Rocky Mountain	1	0.0
Maple, Shantung	2	0.1
Maple, Silver	5	0.2
Maple, State Street Miyabe	11	0.3
Maple, Sugar	3	0.1
Maple, Vine	1	0.0
Mimosa	1	0.0
Mulberry, Fruitless	23	0.7
Oak, Bur	11	0.3
Oak, Chinquapin	5	0.2
Oak, English	2	0.1
Oak, Gambel	3	0.1

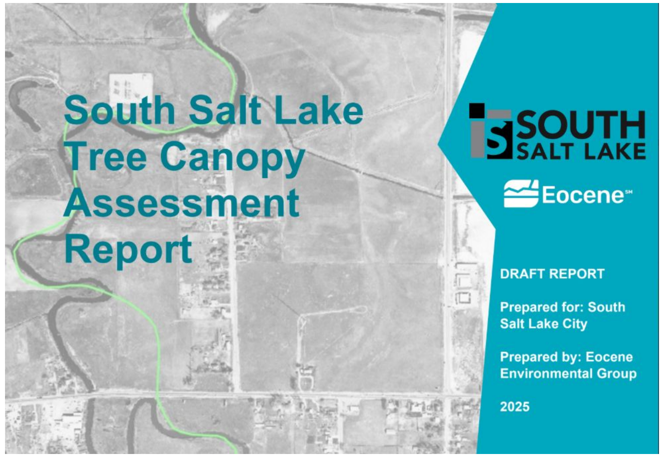
Promote the benefit of trees

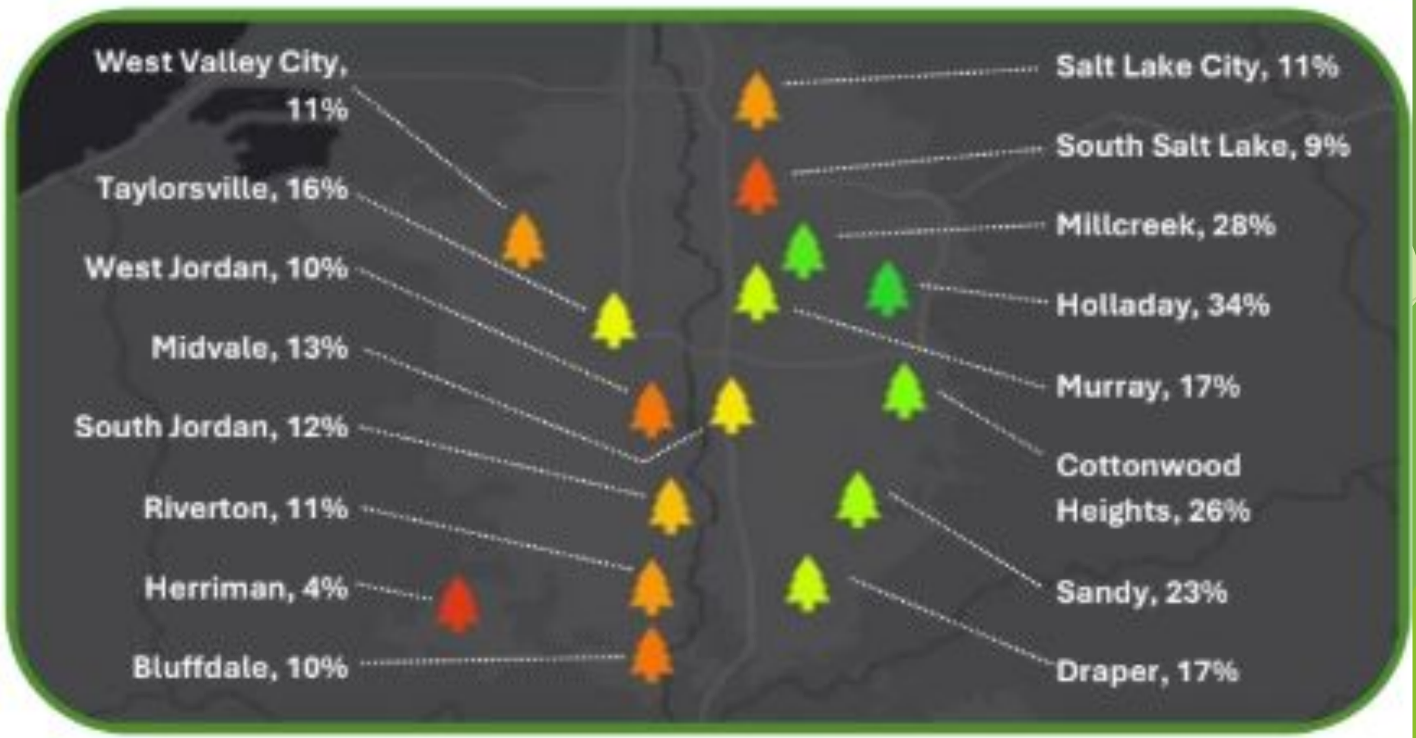
An i-Tree Eco analysis revealed that the inventoried trees provided 20.81 acres of canopy coverage and have a $5.23 million replacement value. Annually, these trees produce 47.68 tons of oxygen (a $147,000 yearly value), sequester 17.88 tons of carbon (a $3,050 yearly value), and capture 155,200 gallons of storm runoff (a $1,390 yearly value).



Canopy Study

- Studies all the trees in the city, including *Private Trees*
- Shows patterns, gains and losses over time
- Benchmarks us against other communities in the valley





Canopy Study

- Uses satellite and aerial photos from 1965, 1985, 2006, 2016, 2021
- Compares land use types and tree canopy coverage

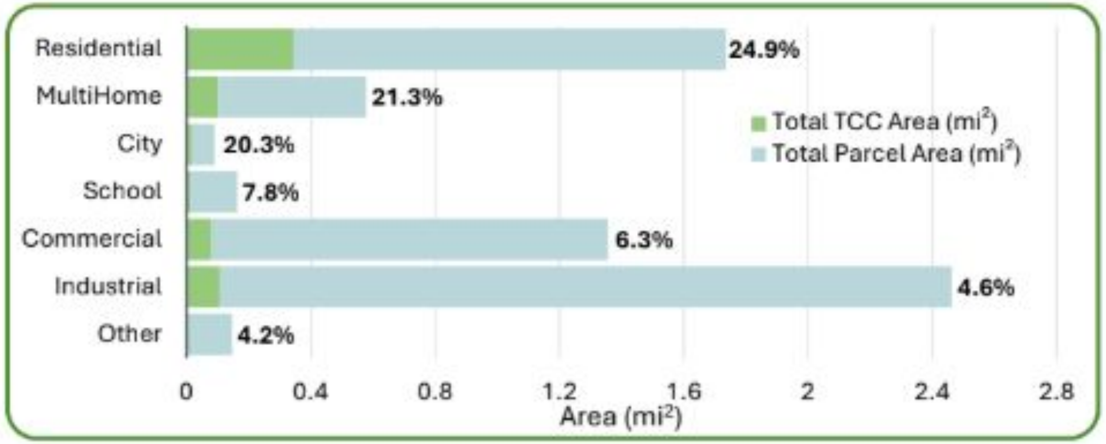
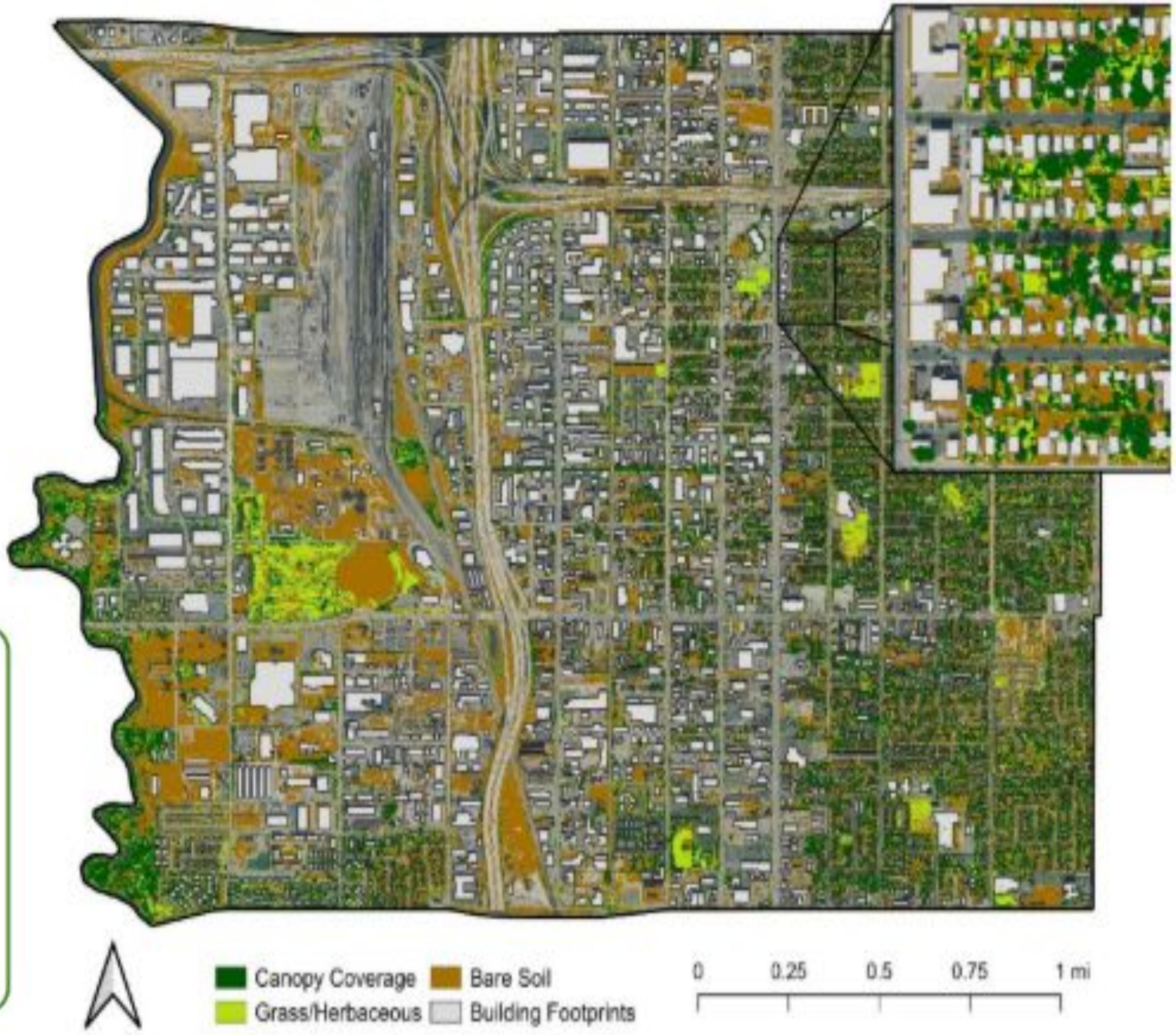


Figure 6. Total parcel and TCC area by parcel zoning in South Salt Lake, with TCC %.



Canopy Study Findings

South Salt Lake has been altered from a majority land cover of bare soil (17.7%) and herbaceous plants (53.0%) in 1964, to largely impervious (70.0%) in 2021. Tree canopy coverage increased from 3.9% in 1964 to 8.7% in 2006 as the City was developed and trees were planted in residential areas, then a slight decrease to 7.3% in 2021 as the City was further developed and the population continued to grow.

The decrease in tree canopy from 8.7% (±0.63) in 2006 to 7.3% (±0.58) in 2021 is equal to approximately 64 acres, or an area equal to six times the size of Fitts Park.

Canopy Study Findings

Compared to other cities in the Salt Lake Valley, South Salt Lake has one of the lowest percentages of tree canopy coverage and highest percentages of unemployment, people living in poverty and linguistic isolation, and rating highly on a health burden index.

Areas of South Salt Lake with the lowest tree canopy coverage also experienced the highest heat disparity, experiencing temperatures 4°F and higher than areas with higher tree canopy.

Commercial and Industrial zoned parcels make up 52.3% of the City's land and have an average tree canopy coverage of 5.4%. Parcels zoned as Residential or Multihome make up 26.9% of the City's area and have an average tree canopy coverage of 23.1%.

Canopy Study Findings

- Potentially plantable areas were identified: 22,713 trees could be planted.
- This would bring City's tree canopy cover up to 12.1% from the city's current 7.3%
- At the city's current rate of planting 100 trees per year, this would take 227 years!
- A majority of this could take place in commercial and industrial zones, which are more challenging than homes.

We need a plan!

How will we use this?

- To drive conversation on priorities and approaches
- To promote a call to action
- To guide the Tree Management Plan (coming soon)
- To guide new ordinances and policies.

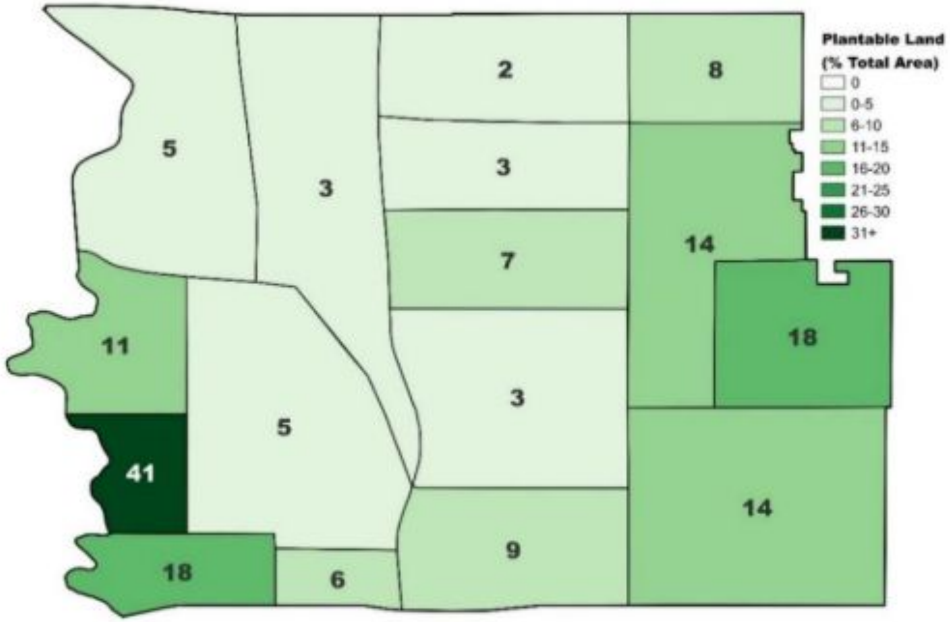


Figure xxx. Percent plantable land, by neighborhood.

Planning Progress (recap)

1. Tree Assessment Report and GIS inventory
   a. COMPLETE: Detailed inventory of 3,264 trees in the city and 473 places to plant
   b. COMPLETE: Report on the benefits of trees to the city and people
2. Tree Canopy Assessment
   a. COMPLETE: Analysis of tree coverage city-wide over the last 60 years
   b. COMPLETE: Comparison between neighborhoods and to other cities and nationally
3. Tree Management Plan
   a. COMPLETE: Analysis of city's processes, policies and budget
   b. COMPLETE: Benchmarking to national standards and best practices (USDA, Arbor Day Foundation)
   c. IN PROCESS: Recommendations such as canopy goal, maintenance, budget, outreach

Planning Progress (recap)

4. Tree Ordinance Update
    - IN PROCESS: Consultant is comparing ours to best practices and rewriting
    - IN PROCESS: Sections include Urban Forest, Landscaping, and Sidewalks
5. Tree Committee and Landscape Committee
    - IN PROCESS: External-facing Tree Committee developing Recommendations
    - IN PROCESS: Internal city Landscape Committee developing Ordinances
6. Training
    - COMPLETE: 6 city employees have attended national Community Forestry training
    - IN PROCESS: 2 city employees invited to attend certified arborist training

What's next?

- **Refine and adopt Management Plan**
  - Recommendations for Urban Forestry program

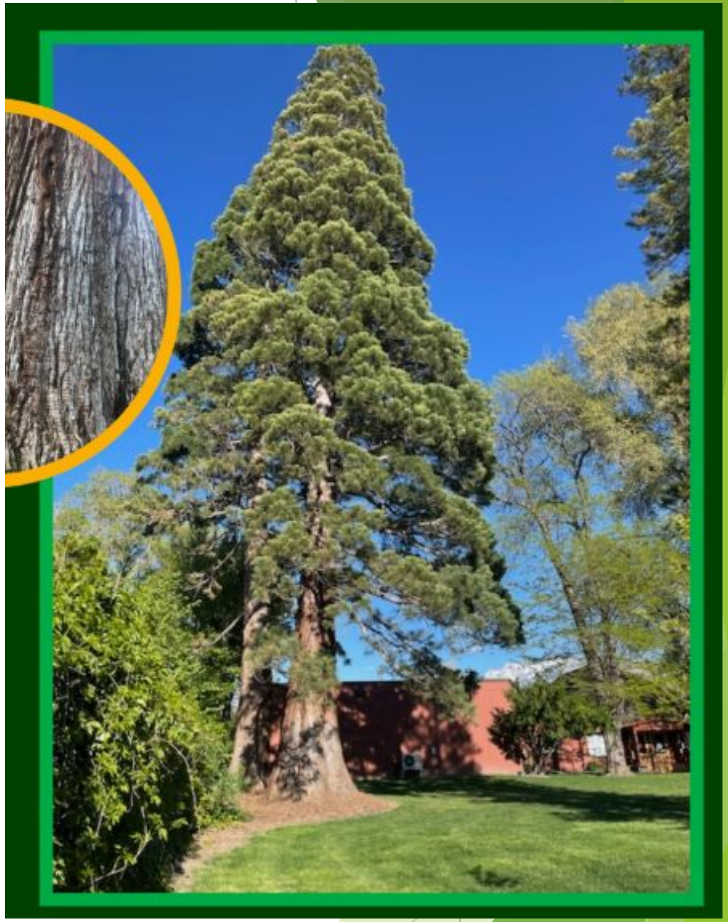
- **Refine and adopt Ordinances**
  - Tree Section
  - Landscape section
  - Water conservation improvements

- **Solidify future funding**
  - FY27 budget and beyond

Timeline: ***February to May 2026***

What's next?

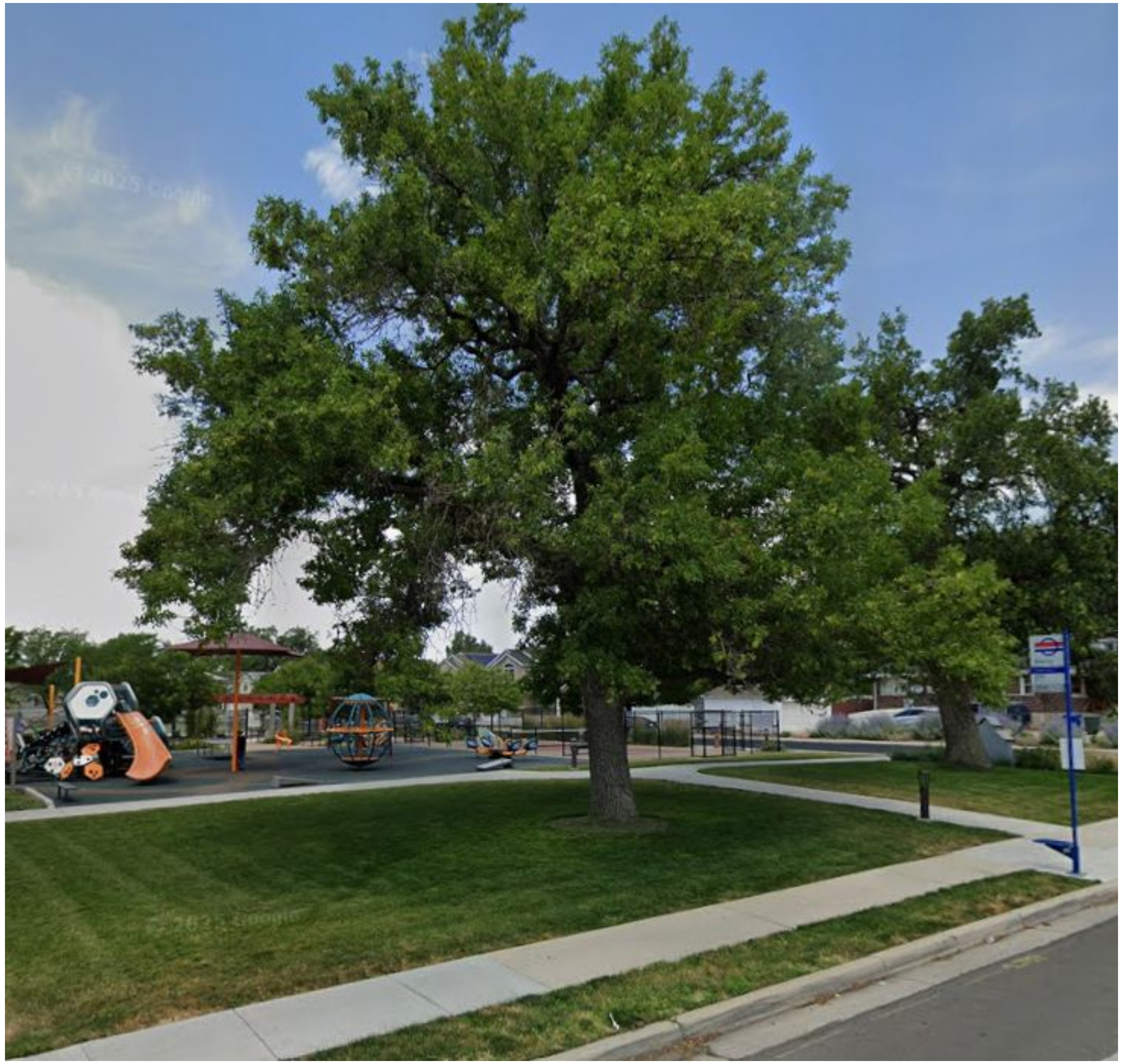
- Tree of the Year Award
  - nominations open April
  - 2024 winner - Giant Sequoia



- Tree Hugger of the Year Award…

Tree Hugger of the Year Award…

LeAnne Huff



(You’re Welcome)

AlREADY PRESENTED SLIDES BELOW

Where are we today?

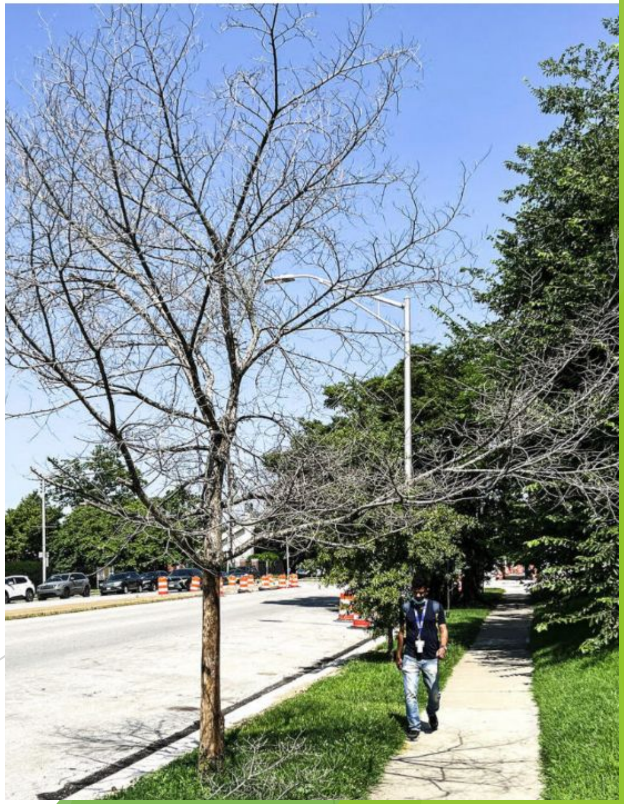
- Maintenance by Streets (ROW) and Parks (city property)
- Urban forestry leadership from Neighborhoods staff
- Existing ordinances and limited enforcement
- Education: website Arbor Day planting, Tree of the Year, Tree Utah plantings
- Plant a Tree for Free *(for homeowners)*
- Tree Recovery Mitigation (*replacements for city construction impacts*)
- Grant funding (USDA -expires 2026) - $50,000/year

There are 476 available planting sites on city park strips in low-mod income neighborhoods.

Where do we want to be?

Fully supported Urban Forestry Program

1. Operating under a Master/Management Plan
2. Regular budget and staffing
3. Professional arborcare: timely maintenance/trimming by trained arborists
4. City tree plantings: Parks, Facilities, Downtown, other public property
5. Oversight/collaboration on park strips with property owners
6. Community tree program: growing the forest on private property
7. Regulations protecting existing trees and requiring replacements
8. Requirements for new trees in new development/construction
9. Education and stewardship



City Standards:

1. Standards for all city public works/infrastructure
   - Update: Soil cell under sidewalk options


City of South Salt Lake

Supplementary

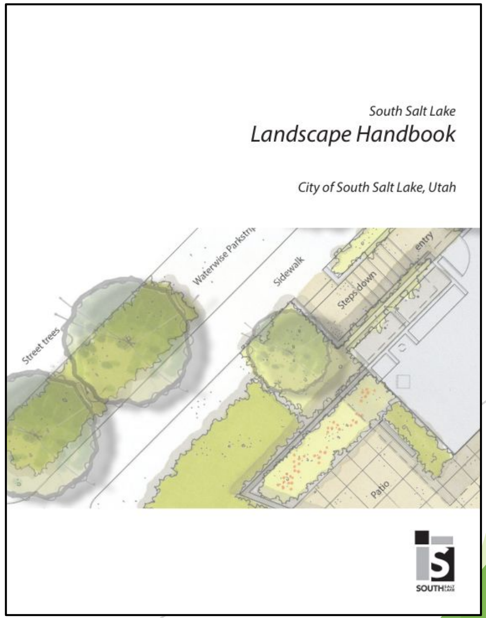
Standard Plans

2018

SOUTH SALT LAKE

Revised Sept. 1, 2020

2. Standards for landscaping and irrigation
   - Update: Soils, irrigation, tree planting


South Salt Lake

Landscape Handbook

City of South Salt Lake, Utah

Protecting Trees

Standards of care

1. How do we show that we value trees? What do people need to know about trees?
2. Is the tree protected from needless removal?
3. Is the tree safe
   construction?
   - barriers,
4.

Image Credit: Francisco Kjolseth | The Salt Lake Tribune


Image Credit: Sharen Hauri

Planting Trees

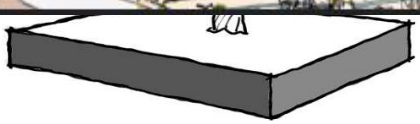
Construction Inspection

1. Does it meet standards?
    - soil quantity and quantity
    - tree species, size, number, quality
2. Does it function?
    - irrigation installed properly
    - are the plants alive?
3.

Let it Grow!

How will we get there?

- Higher quality soil **+**
- Higher quantity
- Higher quality t
- Healthy Roots &



soil area = tree canopy area

Frequently Asked Questions

- Does a builder have to use soil cells?
  - No. They have to meet minimum soil volume standard.
    They could use an open planter, under pavement soil cells or a combination.
- Is this expensive?
  - Yes. All infrastructure is. Soil cells are expensive to install. Estimate $80/sf
  - No. There is a tradeoff - they save land. Land cost is $60/sf in downtown.
  - No. More savings on energy, irrigation, tree care, stormwater, human health.
- Is this common?
  - Yes. Soil systems like are the same as underground stormwater systems.
  - Yes. They have been used for decades in plazas, rooftops and on streets in cities with strong urban forestry programs.
  - No. Utah has had only a had a few street installations but it is growing.

Tree Comparison

State St, South Salt Lake

1. Street tree in tree grate *(left)*
2. Tree in open planter *(right)*

These trees are different species, but both 4 years old.

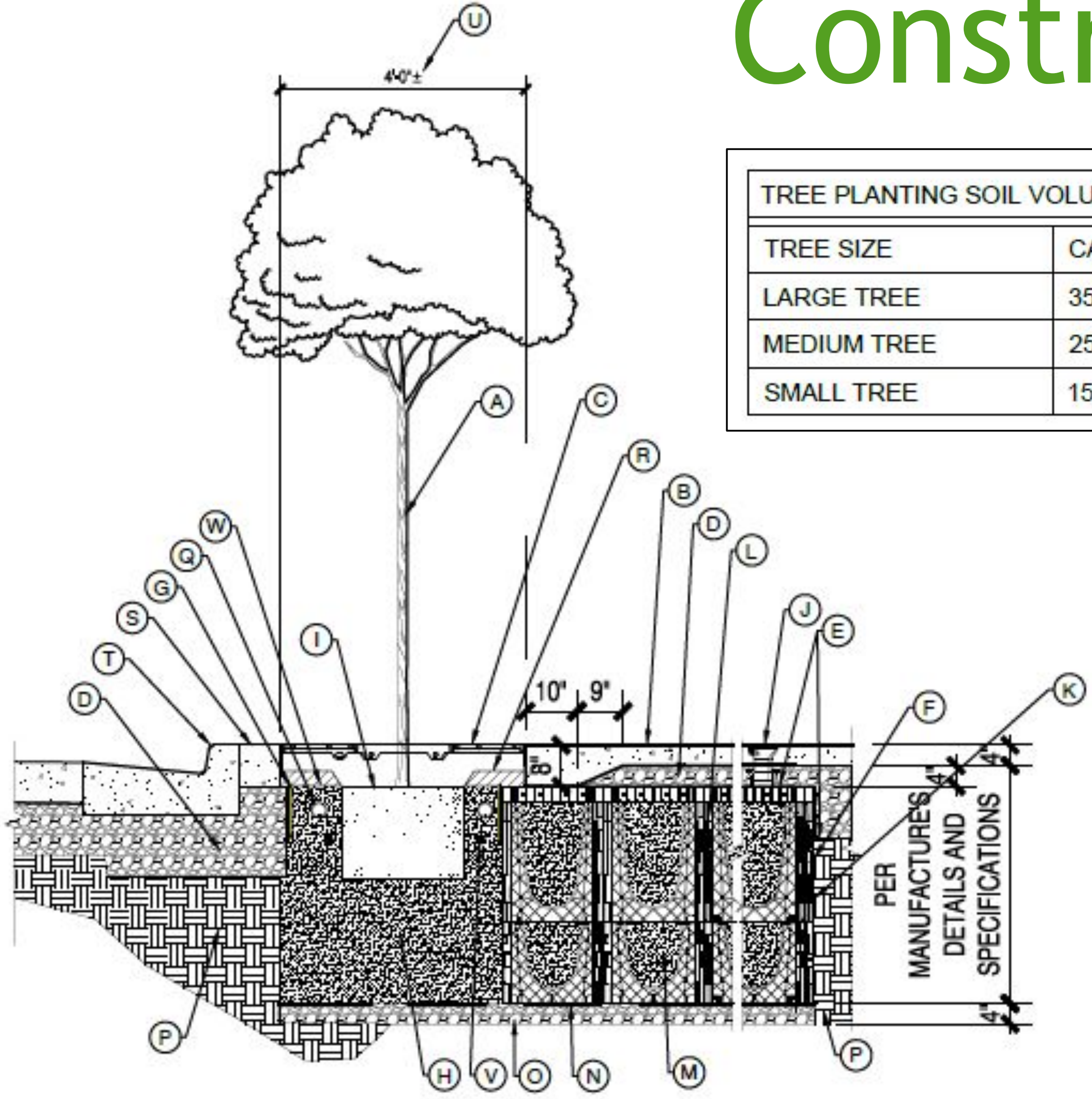
Tree Comparison

South Temple @ Main St, SLC

1. Street trees in soil cell planter *(left)*
2. Street tree in planter *(center)*
3. Tree in open landscape *(right)*

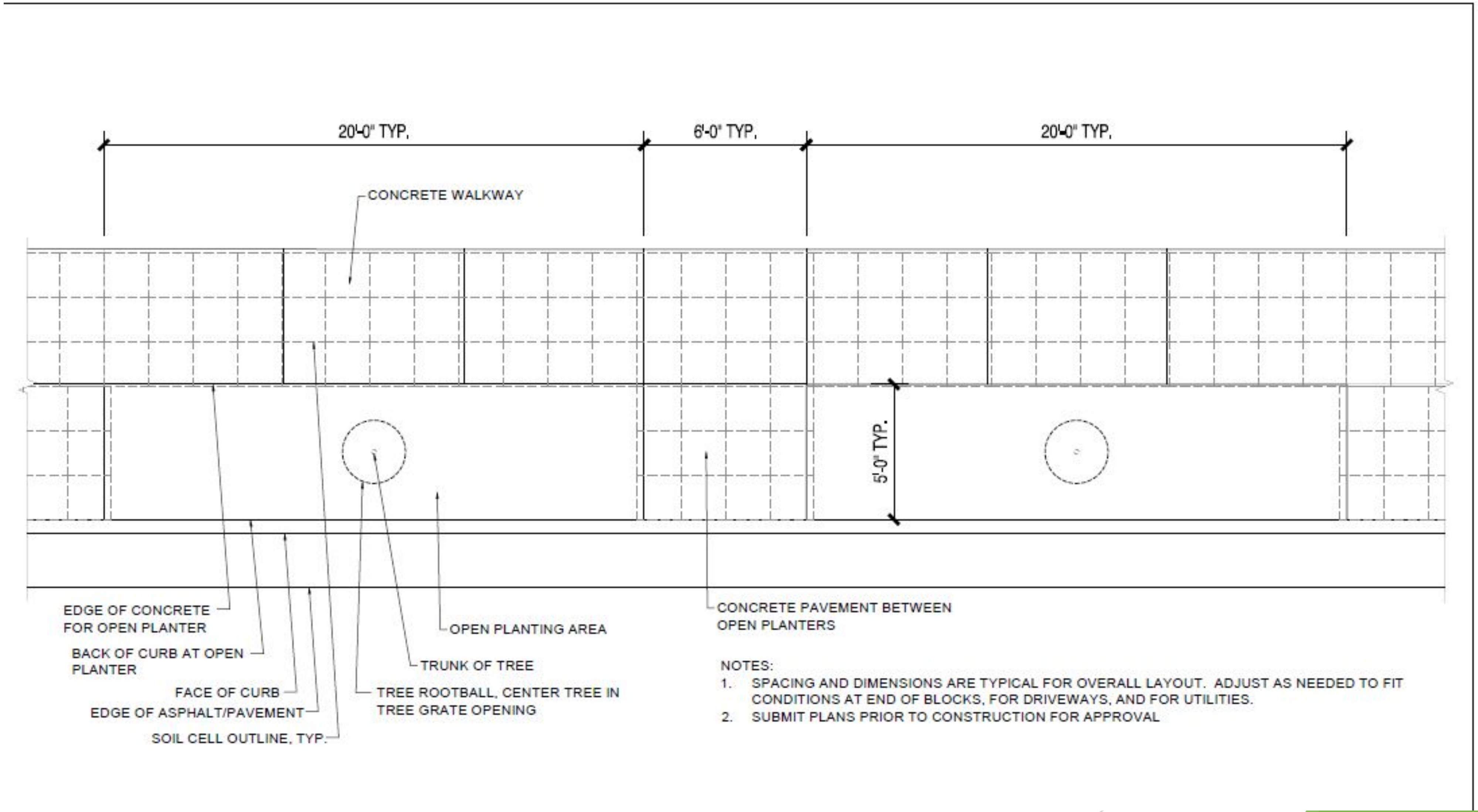
Comparisons are hard because there are so many variations in how and when trees are planted.

Construction



TREE PLANTING SOIL VOLUME REQUIREMENTS			
TREE SIZE	CANOPY DIA.	QUANTITY	UNITS
LARGE TREE	35' & UP	1,000 MIN.	CU FT
MEDIUM TREE	25' - 35'	800 MIN.	CU FT
SMALL TREE	15' - 25'	600 MIN.	CU FT

Construction



Cost

Upfront

- Soil cell system cost $15,000 per tree
- Tree planter cost $1,500 per tree
- Pavement, irrigation costs are similar

Ongoing

- Cost of maintenance for cells - low, uncommon
- Cost of repair to access a utility break is higher

South Salt Lake Public Tree Assessment Report

Prepared for: South Salt Lake City

Prepared by: Eocene Environmental Group

February 2025

Acknowledgements

We'd like to thank the South Salt Lake project team for their assistance and enthusiasm, which was vital to the project's success. Also, the community of South Salt Lake is to be commended for investing in their trees in the present, so that their benefits can be enjoyed for generations to come.

South Salt Lake Project Team

Anthony Biamont – Parks Project Manager

Sharen Hauri – Director of Neighborhoods

Joaquin Garcia – Parks Manager

Eocene Project Staff

Rich Hauer – Subject Matter Expert

Sarah Lilley – Project Manager

Liz Lingo – Urban Forestry Consultant

Luke Wohltmann – Inventory Arborist

Matt Johns – GIS Analyst

Paola Nansel – Urban Forestry Associate

Grant Information

The funding for this project is derived in part from a federal award of the U.S. Forest Service, Department of Agriculture, subawarded by the Utah Division of Forestry, Fire and State Lands. This award includes funds authorized by the Inflation Reduction Act of 2022.

Timeline

Data was collected in September and October 2024 and summarized into this report in February 2025.

Disclaimer

Tree inventory data collected by Eocene Environmental Group is based on visual observations recorded at the time of inspection. Observations were made from the ground, with no specialized equipment used, and during standard weather conditions. Eocene is not responsible for conditions that were not visually observable at the time of inspection. Tree inventory data may not remain accurate after inspection due to tree growth, decline, and damage caused by environmental and anthropogenic factors. The provided tree risk ratings and maintenance recommendations are up to the client to act upon.

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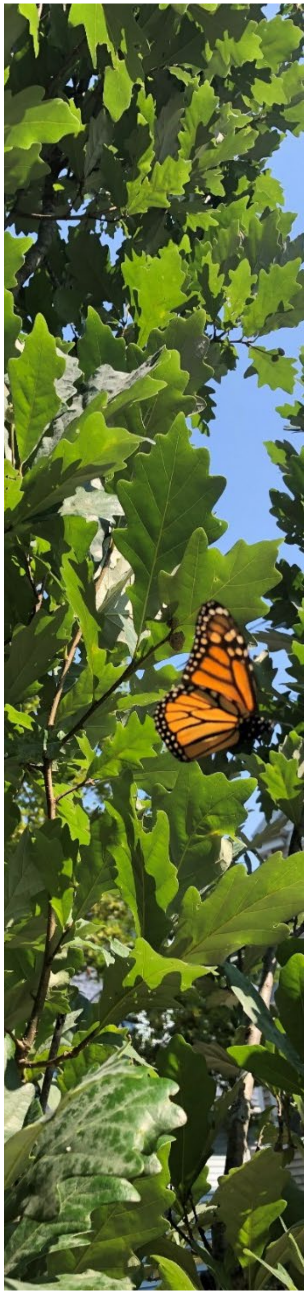


Appendixes

Introduction

South Salt Lake is a dynamic community in the center of Salt Lake County, Utah, with a population of twenty-six thousand residents and growing. Historically dominated by warehouses and railyards, South Salt Lake is growing into its 21st century identity as a welcoming and vibrant place for diverse families to call home, with the S Line Streetcar and new building developments leading the way. And as the community grows, it's prioritizing its trees and public spaces. With its industrial background, tree planting has not been consistent across many parts of the city. As the city continues to redevelop, previously under-shaded areas are being transformed into mixed-use and residential neighborhoods, increasing the demand for an expanded tree canopy. This need, along with growing public interest in environmental sustainability and the broad benefits of trees, recent planting programs have been well-received. This assessment is part of comprehensive actions that the City is taking to improve tree planting and maintenance.

A community's trees provide many services, both ecologic and economic. Trees serve the local ecosystem by intercepting stormwater, decreasing erosion, and providing wildlife habitat. In this time of changing climate, trees provide shade, filter air pollutants, and can reduce a home's energy needs. While there are cost savings associated with the ecological services that trees provide, they also have been shown to increase property values, provide traffic calming measures, reduce noise pollution, and are associated with lower crime rates. Beyond the tangible value of trees, they also create a sense of social cohesion and civic engagement, making the community a place that residents are proud of and that visitors and business patrons want to visit.

South Salt Lake is undergoing a project to understand the current status of its community trees and creating a plan to maintain and grow its tree canopy. This project will result in three outputs, the first of which is this report. In this Public Tree Assessment Report, the findings from an inventory of public trees completed in 2024 will be presented. The second and third outputs will be a City Tree Canopy Assessment Report and a Tree Management Plan.

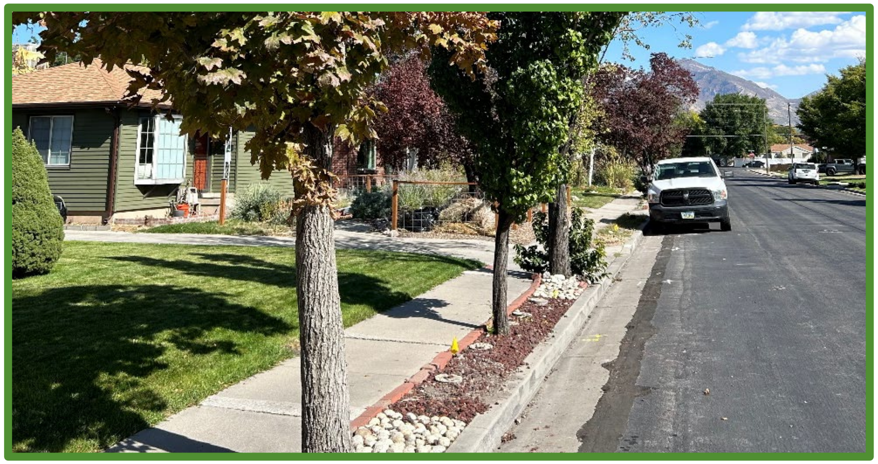


Figure 1 Trees planted in a tree strip in the public right-of-way.

2024 Tree Inventory

Data was collected on trees and stumps located within the public right-of-way along streets, and at parks and public facilities, in the months of September and October, 2024. Collected tree data attributes included species, size, health, risk rating, and site conditions. A full list of collected data attributes can be found in Appendix A. The majority of inventoried trees were in maintained areas, in close proximity to public activities. Sites suitable for tree planting were identified, with a recommendation made for the appropriate tree size (Appendix A). All tree data was collected by an arborist certified by the International Society of Arboriculture, and qualified in Tree Risk Assessment.

In total, 3,264 trees, 83 stumps and 473 planting sites were inventoried (Figure 2). Looking at the quantity of trees/stumps and planting sites by neighborhood, the greatest number were identified in the Granite Legacy Neighborhood, with 616 and 157, respectively, followed by Central Park and Fitts Park. The Jordan River neighborhood had the lowest number of trees (1) and planting sites (0) identified.

The majority of trees/stumps (n=2,039, 60.9%) and planting sites (n=316, 66.8%) are located in park strips, the plantable space located between a sidewalk and street (Figure 1, Figure 3). Open sites, which may be next to a street but otherwise unbounded by hardscape, was the second most common, followed by paved park strips.

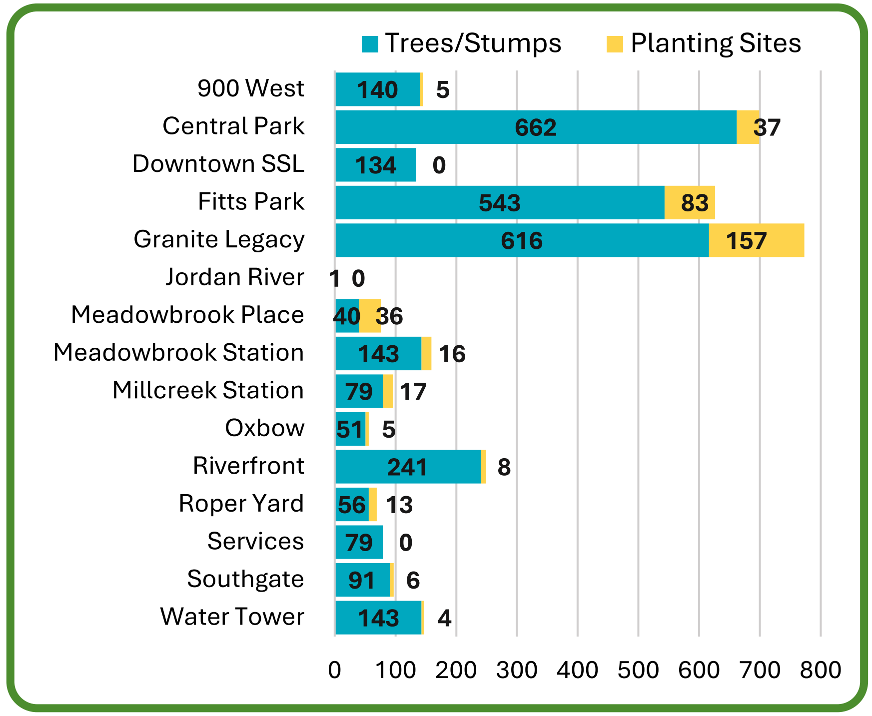


Figure 2 Total number of trees and planting sites inventoried, by neighborhood, in South Salt Lake.

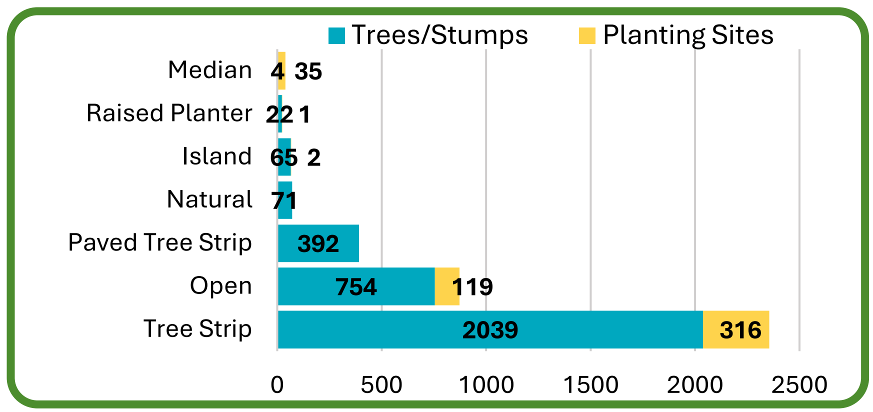


Figure 3 Types of spaces where public trees are located, by frequency.

Species Composition and Diversity

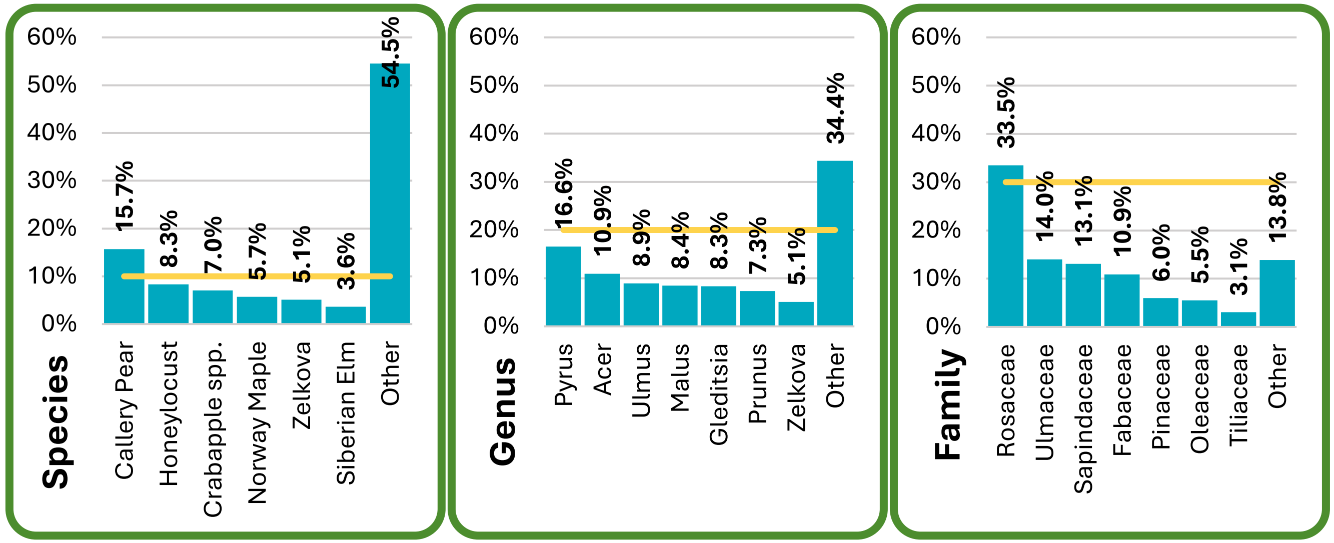


Figure 4 Diversity of South Salt Lake's public trees by Species (left), Genus (center), and Family (right), with target lines at 10%, 20%, and 30%.

It's important to have a diversity of tree species represented in a community forest to promote resiliency against pests, storms, and changes in climate. In total, **118 species of trees** were identified in South Salt Lake's public areas. A general urban forestry guideline, known as the 10-20-30 rule, is that no more than 10% of a community's trees should be of one species, 20% of one genus, and 30% of one family (Santamour 1990). The most common species of trees was Callery Pear at 15.7% of the tree population, followed by Honeylocust and Crabapples (Figure 4). Callery pear is part of the *Pyrus* genus, which was the most common (16.6% of population), followed by *Acer* (maples) and *Ulmus* (elms). *Rosaceae* (pears, apples, plums, cherries) was the most common Family of trees represented, at 33.5% of the population, followed by *Ulmaceae* (elms, zelkova) and *Sapindaceae* (maples). A full list of the species, genus, and families of tree identified in South Salt Lake, with their frequency, is found in Appendix B.

Based on these results, it's recommended to limit the planting of trees in the *Rosaceae* familiy, especially the Callery pear

Figure 5 A row of Honeylocust shading a South Salt Lake sidewalk.

which has invasive qualities and is prohibited as a street tree in South Salt Lake along with the rest of the Pyrus genus. Honeylocust (Figure 5) is another extremely popular street tree due to its ability to weather harsh urban environments, but is close to making up 10% of the tree population in South Salt Lake and should only be used where other species wouldn't survive.

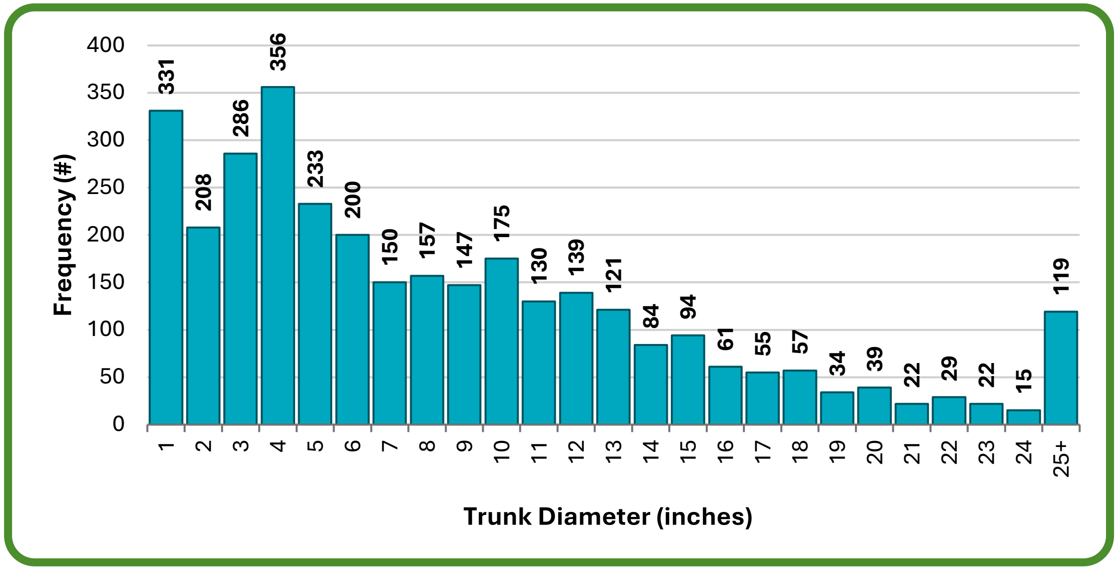


Figure 6 Diameter distribution of public trees inventoried in South Salt Lake.

Age Distribution

The diameter of a tree's trunk is used to represent its age, since a tree adds rings of wood to its trunk over time. The measurement is known as diameter at breast height (4.5' feet above the ground), or DBH, and each tree was measured with forester's diameter tape to the nearest inch. From the results seen in Figure 6, the largest number of trees have a diameter of 4" (n=356) followed by 1" (n=331). Since new trees are typically planted when they are 1"-2" in diameter, the data indicates that there was a large tree planting effort a few years ago which then ramped down, and then increased in the last year or two. South Salt Lake should continue planting trees to maintain its tree canopy, and increase the number of trees planted annually to reach its canopy expansion goals.

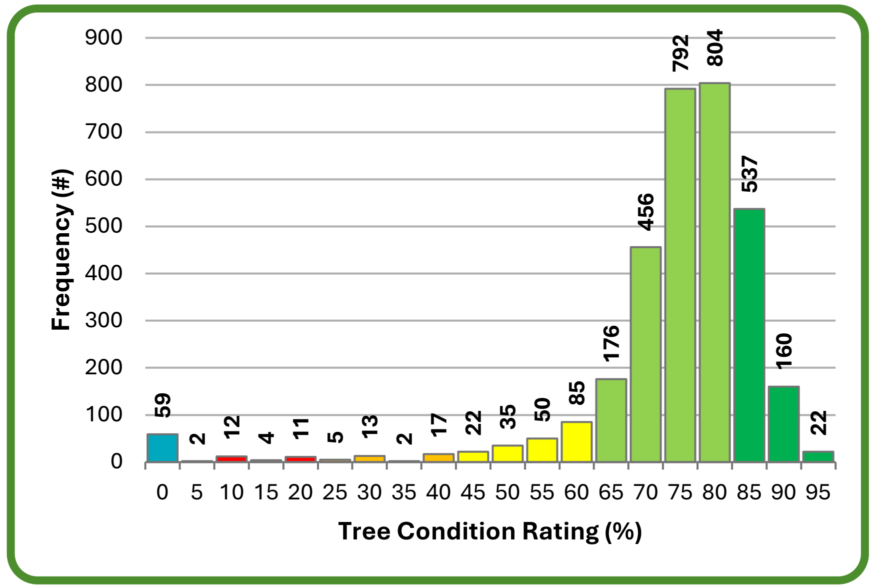


Figure 7 South Salt Lake public tree condition ratings using CTLA version 9 methodology.

Overall Condition and Health

Tree condition was assessed to gauge the overall health of a tree, based on the structure and health of the root system, tree trunk, main branches, twigs, foliage, and buds. Tree condition was rated using the Council of Tree and Landscape Appraisers (CTLA) version 9 method, which assigns a condition from 0 to 100 percent (Council of Tree and Landscape Appraisers 2000). Trees were rated into 5% categories, where 0% is dead and 100% is excellent with few to no observable health defects.

Looking at the condition ratings of South Salt Lake's public trees (Figure 7), 59 trees (1.8%) were found to be completely dead, but the majority of trees (84.9%) were rated 70% or higher; the average condition rating is 74.0%. The target overall tree condition rating is approximately 75%. With an average tree condition rating of 74.0%, South Salt Lake is showing that it is mostly proactive in its tree maintenance. The condition rating will improve towards the 75% benchmark as dead trees are removed, and maintenance practices are upheld and improved upon.

Up to three observed conditions of concern were documented for each tree (Figure 8). The majority of trees (75.8%) had no observed conditions of concern. This is a reflection of a young tree population free of defects that accumulate over time, and a well-managed tree population. The most frequently observed condition of concern was decay (n=404), followed by weak branch unions (n=170) and severed/damaged roots (n=99). 73 trees were documented as dead or with dead limbs, which are recommended for removal.

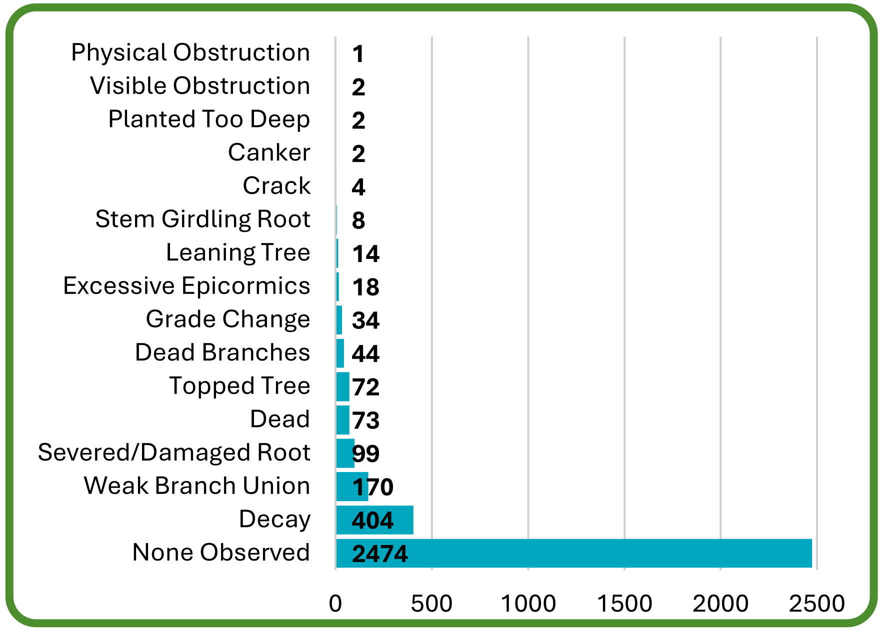


Figure 8 Conditions of concern observed in 2024. Note: trees could have multiple observed conditions.

Recommended Maintenance

The majority of inventoried trees (n=2,708, 81%) were not prescribed any recommended maintenance at the time of observation. Of those trees recommended for maintenance, the largest number (n=277) required clearance pruning for vehicle/pedestrian traffic or away from lights, signs, or other structures (Figure 9).

An almost equal number of trees were recommended for immediate removal or routine pruning (n=91 and 88, respectively), and 83 stumps were identified for removal. 65 trees did not have a maintenance assigned to them, but exhibited characteristics which should be monitored for changes.

Whether or not a tree was recommended for maintenance, all trees should be cyclically inspected for changes to condition which would require action. Beyond routine inspections, trees should be assessed following major storm events to identify failures requiring immediate remediation.

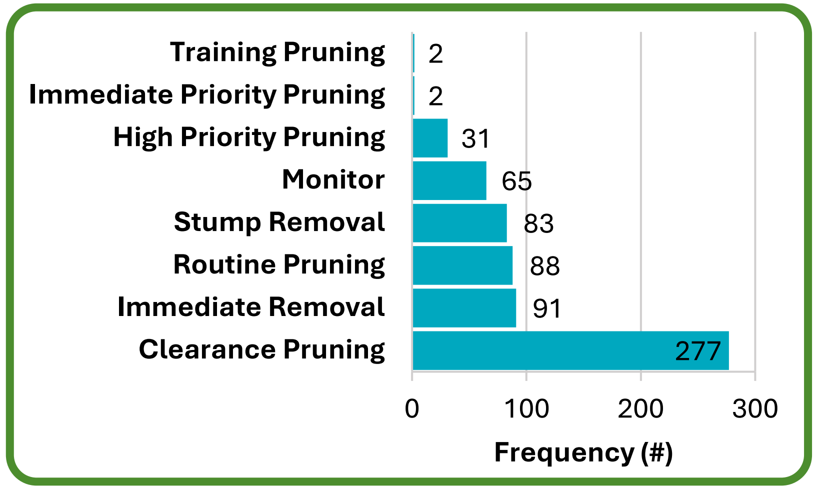
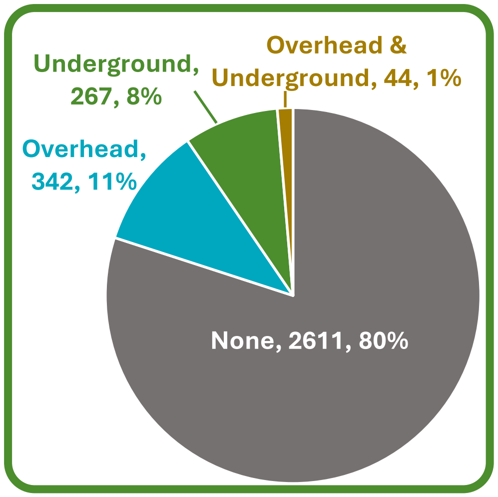


Figure 9 Recommended maintenance for inventoried trees. Note: 2,708 trees were not recommended maintenance at the time of inspection.

Utility Conflicts

80% of South Salt Lake's public trees had no conflict with utilities, or hardscape (95%), such as sidewalks, pavement, or curbs (Figure 10). Utility conflicts were identified either when visually observed in the field, by the presence of overhead conductors or access points to underground utilities, and by comparing inventoried tree points to an underground utility GIS layer. Since over 95% of the inventoried trees/stumps were located in the park strip or adjacent to a roadway (Figure 3), where both overhead and underground utilities are also commonly located, it is recommended to continue monitoring for utility and hardscape conflicts. In addition, it is recommended to adopt the "right tree, right place" approach to avoid conflicts in the future. This includes incorporating tree planting standards like space and soil volume minimums in future streetscape developments.



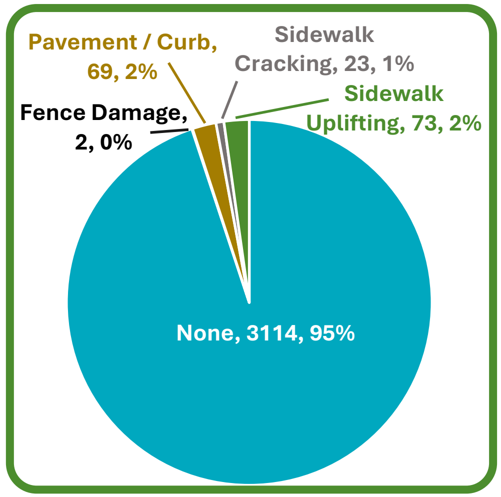


Figure 10 Breakdown of utility conflicts (left) and hardscape conflicts (right) observed with South Salt Lake's public trees.

Stocking Level

The stocking level refers to the proportion of existing street trees to the total number of potential street trees:

Stocking Level	=	Existing Street Trees	÷	Potential Street Trees	x	100%

Where Existing Street Trees are those located within park strips, open spaces adjacent to streets, medians, islands, and raised planters, and Potential Street Trees includes Existing Street Trees, inventoried planting sites, and inventoried locations with a stump.

From the 2024 inventory data, there are 3,193 Existing Street Trees and 3,749 Potential Street Trees (Existing Street Trees + 83 stumps + 473 identified planting sites), for a **Stocking Level of 85.2%**. A national municipal forestry survey found an average street tree stocking level of 81.5% ± 1.4 SEM (Hauer and Peterson 2016). The same survey also found an average of 0.27 ± 0.1 SEM street trees per capita. With a population of 26,777, South Salt Lake has an average of 0.12 street trees per capita and a maximum of 0.14 street trees per capita if all Potential Street Tree sites were filled. So while South Salt Lake is doing well at planting trees within the available planting sites along streets, there are not many available places to plant trees, per capita, when compared to other communities.

i-Tree Eco Analysis

Trees provide both ecological and aesthetic benefits, which can be quantified and balanced against the cost to maintain them. The i-Tree software suite analyzes an urban forest's extent and measured benefits to its community (USDA Forest Service n.d.); the software is provided free by the USDA Forest Service and is peer-reviewed by academics and forestry practitioners. Besides providing justification for tree management funding needs, an i-Tree Eco analysis also provides a snapshot against whether the forest or its associated benefits are growing or shrinking over time.

The 3,264-tree population was analyzed using i-Tree Eco V6.0.35. As a population, the inventoried trees in South Salt Lake's public areas have an estimated **$5.23 million replacement value** (Table 1). This means that to replace the tree population with a similar set of trees would cost approximately this amount. The inventoried public trees **intercept approximately 155.2 thousand gallons of storm water and help remove 821.2 pounds of air pollution annually**. A summary of results is seen in Table 1, and the full i-Tree Eco report is provided in Appendix C. The i-Tree report provides descriptions of additional benefits, potential tree pests, and a more in-depth look at South Salt Lake's public tree population.

Table 1. The functional and structural value of 3,264 public trees in South Salt Lake, as calculated by i-Tree Eco V6.0.35.

Ecosystem Metric	i-Tree Generated Value	Description	Method for Calculation
Tree Cover	20.81 acres	Amount of land covered by tree canopy.	Estimate generated from quantity of each tree species and tree size.
Pollution Removal	821.2 pounds/year ($1.42 thousand/ year)	Quantity and value of air pollutants removed from the atmosphere, including ozone, carbon monoxide, nitrogen dioxide, particulate matter <2.5 microns, particulate matter between 2.5 and 10 microns, and sulfur dioxide.	Estimated using field data and recent available pollution and weather data for the region.
Carbon Storage	860.2 tons ($147 thousand)	Carbon stored in a tree over its lifetime and released when it dies.	Quantity, species, and size of trees.
Carbon Sequestration	17.88 tons ($3.05 thousand/year)	Carbon sequestered as trees put on annual new growth, increases with the size and health of the tree.	Quantity, species, and size of trees.
Oxygen Production	47.68 tons/year	Creation of oxygen through photosynthesis.	Directly related to carbon sequestration, which is based on tree biomass.
Avoided Runoff	155.2 thousand gallons/year ($1.39 thousand/year)	Precipitation and its associated pollutants which enters waterways or is treated as wastewater. Trees intercept precipitation and promote its infiltration and storage in soil.	Estimated from tree biomass and local weather patterns.
Replacement Value	$5.23 million	Cost to replace trees with the same species, size, and condition.	Estimated based on local species factors, average replacement cost, transplantable size, and replacement prices

Summary

Public trees and tree planting sites along streets, in parks, and at city facilities in South Salt Lake were inventoried, with information collected on their species, size, and condition. In total, 3,264 trees, 83 stumps and 473 planting sites were inventoried. The Granite Legacy neighborhood had the highest number of trees, and the Jordan River neighborhood had the fewest. Callery pear were shown to be overplanted, making up over 15% of the tree population. An analysis of the tree population's age, represented by DBH (Diameter at Breast Height), shows that 36% of the trees are quite young with a DBH of 4" or less and that 84.9% had a CTLA condition rating of 70% or more. South Salt Lake has a street tree stocking level of 85.2%, but this may indicate an overall low number of suitable planting spaces.

An i-Tree Eco analysis revealed that the inventoried trees provided 20.81 acres of canopy coverage and have a $5.23 million replacement value. Annually, these trees produce 47.68 tons of oxygen (a $147,000 yearly value), sequester 17.88 tons of carbon (a $3,050 yearly value), and capture 155,200 gallons of storm runoff (a $1,390 yearly value).

Based on the information collected and analyzed on South Salt Lake's public tree population, the following are recommended:

- Increase the diversity of public tree plantings: avoid planting Callery pear, and plant honeylocust and crabapples only when other species are incompatible with the site.
- Continue planting and maintaining trees to increase canopy coverage, prioritizing areas with low canopy coverage, and replace trees as they decline and are removed.
- Identify how tree planting should be prioritized and set planting goals: by ease of planting, quality of planting site, heat index equality, or other metrics.
- Expand identification of locations to plant trees: planting sites along the public right-of way may not be sufficient to meet tree planting goals.

The inventory and assessment of South Salt Lake's public trees are an excellent start to understanding the status of the community forest. The companion Tree Canopy Assessment Report and Management Plan provide further insights into the extent of the community forest, and the best practices to manage it for the future.

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Appendix A – Tree and Planting Site Inventory Data Attributes

	Data Attribute	Description
Location Information	Site ID	Unique identifier composed of numbers and letters, assigned by software.
	Street Address	Street address of tree location; autopopulated from GIS file provided by the City.
	Latitude/Longitude	GPS coordinates of each tree's location.
	Planting Space Type	Description of the space: tree strip, paved tree strip, open, natural (unmaintained), median, island.
	Utility Conflicts	Presence of overhead and underground utilities within dripline of tree, as observed visually or by comparing to City-provided underground utility GIS layer.
	Hardscape Damage	≥½ inch damage: sidewalk cracking, sidewalk uplifting, fence damage, pavement/curb damage.
	Other Location Data	Autopopulated from City-provided GIS file: ▪ Neighborhood ▪ City property name (if applicable) ▪ Census tract ▪ Block group ▪ Zoning designation ▪ Council district
	Tree Planting Area Size[1]	Occular estimate, in ft^2, "999" entered if the site is open.
	Recommended Tree Size for Planting[1]	Using guidelines shared by the Salt Lake City Public Lands Department (Salt Lake City 2024): ▪ Small (<25' at maturity): overhead conductors ok, parkstrip ≥5' wide, no other above- or belowground space constraints ▪ Medium (<50' at maturity): no overhead conductors, parkstrip 5-8' wide ▪ Large (>50' at maturity): no overhead conductors, parkstrip ≥8' wide
Tree Information[2]	Common Name	Common name of the tree.
	Species, Genus, Family	Taxonomic name of the tree.
	DBH	Tree stem diameter measured at breast height (4.5' above the ground), measured with d-tape or Biltmore stick to the nearest inch.
	Crown Spread	Ocular estimate of crown width in two directions, in 5-foot increments.
	Height	Height of the tree, ocular estimate, in feet.
	Tree Condition	Rated 0-100% in 5% increments, following CTLA version 9 guidelines, where 0% = dead tree.
	Conditions of Concern	Significant health or structural defects: decay, crack, severed/damaged root, stem girdling root, planted too deep, grade change, weak branch union, canker, leaning, topped, excessive epicormics, dead, visible obstruction (of sign, traffic signal, streetlight), physical obstruction (of vehicles/pedestrians).

	Data Attribute	Description
Tree Information[2]	Recommended Maintenance	▪ Immediate removal (within 30 days) ▪ Immediate priority pruning (within 30 days) ▪ High priority pruning (within 1-6 months) ▪ Routine pruning (6-12 months) ▪ Training pruning: structural pruning of young trees ▪ Clearance pruning: clear limbs to 6' above sidewalks and 14' above streets ▪ Stump Removal ▪ Monitor: assess annually and after storm events ▪ No maintenance currently recommended
	TRAQ Risk Rating (Dunster, et al. 2017)	Likelihood of condition of concern to fail: improbable, possible, probable, imminent Likelihood of tree/part impacting target: very low, low, medium, high Consequence of failure: negligible, minor, significant, severe Tree risk rating: calculated from the above inputs and rated as low, moderate, high, or extreme
	Comments	Used as needed for documentation.

[1] Data attributes collected only for planting sites.

[2] Data attributes collected only for trees.

Appendix B – Frequency of Inventoried Trees by Species, Genus, and Family

Species (Common Name)	Frequency (#)	% of Total
Total	**3264**	**100**
Apple	45	1.4
Apricot	7	0.2
Arborvitae	25	0.8
Ash, Arizona	1	0.0
Ash, European	13	0.4
Ash, Green	78	2.4
Ash, White	51	1.6
Aspen	38	1.2
Baldcypress	2	0.1
Beech, European	8	0.2
Birch, European White	1	0.0
Birch, Western Water	1	0.0
Boxelder	35	1.1
Buckeye, Red	1	0.0
Buckthorn, Alder	4	0.1
Catalpa	17	0.5
Cedar, Atlas	1	0.0
Cedar, Deodar	20	0.6
Cedar, Rocky Mountain	12	0.4
Cherry sp.	1	0.0
Cherry, Japanese Flowering	57	1.7
Chokecherry	53	1.6
Corneliancherry Dogwood	1	0.0
Cottonwood, Eastern	14	0.4
Cottonwood, Fremont	15	0.5
Cottonwood, Plains	1	0.0

Species (Common Name)	Frequency (#)	% of Total
Crabapple species	230	7.0
Cypress sp.	1	0.0
Desertwillow	1	0.0
Douglas-fir	2	0.1
Elm Species	30	0.9
Elm, American	48	1.5
Elm, English	24	0.7
Elm, Frontier	50	1.5
Elm, Lacebark	21	0.6
Elm, Siberian	119	3.6
European Mountain-Ash	1	0.0
Giant Sequoia	6	0.2
Ginkgo	2	0.1
Goldenrain	70	2.1
Hackberry, Common	40	1.2
Hawthorn sp.	26	0.8
Hazelnut sp.	1	0.0
Holly	1	0.0
Honeylocust	272	8.3
Hornbeam, American	10	0.3
Hornbeam, European	2	0.1
Horsechestnut	7	0.2
Horsechestnut, Red	1	0.0
Incense-Cedar	1	0.0
Japanese Pagoda Tree	8	0.2
Japanese Tree Lilac	18	0.6
Juniper, Rocky Mountain	9	0.3

Species (Common Name)	Frequency (#)	% of Total
Kentucky Coffeetree	8	0.2
Lilac, Common	14	0.4
Lilac, Peking	6	0.2
Linden, American	26	0.8
Linden, Littleleaf	74	2.3
Locust, Black	12	0.4
London Plane	72	2.2
Magnolia species	3	0.1
Maple, Amur	41	1.3
Maple, Bigtooth	25	0.8
Maple, Freeman	24	0.7
Maple, Hedge	1	0.0
Maple, Japanese	14	0.4
Maple, Norway	186	5.7
Maple, Red	8	0.2
Maple, Rocky Mountain	1	0.0
Maple, Shantung	2	0.1
Maple, Silver	5	0.2
Maple, State Street Miyabe	11	0.3
Maple, Sugar	3	0.1
Maple, Vine	1	0.0
Mimosa	1	0.0
Mulberry, Fruitless	23	0.7
Oak, Bur	11	0.3
Oak, Chinquapin	5	0.2
Oak, English	2	0.1
Oak, Gambel	3	0.1

Species (Common Name)	Frequency (#)	% of Total
Oak, Northern Red	4	0.1
Oak, Pin	1	0.0
Oak, Swamp White	5	0.2
Oak, Valley	1	0.0
Peach	11	0.3
Pear Species	30	0.9
Pear, Callery	511	15.7
Persimmon	1	0.0
Pine, Austrian	82	2.5
Pine, Japanese Black	1	0.0
Pine, Lodgepole	6	0.2
Pine, Mugo	6	0.2
Pine, Pinyon	3	0.1
Pine, Ponderosa	8	0.2
Pine, Scots	6	0.2
Pine, White	2	0.1
Plum sp.	27	0.8
Plum, Purpleleaf	83	2.5
Poplar, Lombardy	1	0.0
Redbud, Eastern	53	1.6
Serviceberry	12	0.4
Smoketree	7	0.2
Spanish Broom	2	0.1
Spruce, Blue	47	1.4
Spruce, Engelmann	1	0.0
Spruce, Norway	21	0.6
Spruce, White	11	0.3
Sweetgum	9	0.3
Tree of Heaven	22	0.7
Tulip Poplar	11	0.3

Species (Common Name)	Frequency (#)	% of Total
Walnut, Black	1	0.0
Willow, Bay	2	0.1
Willow, Bebbs	1	0.0
Willow, Weeping	2	0.1
Willow, White	20	0.6
Yew, Japanese	2	0.1
Zelkova	166	5.1
Stumps	83	N/A

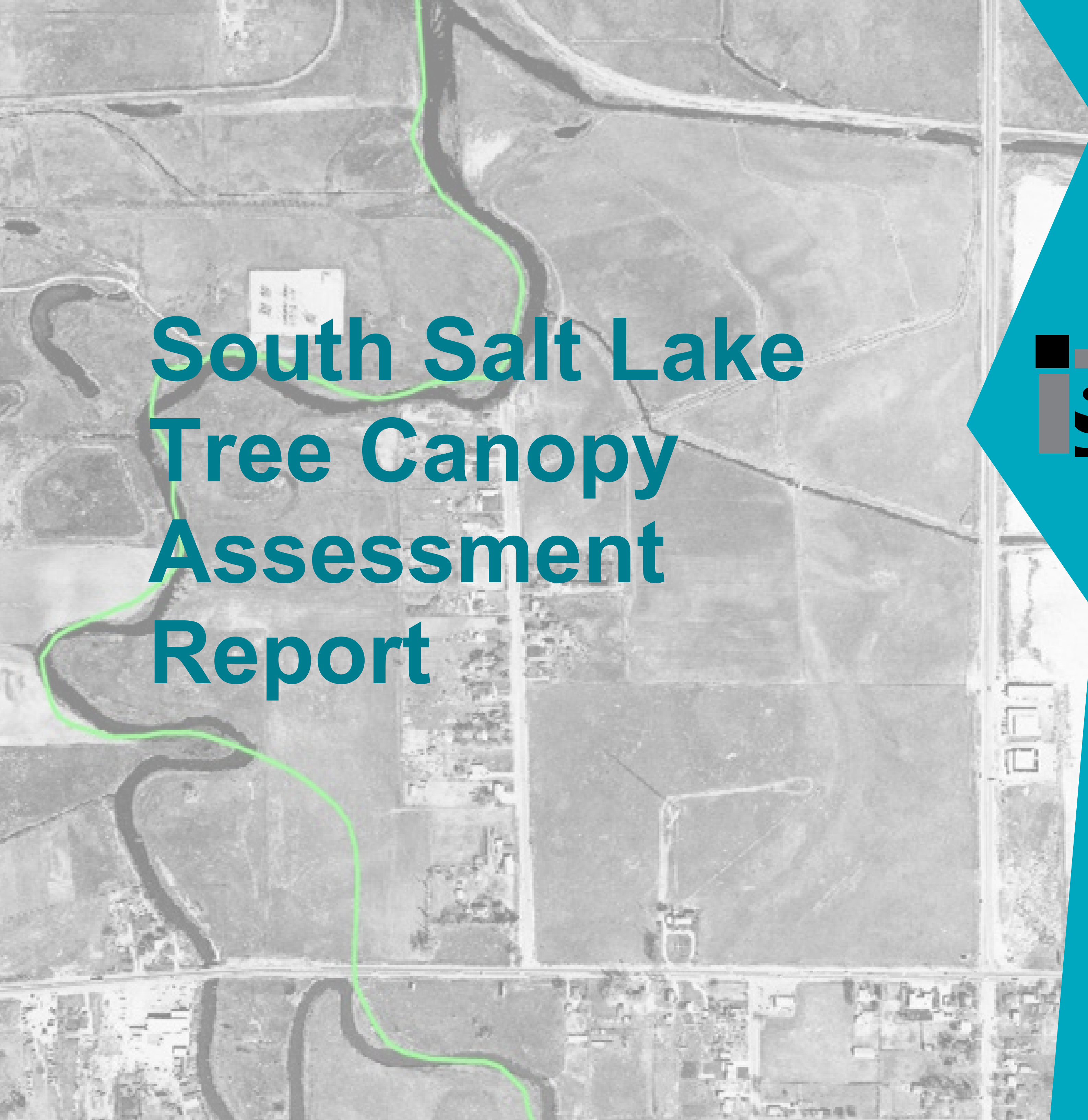
Genus	Frequency (#)	% of Total
Total	**3264**	**100.0**
Acer	357	10.9
Aesculus	9	0.3
Ailanthus	22	0.7
Albizia	1	0.0
Amelanchier	12	0.4
Betula	2	0.1
Calocedrus	1	0.0
Carpinus	12	0.4
Catalpa	17	0.5
Cedrus	21	0.6
Celtis	40	1.2
Cercis	53	1.6
Chamaecyparis	1	0.0
Chilopsis	1	0.0
Cornus	1	0.0
Corylus	1	0.0
Cotinus	7	0.2
Crataegus	26	0.8
Diospyros	1	0.0

Genus	Frequency (#)	% of Total
Fagus	8	0.2
Frangula	4	0.1
Fraxinus	143	4.4
Ginkgo	2	0.1
Gleditsia	272	8.3
Gymnocladus	8	0.2
Ilex	1	0.0
Juglans	1	0.0
Juniperus	21	0.6
Koelreuteria	70	2.1
Liquidambar	9	0.3
Liriodendron	11	0.3
Magnolia	3	0.1
Malus	275	8.4
Morus	23	0.7
Picea	80	2.5
Pinus	114	3.5
Platanus	71	2.2
Platanus	1	0.0
Populus	69	2.1
Prunus	239	7.3
Pseudotsuga	2	0.1
Pyrus	541	16.6
Quercus	32	1.0
Robinia	12	0.4
Salix	25	0.8
Sequoiadendron	6	0.2
Sorbus	1	0.0
Spartinum	2	0.1
Styphnolobium	8	0.2

Genus	Frequency (#)	% of Total
Syringa	38	1.2
Taxodium	2	0.1
Taxus	2	0.1
Thuja	25	0.8
Tilia	100	3.1
Ulmus	292	8.9
Zelkova	166	5.1
Stump	83	N/A

Family	Frequency (#)	% of Total
Total	**3264**	**100.0**
Anacardiaceae	7	0.2
Aquifoliaceae	1	0.0
Betulaceae	15	0.5
Bignoniaceae	18	0.6
Cannabaceae	40	1.2
Cornaceae	1	0.0
Cupressaceae	69	2.1
Ebenaceae	1	0.0
Fabaceae	356	10.9
Fagaceae	40	1.2
Ginkgo	2	0.1
Hamamelidaceae	9	0.3
Hippocastanaceae	9	0.3
Juglandaceae	1	0.0
Magnoliaceae	14	0.4
Moraceae	23	0.7
Oleaceae	181	5.5
Pinaceae	196	6.0
Plantanaceae	72	2.2
Rhamnaceae	4	0.1
Rosaceae	1094	33.5
Salicaceae	94	2.9
Sapindaceae	427	13.1
Simaroubaceae	22	0.7
Taxaceae	2	0.1
Taxodiaceae	8	0.2
Tiliaceae	100	3.1
Ulmaceae	458	14.0
Stump	83	N/A

Appendix C: i-Tree Eco Report



South Salt Lake Tree Canopy Assessment Report

DRAFT REPORT

Prepared for: South Salt Lake City

Prepared by: Eocene Environmental Group

2025

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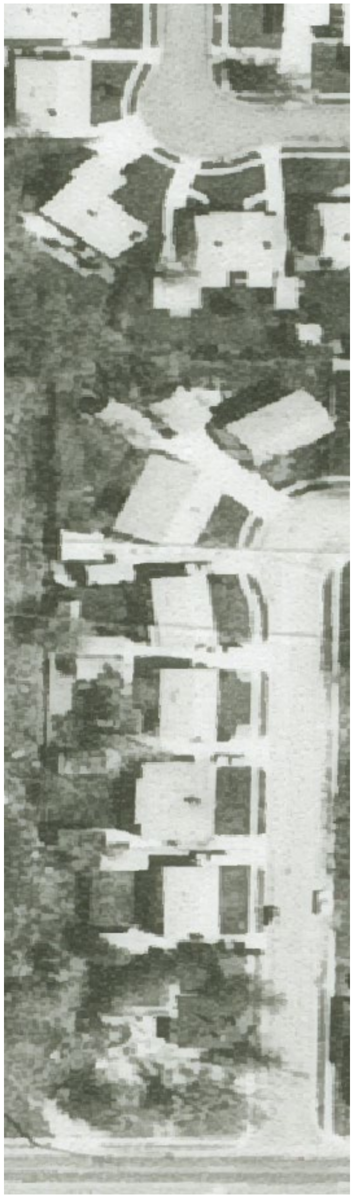


Summary of Findings

A tree canopy assessment was completed for the City of South Salt Lake to determine the percentage of land covered by tree canopy, both currently and in the historic past, analyzed by parcel zoning and neighborhood. The City was compared to neighboring communities for canopy coverage and socio-economic indicators. Plantable areas were identified, and the number of potentially planted trees and tree canopy cover was calculated. The data was analyzed using i-Tree Canopy, which calculated the financial and environmental benefits that the City's trees provide. Below is a summary of findings:

South Salt Lake has been altered from a majority land cover of bare soil (17.7%) and herbaceous plants (53.0%) in 1964, to largely impervious (70.0%) in 2021. Tree canopy coverage increased from 3.9% in 1964 to 8.7% in 2006 as the City was developed and trees were planted in residential areas, then a slight decrease to 7.3% in 2021 as the City was further developed and the population continued to grow.

The decrease in tree canopy from 8.7% (±0.63) in 2006 to 7.3% (±0.58) in 2021 is equal to approximately 64 acres, or an area equal to six times the size of Fitts Park.

Compared to other cities in the Salt Lake Valley, South Salt Lake has one of the lowest percentages of tree canopy coverage and highest percentages of unemployment, people living in poverty and linguistic isolation, and rating highly on a health burden index.

Areas of South Salt Lake with the lowest tree canopy coverage also experienced the highest heat disparity, experiencing temperatures 4°F and higher than areas with higher tree canopy.

Commercial and Industrial zoned parcels make up 52.3% of the City's land and have an average tree canopy coverage of 5.4%. Parcels zoned as Residential or Multihome make up 26.9% of the City's area and have an average tree canopy coverage of 23.1%.

An analysis of potentially plantable areas found that 22,713 trees that could be planted, bringing the City's tree canopy cover up to 12.1%.

South Salt Lake's trees provide an average of $286,462 in ecosystem benefits every year, including pollutant removal and interception, and carbon sequestration.

Based on the data analyzed through a tree canopy assessment, the following recommendations are made:

- Develop a tree canopy goal as a target to guide tree preservation and canopy expansion efforts
- Develop a tree planting plan to focus canopy coverage in areas that need it most
- Identify methods to increase tree canopy coverage on Industrial, Commercial, and School properties
- Provide education & outreach materials to community
- Routinely update tree canopy assessment to understand whether goals are being met

Introduction

As a growing community, South Salt Lake is constantly planning for its future. Moving from its past as an industrial community built in the grasslands of Salt Lake Valley, the City is now embracing a new identity of an urban center where people want to live. As new housing, transportation, and services are established, the City understands that its people also need greenspaces and vegetation to thrive. Trees enhance quality of life by providing environmental, economic, health, and social benefits. And just as built infrastructure needs to be thoughtfully planned out to maximize their usefulness, so too does a community's trees.

South Salt Lake is undergoing a project to understand the current status of its community trees and creating a plan to maintain and grow its tree canopy. A tree canopy assessment provides a perspective of how much land within a geographic area is covered by tree canopy, including on private property.

South Salt Lake's tree canopy assessment was conducted with the following objectives:

- Establish the City's tree canopy cover percentage, with detailed methodology and known accuracy, both in the current time and in the historic past
- Develop ecosystem services benefit estimates for the City's trees
- Identify the potential for future tree planting opportunities
- Utilize project information to inform sound urban forest management policies and plans

What is a Tree Canopy Assessment?

A tree canopy assessment provides a perspective of how much of the land area is covered by trees, including trees on public and private property. Besides tree canopy, the percent of land covered by bare soil, grass, herbaceous plants, impervious surface (e.g., roads), or water is quantified.

What a Tree Canopy Assessment is Not! A tree canopy assessment provides an aerial perspective of what is above the land surface, but it does not collect individual tree attributes. This data is typically collected during a tree inventory, where people visually assess the tree. Employing both approaches provides important information for urban forest planning and management.

The trees that live in South Salt Lake provide a multitude of benefits that residents and visitors enjoy. They improve air and water quality, provide shade and energy savings, and improve mental and physical health. However, their establishment and health need to be balanced against population growth and development. Trees are removed as they age and to make way for infrastructure, which needs to be balanced with new planting efforts. The tree canopy assessment will help quantify the tree canopy loss and/or gain across the City, and complements the information collected in the public tree inventory to make management decisions

Methods

Land Cover Assessment

High-resolution aerial imagery from the United States Department of Agriculture's National Agriculture Imagery Program (NAIP) was used as the basis for the tree canopy assessment. 2021 NAIP data with 60-centimeter resolution was the most current timeframe available at the time of assessment and was used as a proxy for the current tree canopy cover (TCC). The years 2016 and 2006 were assessed using NAIP imagery with 1-meter resolution. The snapshot of tree canopy through history was extended by using orthoimagery from 1984 and 1964, sourced from the Utah Geological Survey. The orthoimages are individual high-resolution photographs taken from a fixed-wing airplane. To capture the entirety of South Salt Lake's city limits, the images were "stitched" to combine and orthorectify the images by referencing common ground points (Figure 1).

A History of Tree Canopy in SSL South Salt Lake's current and historical land cover was estimated through a sample point assessment (Figure 2). With this methodology, geospatial points are randomly generated and then classified by a reviewer. The points were classified as tree, grass, impervious surface, water, or bare soil (Figure 3). To perform the current land cover analysis, 2,000 points were classified using the 2021, 2016, and 2006 NAIP imagery. Using the same sample point methodology, 1,000 points were classified for the time periods of 1985, and 1964. As a quality control accuracy assessment, a secondary evaluator classified a 10% sample of locations. By comparing how the two evaluators classify the land covers, we can determine the accuracy level of the primary evaluator. For this project, we exceeded the desired level of 95%, with a minimum tree identification accuracy of 96.2% for the five time periods.

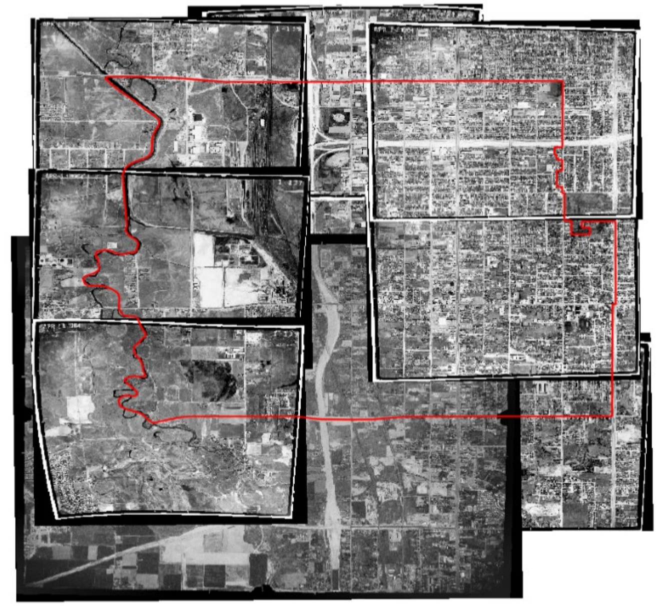


Figure 1. Example orthophotos before rectification.

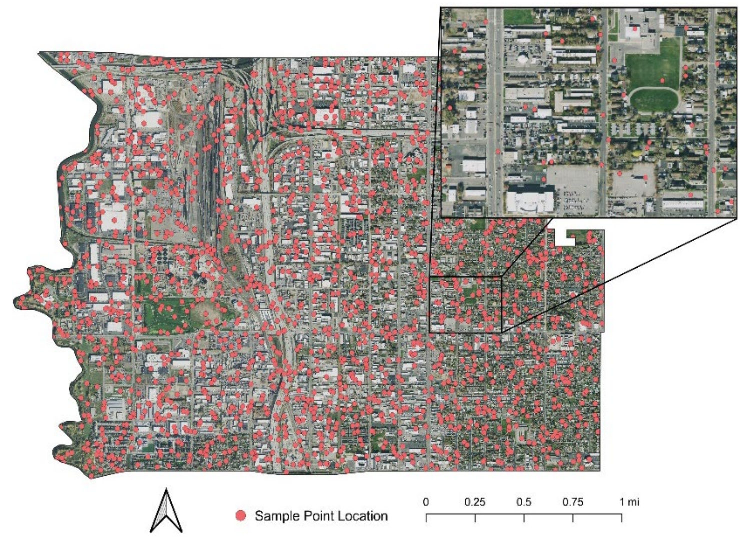


Figure 2. Sample point land cover assessment.

Land Cover Analyses

Figure 3. Example land cover classes assessed for the project.

Geographic Analysis In addition to the City-wide TCA, the land cover assessment for each period was geographically disaggregated into census blocks and neighborhoods. This allowed us to assess how tree canopy differed by geographic area, which can help focus tree planting efforts in the future. In particular, the Tree Equity tool bases its calculations on population demographics at the census block level, so we can compare South Salt Lake's tree canopy data against this tool.

While the sample point method was used for the entire City area, a supervised classification was used to determine canopy coverage for smaller land areas. For this method, a GIS layer was first applied that removed building footprints from the analysis. The GIS program was then trained to recognize tree canopy by calibrating sample points against a human analyst. While not as accurate as the sample point method, this method can efficiently approximate TCC for smaller areas; our calculated alignment between human analyst and computer was 90.95%. Using the supervised classification method, the TCC was determined for land zoning designations including public versus private, and for schools and parks.

Potential Plantable Analysis

The 2021 land cover assessment data was used as the basis to determine potential plantable areas across the City. The sample points where a tree could potentially be planted (grass/herbaceous and bare soil) were separated from the points where tree planting would not be readily feasible (impervious, water, or already existing tree). For the potentially plantable spaces, they were assessed individually to determine if a small, medium, or large tree (<25' tall/15' wide, <40' tall/25' wide, or >40' tall/40' wide at maturity) could be planted there depending on above-and belowground constraints, such as proximity to hardscape and structures, overhead utility conductors, and distance to other trees (Figure 4). Planting site characteristics can be found in Appendix A.

Figure 4. Example plantable and nonplantable locations.

South Salt Lake's Tree Canopy Coverage compared to other Utah cities

South Salt Lake's tree canopy was compared to those of other Utah cities to see if there could be an opportunity to learn from its neighbors. The Tree Equity Score National Explorer was used as the basis to compare TCC between communities. This was chosen since the method by which TCC is calculated is the same across all communities, which is derived from pre-aggregated Google high-resolution tree canopy sourced from Google Environmental Insights Explorer. The values for SSL were compared against other cities in Salt Lake County for which a Tree Equity report was available.

The canopy of this tree shades both the street and the sidewalk.

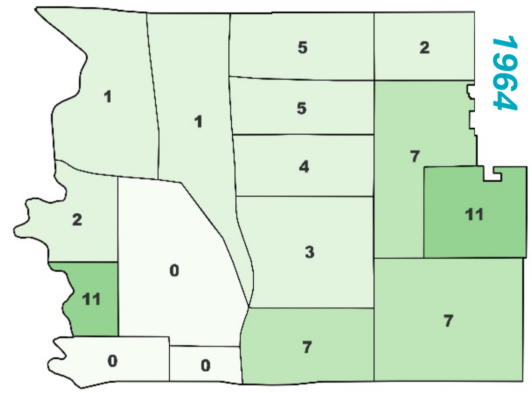
Ecosystem Benefits

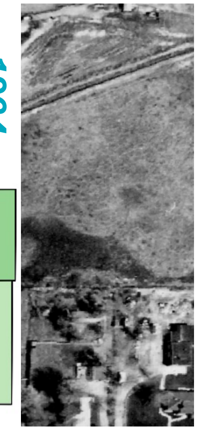
South Salt Lake's ecosystem benefits were calculated using i-Tree Canopy (canopy.itreetools.org). Carbon storage and annual values for avoided water runoff, carbon sequestration, and air pollutant removal were developed based on South Salt Lake's 2021 estimated 7.3% tree canopy cover. A 95% confidence interval (CI) and standard error (SE) were also calculated for each ecosystem benefit amount and monetary value. For example, sulfur dioxide pollutant removal was estimated at 0.76 (±0.12) tons annually, or an expected estimate with a 95% chance of being within the range of 0.64 to 0.88 tons a year.

A History of Tree Canopy in South Salt Lake

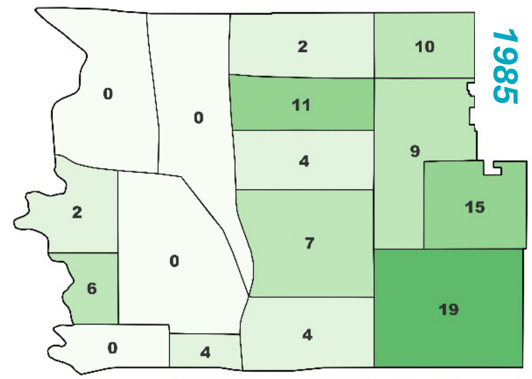
South Salt Lake has seen incredible changes in development and population in the past 50 years. The City's tree canopy assessment was captured at 5 time periods: 1964, 1985, 2006, 2016, and 2021. While the City expanded its boundaries with the annexation of unincorporated county land from 3300 South to 3900 South in 1998, the tree canopy assessment for all time periods uses the current municipal boundary for continuity. What follows is a description of the tree canopy coverage and notable activities in South Salt Lake during the five selected time periods. To the right are maps of canopy coverage (%) by neighborhood, and an image of the same location showing changes in development and tree canopy over time.

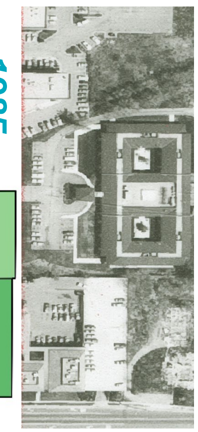
1964 The overall tree canopy is **3.9% (±0.61)**. Neighborhoods in the southwest had the lowest tree canopy (0%) while Fitts Park on the eastern boundary had the highest (11%). The 1960 census reported the population as 9,520. It can be inferred that there was a recent boom in development, since the 1940-1950 censuses reports a 382% population increase from 1,599 to 7,704 people. In 1964, residential developments are seen to be established on the eastern side of the City, especially in the northeast. The area west of the future interstate 15 is largely undeveloped, with the railyard established in the northwest corner. While routes 15 and 80 haven't been completed, their outlines are already sketched across SSL as undeveloped corridors.



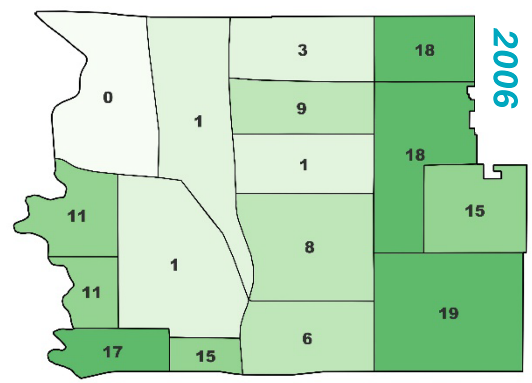


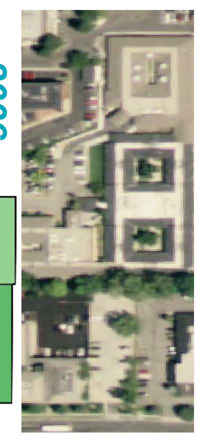
1985 At this time, construction of Interstate 80 was well underway, to be completed in 1986. The highway construction made transportation easier but split up neighborhoods and ensured a large part of the City would be permanently paved. The overall tree canopy is **5.7% (±0.73)**, and the 1980 census lists the population as 10,413. West of interstate 15 still has low tree canopy (0-6%), while almost all neighborhoods east of interstate 15 see increases compared to 1964, especially Granite Legacy (7% to 19%). In 1985 the Jordan River's channel has been altered to fit the current western boundary of the City.





2006 This time period saw South Salt Lake's tree canopy at its maximum analyzed: **8.7% (±0.63)**. Neighborhoods on the eastern side saw continued tree canopy expansion, peaking at about 19% coverage in the Granite Legacy neighborhood. A major event occurred in 1998 as the City almost doubled in size to the south with the annexation of county land. The City's population also

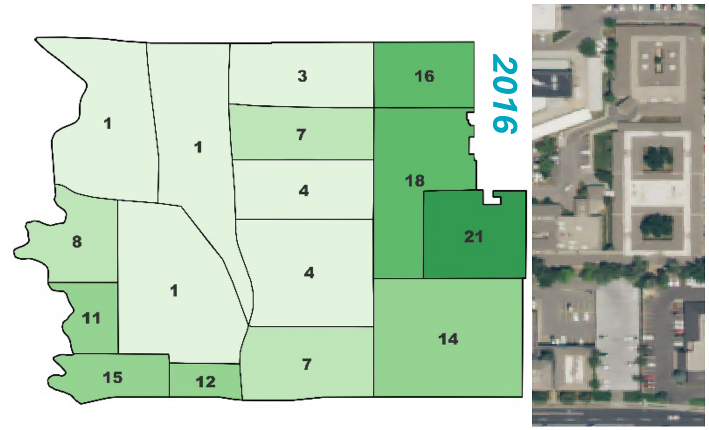




doubled between the 1990 and 2000 censuses, from 10,129 to 22,038. Within the new City boundaries, all neighborhoods saw an increase in tree canopy, most notably the Riverfront neighborhood of 0% to 17%.

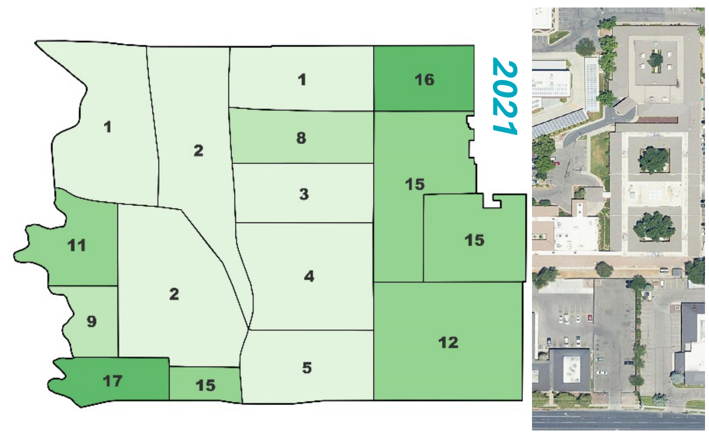
2016

Tree canopy coverage decreased across the city in 2016, to **8.0% (±0.60)**; the population increased 7.2% from the 2000 census, to 23,617 in 2010. The S Line was completed in 2013; alongside its construction, the former warehouse district was rezoned to mixed-use urban development. The only neighborhood to see a marked increase in tree canopy coverage was Fitts Park, from 15% to 21%.



2021

Tree canopy coverage decreased again in 2021, to **7.3% (±0.58), or a total area of 322 acres**. According to the 2020 census, the population grew another 13.4% from the decade prior, to 26,777. Neighborhoods east of interstate 15 mostly decrease in tree canopy coverage, while there are slight gains in the Oxbow (8% to 11%), Riverfront (15% to 17%), and Meadowbrook Place (12% to 15%) neighborhoods.



All land cover changes in South Salt Lake from 1964 to 2021 are seen in Figure 5. In 1964, a majority of land within the current city boundaries was bare soil (17.7%) or grass/herbaceous plants (53.0%). Land covered in bare soil steadily decreased through the decades, to 6.5% in 2021. Land covered by herbaceous plants decreased from 1964 to 1985 (53.0% to 32.0%), then again from 1985 to 2006 (32.0% to 13.7%), before leveling out to 15.2% in 2021. Land covered by impervious surface increased significantly from 24.4% in 1964, to 47.3% in 1985, and then 67.9% in 2006. In 2021, the land covered by impervious surface was at 70.0%, the maximum analyzed. Changes in tree canopy weren't as dramatic, ranging from 3.9% to 8.7% of land cover, but show an increase from 1964 to 2006, then a decrease to 7.3% in 2021.

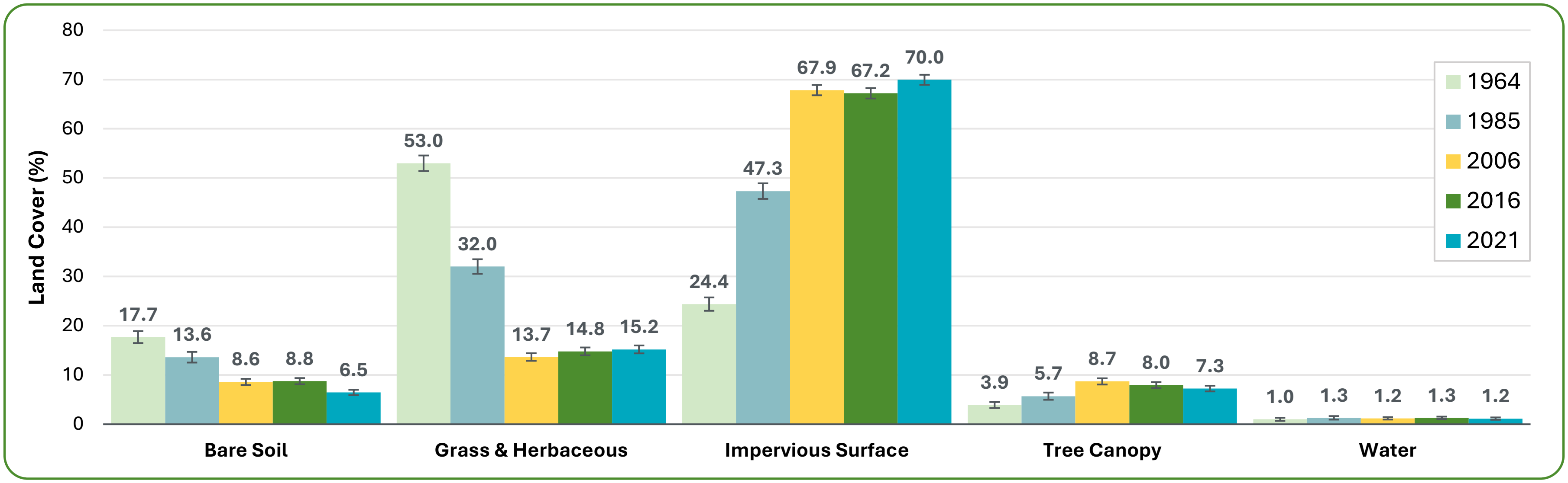
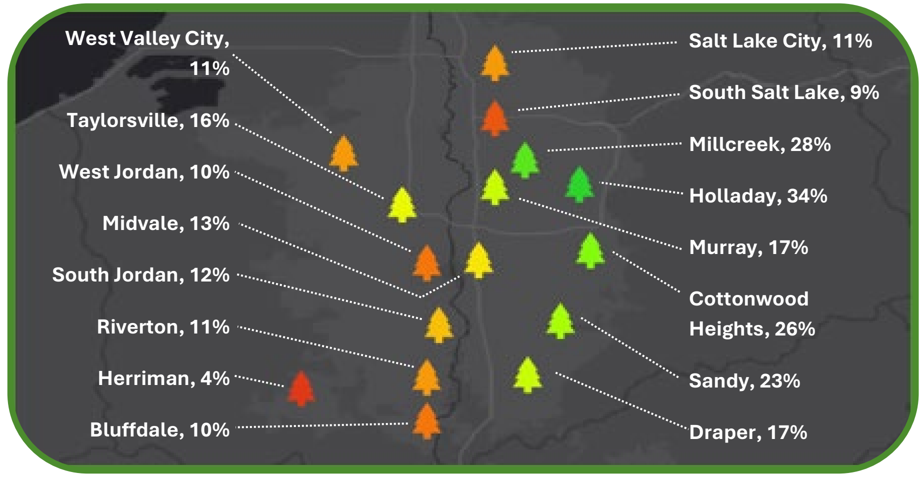


Figure 5. Land cover changes in South Salt Lake,

The relationship between development and tree canopy in South Salt Lake has been intertwined over time. Historians Richard Jackson and Dale Stevens wrote that "the first settlers found most of the (Salt Lake) valley covered with grasses except where streams provided enough extra water for trees…" The historical land cover assessment found that to still be the case in 1964, when 53% (±1.58) of the land was covered by grass and herbaceous plants, and the population was nearing 10,000. As the population grew, so did tree canopy, likely due to the nostalgia for more forested homelands by new immigrants to the valley and the innate social benefits that trees provide. South Salt Lake's population has steadily increased over time, yet the tree canopy coverage peaked in 2006 at 8.7% (±0.63), and then decreased to 7.3% (±0.58) in 2021. The decrease in tree canopy could be due to new developments removing established trees, or due to the removal of trees planted over half a century ago as they naturally age and decline. As South Salt Lake continues to grow, it will need to proactively plan to maintain its green infrastructure to benefit both residents and visitors.

South Salt Lake Compared to Neighboring Communities

South Salt Lake was compared to 15 other communities in Salt Lake County for tree canopy cover and several socioeconomic indicators, using data from the Tree Equity Score National Explorer (TESNE). The methods used in the TESNE indicated a slightly higher tree canopy cover for South Salt Lake, of 9%; this was the second lowest tree canopy cover of all communities included in the analysis, with only Herriman having a lower tree canopy cover (4%). Holladay had the highest percentage, 34%.



The TESNE also looks at socioeconomic indicators to identify locations which may have been historically disadvantaged or currently lack the resources to maintain or grow their community forest. The selected socioeconomic indicators and their status in South Salt Lake compared to neighboring communities are below, with a full table in Appendix A.

People in Poverty The percentage of people living below 200% of the federally-designated poverty line. **South Salt Lake had the highest percentage (43%) of people living in poverty** compared to the 15 other communities, followed by Salt Lake City (33%) and West Valley City (32%). South Jordan had the lowest percentage (9%).

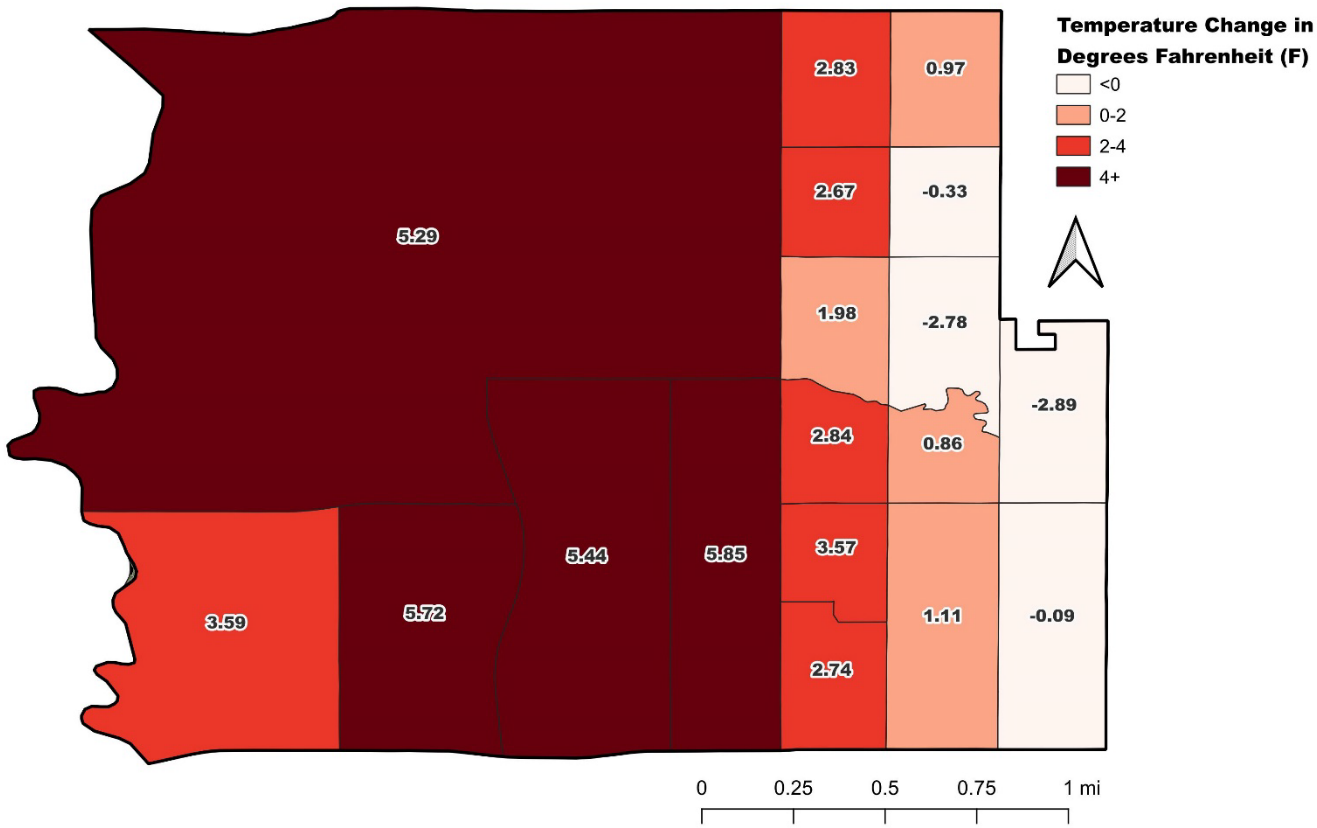
People of Color Percentage of people that are Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and includes all people classified as Hispanic by the Census Bureau. **South Salt Lake had the second highest percentage of people of color (50%)** after West Valley City (54%). Cottonwood Heights and Holladay had the lowest percent, both 12%.

Unemployment Percentage of the labor force that do not have a job, are available, and looking for one. **South Salt Lake had the highest unemployment (7%)**, followed by Taylorsville (5%). Draper and South Jordan both had the lowest percentage of unemployment (2%).

Linguistic Isolation Percentage of households where no person age 14+ speaks only English, or no person age 14+ who speaks a language other than English speaks English "very well." **South Salt Lake had the highest population percentage experiencing linguistic isolation (9%)**, followed by West Valley City (7%). Bluffdale, Draper, Herriman, and Riverton all had 0% of their population experiencing linguistic isolation.

Average Health Burden Index Self-reported prevalence of poor mental health, poor physical health, asthma and heart disease in an equally weighted index. South Salt Lake had the second highest health burden (56), surpassed only by West Valley City (58). Draper had the lowest Health Burden, with an index value of 28.

The TESNE was also used to determine the heat disparity across South Salt Lake. Average surface temperatures for the hottest days were estimated using 2022 data from the USGS Earth Explorer – Landsat 8 Collection 2 Level 2 Surface Temperature, and averaged by census block group. Heat disparity is measured by comparing average block group heat extremity with the urban area average to measure variance in heat severity across an urban area. For South Salt Lake, the eastern census blocks experienced the lowest heat disparity, while the western census blocks experienced the greatest heat disparity. Higher surface temperatures are linked to higher energy consumption, compromised human health and comfort, increased air pollutants, and impaired water quality. The level of heat disparity roughly correlates to tree canopy coverage across the City, which is corroborated by a 2023 study of the relationship between urban heat islands and parks and green spaces in Salt Lake City.

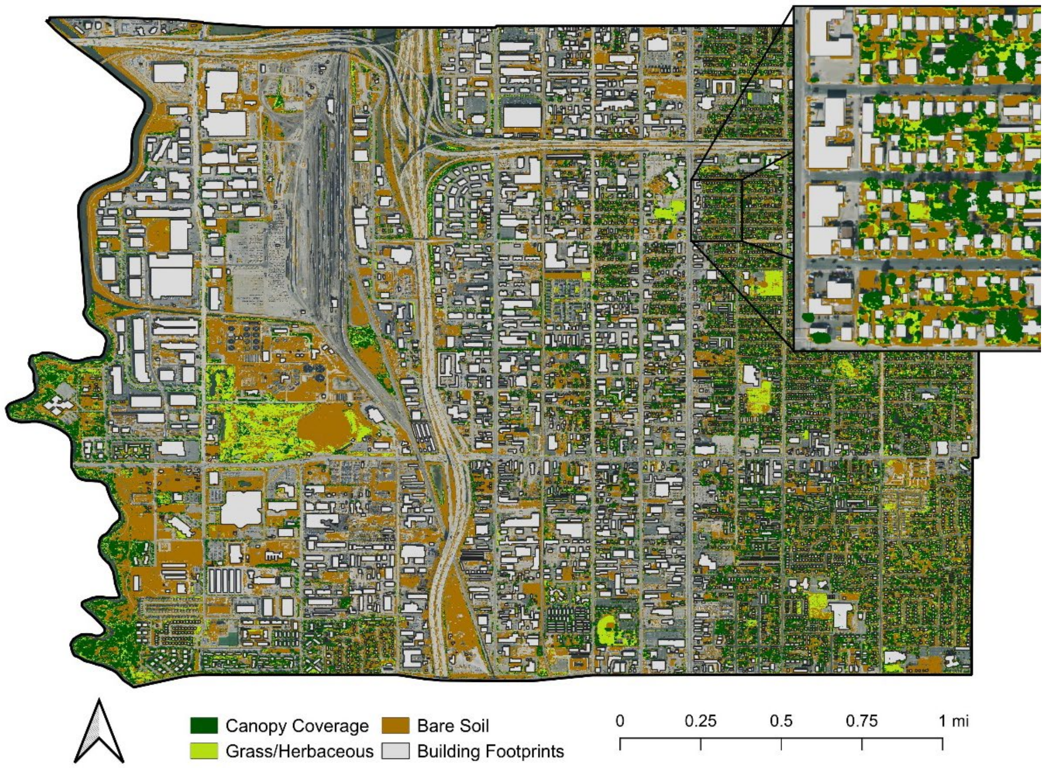


Where are South Salt Lake's Trees?

The map to the right shows the supervised classification of South Salt Lake's land cover, using 2021 NAIP imagery. The dark green areas with higher tree canopy on the eastern side and southwest corner are evident.

Figure 6 shows a breakdown of the different parcel zoning types, with the total area and TCC area for each zoning type, as well as the TCC percentage. Industrial parcels made up the greatest area in the City (2.36 mi²), yet had only 4.6% TCC. Similarly, Commercially zoned parcels made up a large area (1.27 mi²), but had a low TCC (6.3%). Residential parcels made up the second largest zoning type by area (1.39 mi²), but had a much larger TCC (24.9%). Multihome and City properties also had high percentages of TCC, 21.3% and 20.3%, respectively. Schools cover a small area (0.15 mi²), but only have a TCC of 7.8% All data is listed in Appendix B.

Residential, Multihome, and City properties greatly exceed the City-wide TCC of 7.3%, there may be fewer opportunities to plant additional trees on these parcels, although they should not be ignored, especially since the benefits that trees provide may be more directly experienced. Schools, Commercial, and Industrial properties cover over half of the City's total area, and show great potential for future tree planting.



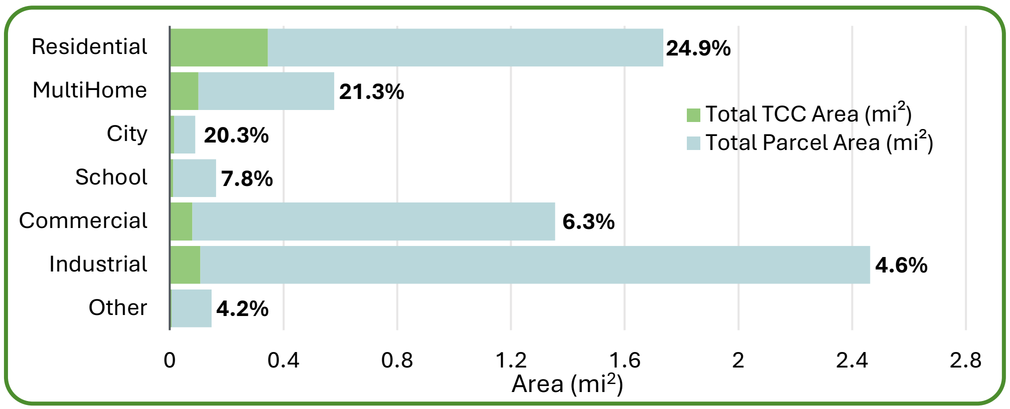
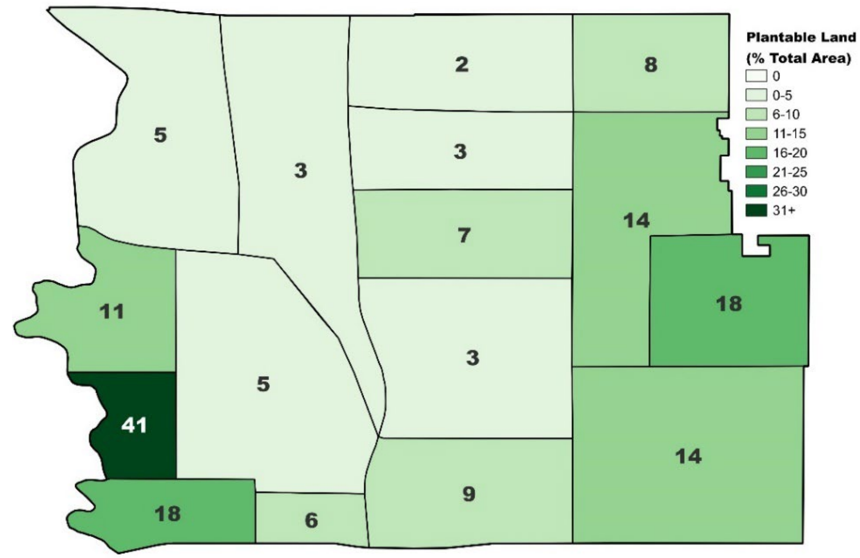


Figure 6. Total parcel and TCC area by parcel zoning in South Salt Lake, with TCC %.

Potential Plantable Areas



The map below shows the percentage of potentially plantable land for each neighborhood. The Jordan River neighborhood had the largest percentage of potentially plantable land, at 41%. Satellite imagery shows that this neighborhood is dominated by large industrial buildings surrounded by grass or soil, with undeveloped areas adjacent to the Jordan River. Other neighborhoods with the largest percentages of potentially plantable land include Riverfront (18%), Fitts Park (18%), Granite Legacy (14%), Central Park (14%), and Oxbow (11%).

Besides knowing the neighborhoods with the greatest availability of planting spaces, it's also important to know the size of trees which can be planted. Available planting spaces were rated for small, medium, and large trees, which have mature heights of <25' tall, 25' to 40' tall, and >40' tall respectively. A site capable of sustaining a large tree can be planted with a medium or small tree, if desired and if there are conditions present which would not benefit a large tree (e.g., shallow or compacted soil). Figure 7 shows the estimated number of each tree size that can be planted in South Salt Lake, with a total of **22,713 trees that could be planted, bringing the City's tree canopy cover up to 12.1%.** A breakdown of the percent of small, medium, and large trees which could be planted by neighborhood is in Appendix D.

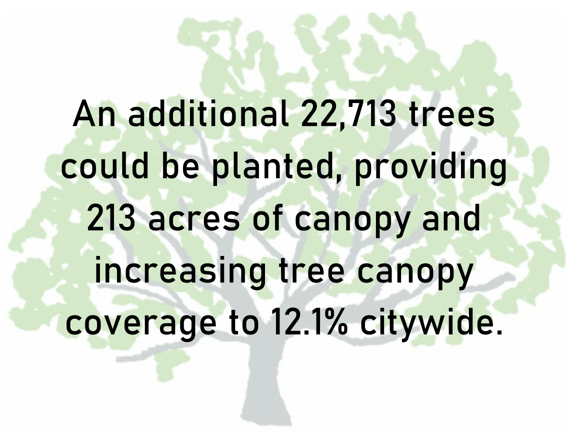


Figure 7. Potentially plantable number of trees and area in South Salt Lake.

Tree Size	Trunk Diameter (in)[a]	Tree Height (ft)[a]	Canopy Spread (ft)	Canopy Area (ft^2)	Total Plantable Area (Acres)	Potential Trees to Plant (#)
Small (10" DSH)	<20	<25	15	177	69	16,955
Medium (18" DSH)	20 to 30	25 to 40	25	491	14	1,270
Large (24" DSH)	>30	>40	40	1257	129	4,488
				Totals	**213**	**22,713**

[a] Projected mean tree diameter at standard height (DSH, 4.5') of planted trees during life span. [b] McPherson, E.G. et. al. (2003) Northern mountain and prairie community tree guide: benefits, costs and strategic planting. Center for Urban Forest Research, Pacific Southwest Research Station, USDA Forest Service. 92p.

Social & Environmental Benefits of Tree Canopy

The social and environmental benefits that South Salt Lake's trees provide were calculated using i-Tree Canopy. The data is based on the 7.3% total TCC calculated using the sample point method. While the calculated totals are an estimate, they provide an idea of the value that a community's trees provide, and supports funding for their preservation and expansion. A table with the full data can be found in Appendix C.

South Salt Lake's trees provide an average of $286,462 in ecosystem benefits every year.

Nitrogen Dioxide and Ozone 1.45 tons of nitrogen dioxide and 7.97 tons of ozone, representing $1,190 and $26,579, is xxx. Nitrogen dioxide is produced by the combustion of fossil fuels, and ozone is a common component of smog. The amount of nitrogen dioxide and ozone present is calculated from locally available pollution and weather data. High levels of these pollutants can cause and worsen respiratory issues, leading to lung damage and death.

Particulate Matter 2.5 and 10 0.31 tons of particulate matter 2.5 ($PM_{2.5}$) and 3.86 tons of particulate matter 10 (PM_{10}), representing $63,444 total, are intercepted annually by South Salt Lake's trees. $PM_{2.5}$ generally comes from combustion: from motor vehicles, factories, and wood-burning. PM10 comes from combustion as well, but also construction dust and industrial and agricultural activities. Inhaling particulate matter can cause breathing issues, worsen other conditions, and increase the risk of heart attacks.

Water Runoff 5.93 million gallons, representing $52,991, is intercepted annually by South Salt Lake's trees. Water runoff comes from precipitation events and includes the pollutants that it picks up as it makes its way through the water cycles. Trees intercept water runoff, either directly through their roots or by promoting its infiltration with their leaves, branches, and trunk. Water runoff is typically treated by a community's stormwater system; the financial savings represents the water that trees intercept that doesn't need to be treated.

Carbon Sequestration 330.60 tons of carbon, representing $143,201, are sequestered annually by South Salt Lake's trees. Trees sequester carbon as they put on annual new growth, and the amount sequestered increases with the size and health of the tree. Sequestering carbon is associated with improved air and soil quality, and with mitigating the effects of climate change.

Conclusions & Recommendations

The presence of trees of South Salt Lake has been dictated by its history: naturally a grassy plain with treed riverbanks, the City was originally built out as a industrial center with a sizeable rail yard. The City became more residential after the World Wars and the population grew. As houses and apartments were built, trees were also planted to provide a pleasant landscape for the residents. The tree canopy peaked at 8.7% in the 2000's as trees reached maturity, and declined to 7.4% in 2021 as the City was further developed and aged trees were removed.

Currently, South Salt Lake has one of the lowest tree canopy coverages in the Salt Lake Valley, and has high percentages of people living in poverty, unemployment, and linguistic isolation, as well as ranking high on a health burden index. While it is unfortunately common for historically disinvested communities to experience a lower tree canopy coverage and the benefits that are associated with it, looking at other communities in the Salt Lake Valley show that a higher tree canopy coverage is possible.

South Salt Lake is currently in an exciting period of redefining itself, with the introduction of the S Line, new residential developments, and a diverse growth in the population. As the gray infrastructure is built out, the City needs to decide if focusing on growing its green infrastructure is a priority. The presence of trees in an urban community has been shown to provide numerous benefits to the people who experience them, including decreased urban heat effects and the associated energy savings, improved mental and physical health, and increased property values. However, trees need to be thought of as infrastructure, with planned installation and maintenance considerations to maximize benefits and cost effectiveness.

Through a tree canopy assessment, this report lays out the history of trees in South Salt Lake, the benefits they provide, how the City compares to its neighbors, and a forecast of future tree planting. Based on the information collected and analyzed on South Salt Lake's public tree population, the following are recommended:

Develop a tree canopy goal. The City's current tree canopy coverage is 7.3%; a tree canopy goal would help the City balance tree planting and maintenance initiatives against continued development. To create the goal, the City could look to neighboring communities with similar population densities and development practices. The goal should take into consideration the potential tree canopy coverage created with additional tree plantings, and the loss of trees through removals.

Develop a tree planting plan. In order to grow its tree canopy, the City needs to prioritize tree planting. A tree planting plan would focus activities where they are most needed, depending on the availability of planting spaces. The current tree canopy assessment identified the potential for tree planting at a neighborhood level; this could be combined with an understanding of where additional tree plantings would provide maximum benefits. These could be areas with the greatest density of residences, or where people typically spend time outside such as walking routes to schools and downtown shopping areas. The planting plan could set targets for the number of trees to plant per year and a recommendation for the species of trees to plant. The planting plan could also incorporate recommendations to remove impervious surfaces and install areas to plant trees using structural soils to increase the potential tree canopy coverage.

Identify methods to increase tree canopy coverage on Industrial, Commercial, and School properties. The tree canopy assessment identified Industrial, Commercial, and School properties as making up over half of the area of the City while having low tree canopy coverages, therefore having a high potential for tree plantings. The 2024 inventory of trees and planting spaces in public areas identified only 473 planting sites; to increase the City-wide tree canopy, trees need to be planted outside of public spaces. School properties should be prioritized due to the benefits that trees provide to human health and the cooling effects they have on buildings. Tree plantings at Commercial and Industrial properties would need to balance against the use of the property and whether alternative uses, such as solar installations, would be more beneficial. Increasing tree plantings at School properties would require buy-in from the community, a City-led initiative, and training of school maintenance staff. For Commercial and Industrial properties, ordinance changes could be considered to promote tree plantings.

Education & outreach. While a tree canopy goal and planting initiatives provide steps for the City to follow, the community also needs to be involved in their implementation. The City should consider community education and outreach when planning any tree planting activity. Doing so creates buy-in and allows for greater involvement and pride in the community. It also fosters long-term momentum in tree planting and maintenance, which will be necessary over the extended lifetimes of trees.

Routinely update tree canopy assessment. A tree canopy assessment is a snapshot in time. In order to determine whether South Salt Lake is meeting its tree canopy goals, the City will need to update its tree canopy assessment in the future. As one approach, updates could coincide with the release of new NAIP imagery. The City could either update the tree canopy assessment itself, using i-Tree Canopy or ArcGIS, or contract it out.

South Salt Lake's tree canopy assessment allows us to understand the historical and current status of the City's tree canopy coverage, so that planting and maintenance recommendations can be developed. This report and the companion Public Tree Assessment Report provide the backbone on which the Management Plan's recommendations are based.

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Appendix A – Comparison of Socioeconomic Indicators in South Salt Lake to Neighboring Communities

Municipality	Urban Area Population[i]	Tree Canopy Cover	People in Poverty[ii]	People of Color[2]	Unemployment[ii]	Linguistic Isolation[ii,iii]	Average Health Burden Index[iv,v]
South Salt Lake	29,093	9%	43%	50%	7%	9%	56
Salt Lake City	203,985	11%	33%	35%	4%	4%	46
Bluffdale	16,298	10%	19%	13%	3%	0%	31
Cottonwood Heights	33,470	26%	15%	12%	3%	1%	36
Draper	50,390	17%	12%	18%	2%	0%	28
Herriman	52,604	4%	12%	16%	4%	0%	29
Holladay	31,485	34%	16%	12%	3%	1%	39
Midvale	34,600	13%	29%	35%	4%	4%	51
Millcreek	63,415	28%	22%	20%	4%	2%	41
Murray	47,904	17%	22%	22%	4%	2%	51
Riverton	46,205	11%	14%	13%	3%	0%	35
Sandy	108,992	23%	15%	19%	3%	2%	41
South Jordan	76,647	12%	9%	18%	2%	1%	34
Taylorsville	63,731	16%	28%	38%	5%	6%	53
West Jordan	127,170	10%	20%	33%	4%	3%	44
West Valley City	136,785	11%	32%	54%	4%	7%	58

[i]Data source: Census 2020
[ii]Data source: American Community Survey 2017-2021
[iii]Percentage of households where no person age 14+ speaks only English or speaks English very well
[iv]Data source: Center for Disease Control CDC PLACES 2022
[v]Self-reported prevalence of poor mental health, poor physical health, asthma and heart disease in an equally weighted index.

Appendix B – Tree Planting Space Decision Criteria

Decision Criteria for Tree Size (Units in Feet)	Maximum Tree Height/Width[a,d] at Maturity		
	Small (<25'/15')	Medium (<40'/25')	Large (40'+/40')
Overhead wires[a]	Acceptable	Unacceptable	Unacceptable
Minimum Horizontal distance from wires[b]	Adjacent	> 25 ft+	> 50'+
Distance between sidewalk and curb[a]	3 to < 5 ft	5 to <8 ft	8 +
Total planting area[c]	50 to 150 ft^2	>150 to 300 ft^2	> 300 ft^2+
Minimum distance from infrastructure[c]	6 ft	8 ft	10 ft+

[a] City of Millcreek, Utah. *Millcreek City Center Urban Forestry Standard*. September, 2020. Millcreek City Community Development and VODA Landscape + Planning.
[b] Olsen, S; Gunnell, J; Kuhns, M; Barnhill, A. *Small Trees for Planting Near Power Lines*. July, 2009. Utah State University Cooperative Extension. https://extension.usu.edu/forestry/files/trees-cities-towns/tree-selection/small-trees-planting-near-powerlines.pdf
[c] University of Florida. *Planting area guidelines*. University of Florida, Landscape Plants. https://hort.ifas.ufl.edu/woody/planting-guidelines.shtml.
[d] Salt Lake City. *Choosing the Right Tree for the Right Place*. Salt Lake City Urban Forestry, SLC.gov. https://www.slc.gov/urban-forestry/2024/06/14/selecting-a-tree/#:~:text=30'%20from%20commercial%20driveway%20and,(less%20than%2030'%20tall)

Appendix C – Total Area, Tree Canopy Cover Area, and Tree Canopy Cover % by Parcel Zoning

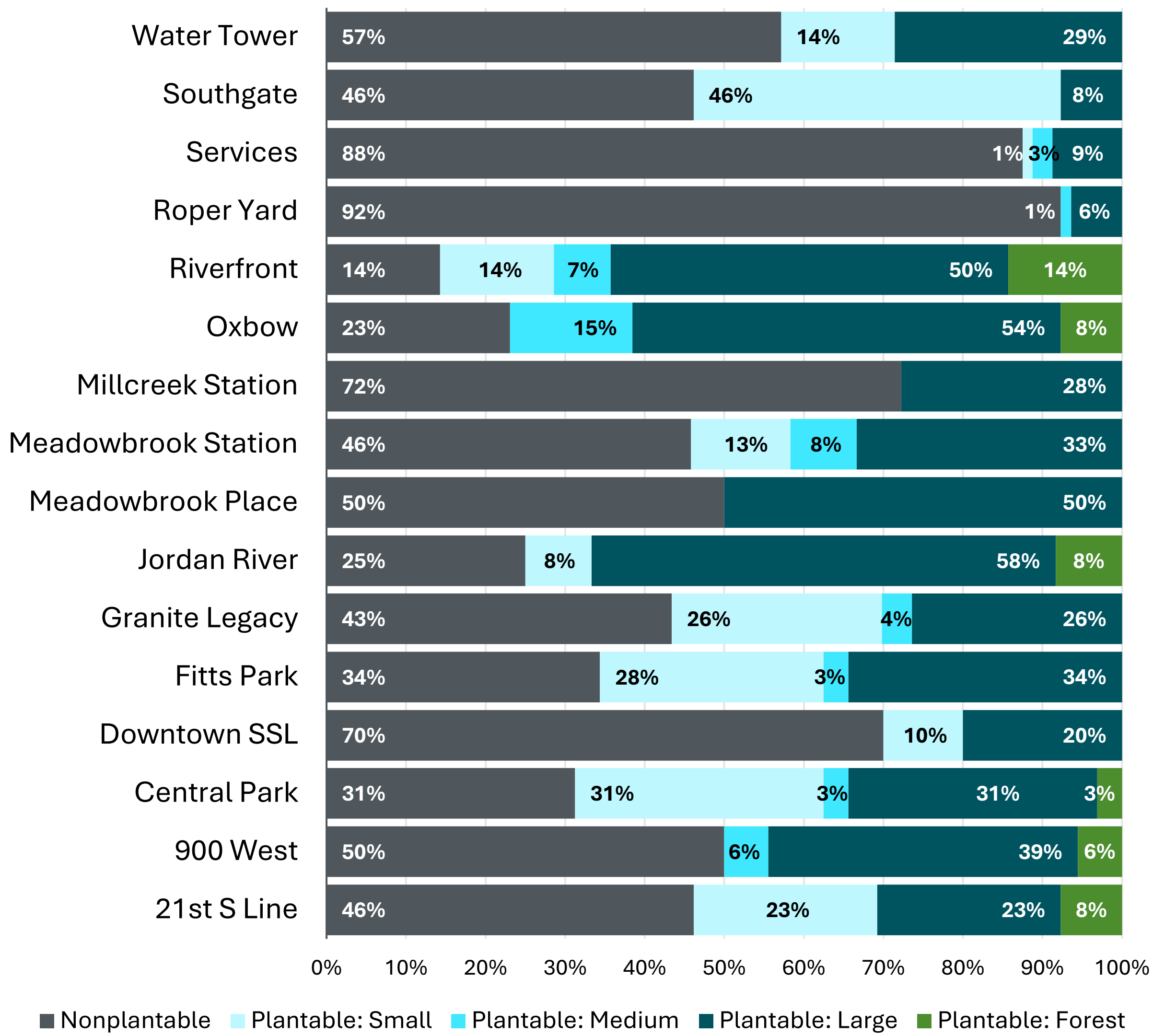
Land Use	Total Tree Canopy Cover Area (mi^2)	Standard Error (%)	Total Parcel Area (mi^2)	Average % Canopy Cover
Other	0.01	0.46	0.14	4.2%
Industrial	0.11	0.46	2.36	4.6%
Commercial	0.08	0.46	1.27	6.3%
School	0.01	0.46	0.15	7.8%
City	0.02	0.46	0.07	20.3%
MultiHome	0.10	0.46	0.48	21.3%
Residential	0.35	0.46	1.39	24.9%

Appendix D – Annual Ecosystem Benefits and Monetary Value of South Salt Lake's Trees, Calculated by i-Tree Canopy

Annual Removal or Runoff Rates	Amount[1]	Standard Error (±)	95% Confidence Interval (±)	Value	Standard Error (±)	95% Confidence Interval (±)
Carbon Monoxide	0.09	0.01	0.01	$114	9.09	17.82
Nitrogen Dioxide	1.45	0.12	0.23	$1,190	95.21	186.61
Ozone	7.97	0.64	1.25	$25,389	2030.59	3,979.96
Sulfur Dioxide	0.76	0.06	0.12	$133	10.67	20.91
Particulate Matter 2.5	0.31	0.02	0.05	$39,244	3138.64	6,151.73
Particulate Matter 10	3.86	0.31	0.61	$24,200	1935.47	3,793.51
Water Runoff	5.93	0.47	0.93	$52,991	4238.12	8,306.71
Carbon Sequestration	330.60	26.44	51.82	$143,201	11453.00	22,447.88
			Annual Total	$286,462		

[1] Units in tons except water runoff in millions of gallons

Appendix E – Percent of Each Tree Size in Potentially Plantable Locations by Neighborhood



Nonplantable

Plantable: Small

Plantable: Medium

Plantable: Large

Plantable: Forest

The source data used for the mapping came from the City of South Salt Lake, the Utah Geological Survey, and the United States Department of Agriculture's National Agriculture Imagery Program.

The project was funded by a grant from SSL to provide.

SOUTH SALT LAKE

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i-Tree
Ecosystem Analysis

SSL 2024 Tree Inventory

Urban Forest Effects and Values
December 2024

Summary

Understanding an urban forest's structure, function and value can promote management decisions that will improve human health and environmental quality. An assessment of the vegetation structure, function, and value of the SSL 2024 Tree Inventory urban forest was conducted during 2024. Data from 3264 trees located throughout SSL 2024 Tree Inventory were analyzed using the i-Tree Eco model developed by the U.S. Forest Service, Northern Research Station.

- Number of trees: 3,264
- Tree Cover: 20.81 acres
- Most common species of trees: Callery pear, Honeylocust, European crabapple
- Percentage of trees less than 6" (15.2 cm) diameter: 49.3%
- Pollution Removal: 821.2 pounds/year ($1.42 thousand/year)
- Carbon Storage: 860.2 tons ($147 thousand)
- Carbon Sequestration: 17.88 tons ($3.05 thousand/year)
- Oxygen Production: 47.68 tons/year
- Avoided Runoff: 155.2 thousand gallon/year ($1.39 thousand/year)
- Building energy savings: N/A – data not collected
- Avoided carbon emissions: N/A – data not collected
- Replacement values: $5.23 million

Ton: short ton (U.S.) (2,000 lbs)
Monetary values $ are reported in US Dollars throughout the report except where noted.
Ecosystem service estimates are reported for trees.
With Complete Inventory Projects, oxygen production is estimated from gross carbon sequestration and does not account for decomposition. Oxygen production in Plot Inventory Projects is estimated from net carbon sequestration.

For an overview of i-Tree Eco methodology, see Appendix I. Data collection quality is determined by the local data collectors, over which i-Tree has no control.

Table of Contents

I. Tree Characteristics of the Urban Forest

The urban forest of SSL 2024 Tree Inventory has 3,264 trees with a tree cover of Callery pear. The three most common species are Callery pear (15.7 percent), Honeylocust (8.3 percent), and European crabapple (7.0 percent).

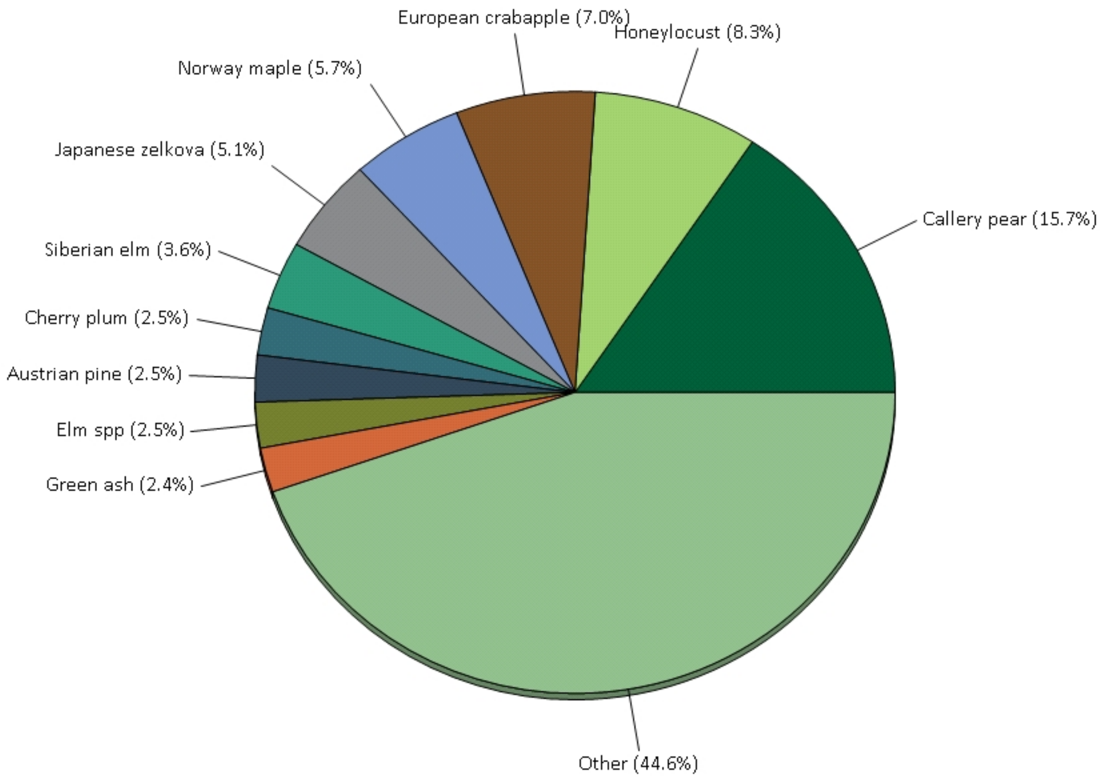


Figure 1. Tree species composition in SSL 2024 Tree Inventory

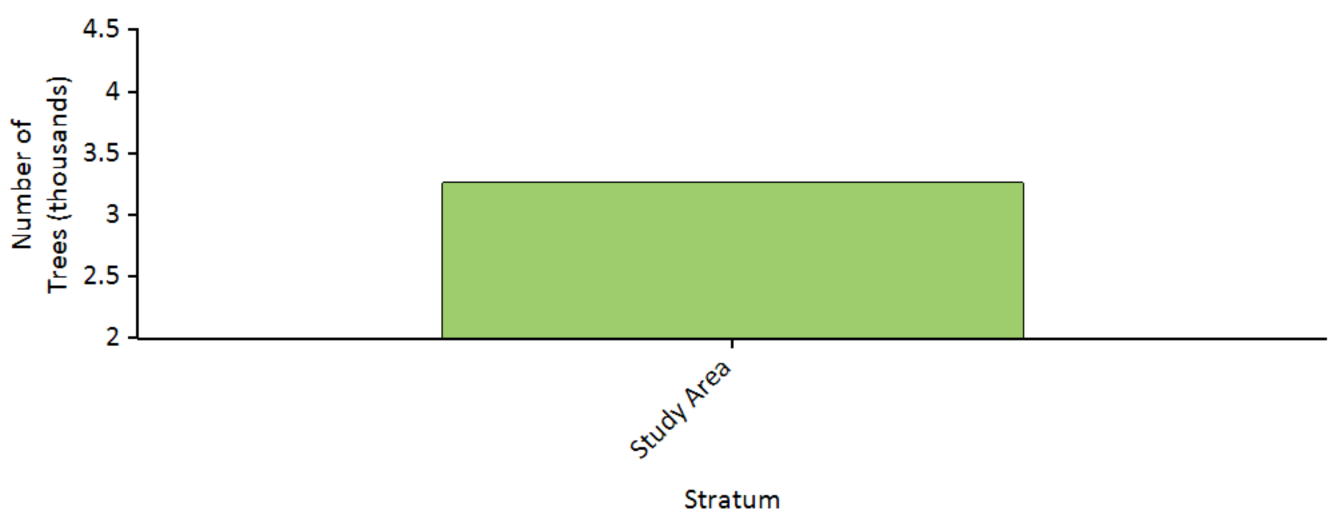


Figure 2. Number of trees in SSL 2024 Tree Inventory by stratum

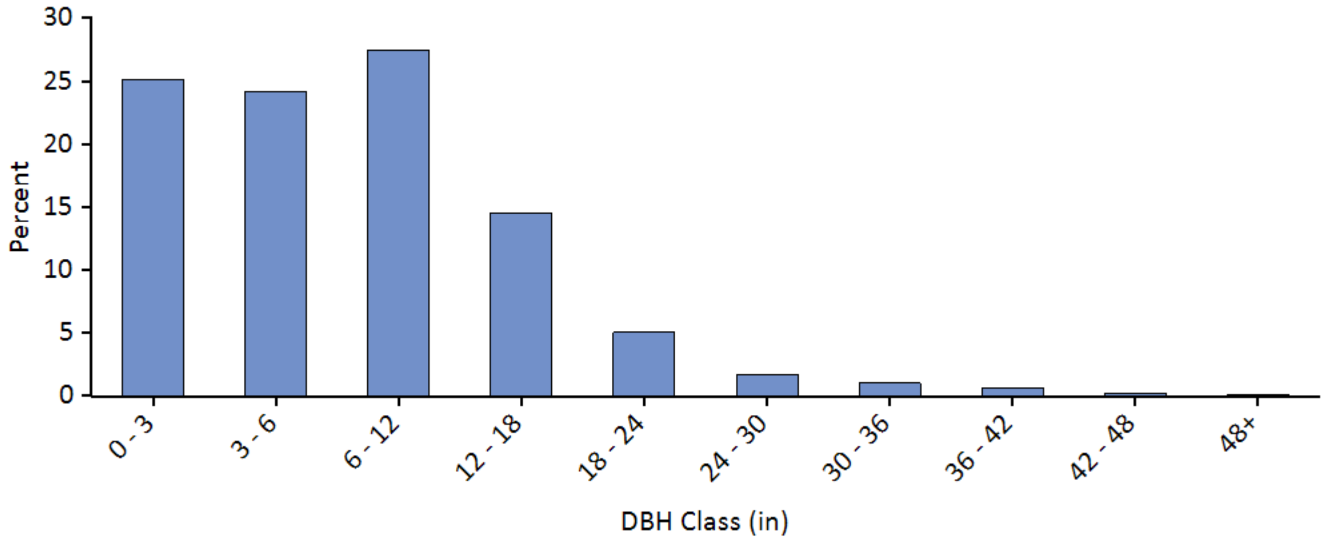


Figure 3. Percent of tree population by diameter class (DBH - stem diameter at 4.5 feet)

Urban forests are composed of a mix of native and exotic tree species. Thus, urban forests often have a tree diversity that is higher than surrounding native landscapes. Increased tree diversity can minimize the overall impact or destruction by a species-specific insect or disease, but it can also pose a risk to native plants if some of the exotic species are invasive plants that can potentially out-compete and displace native species. In SSL 2024 Tree Inventory, about 33 percent of the trees are species native to North America, while 10 percent are native to Utah. Species exotic to North America make up 67 percent of the population. Most exotic tree species have an origin from Asia (35 percent of the species).

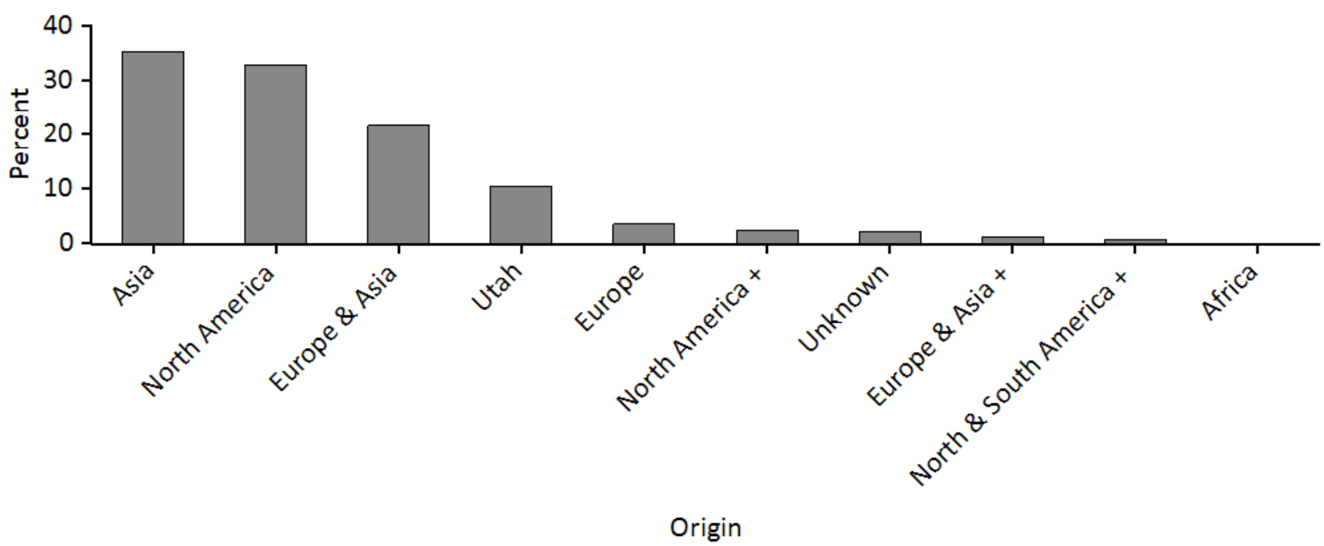


Figure 4. Percent of live tree population by area of native origin, SSL 2024 Tree Inventory

The plus sign (+) indicates the tree species is native to another continent other than the ones listed in the grouping.

Invasive plant species are often characterized by their vigor, ability to adapt, reproductive capacity, and general lack of natural enemies. These abilities enable them to displace native plants and make them a threat to natural areas. One of the 114 tree species in SSL 2024 Tree Inventory are identified as invasive on the state invasive species list (Arizona Wildland Invasive Plant Working Group 2005; Colorado Weed Management Association; Stoddard et al). This invasive species (Siberian elm) comprises 3.6 percent of the tree population though it may only cause a minimal level of impact (see Appendix V for a complete list of invasive species).

II. Urban Forest Cover and Leaf Area

Many tree benefits equate directly to the amount of healthy leaf surface area of the plant. Trees cover about 20.81 acres of SSL 2024 Tree Inventory and provide 88.6 acres of leaf area.

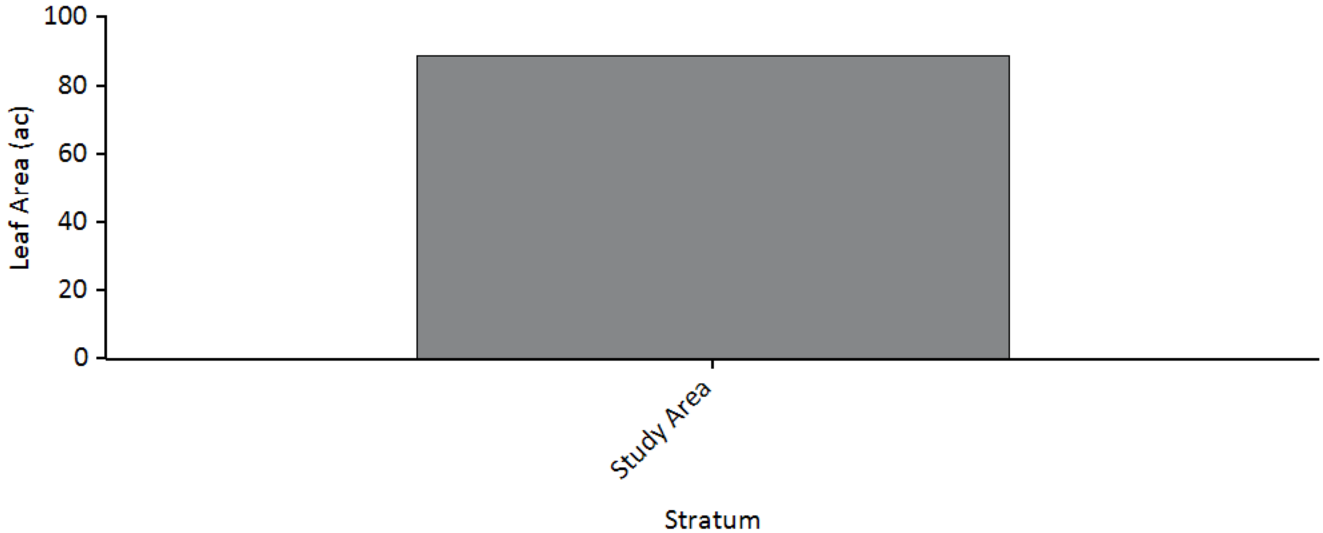


Figure 5. Leaf area by stratum, SSL 2024 Tree Inventory

In SSL 2024 Tree Inventory, the most dominant species in terms of leaf area are Callery pear, Honeylocust, and Green ash. The 10 species with the greatest importance values are listed in Table 1. Importance values (IV) are calculated as the sum of percent population and percent leaf area. High importance values do not mean that these trees should necessarily be encouraged in the future; rather these species currently dominate the urban forest structure.

Table 1. Most important species in SSL 2024 Tree Inventory

Species Name	*Percent Population*	*Percent Leaf Area*	*IV*
Callery pear	15.7	15.5	31.2
Honeylocust	8.3	13.8	22.2
Green ash	2.4	11.0	13.4
Siberian elm	3.6	9.6	13.3
Norway maple	5.7	3.7	9.4
European crabapple	7.0	2.2	9.3
Japanese zelkova	5.1	2.0	7.1
Austrian pine	2.5	4.3	6.8
Littleleaf linden	2.3	2.9	5.2
Goldenrain tree	2.1	2.7	4.9

Common ground cover classes (including cover types beneath trees and shrubs) in SSL 2024 Tree Inventory are not available since they are configured not to be collected.

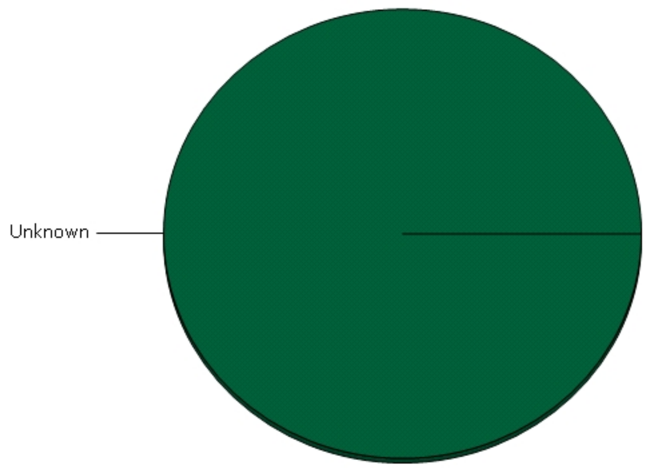


Figure 6. Percent of land by ground cover classes, SSL 2024 Tree Inventory

III. Air Pollution Removal by Urban Trees

Poor air quality is a common problem in many urban areas. It can lead to decreased human health, damage to landscape materials and ecosystem processes, and reduced visibility. The urban forest can help improve air quality by reducing air temperature, directly removing pollutants from the air, and reducing energy consumption in buildings, which consequently reduces air pollutant emissions from the power sources. Trees also emit volatile organic compounds that can contribute to ozone formation. However, integrative studies have revealed that an increase in tree cover leads to reduced ozone formation (Nowak and Dwyer 2000).

Pollution removal[1] by trees in SSL 2024 Tree Inventory was estimated using field data and recent available pollution and weather data available. Pollution removal was greatest for ozone (Figure 7). It is estimated that trees remove 821.2 pounds of air pollution (ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO2), particulate matter less than 2.5 microns (PM2.5), particulate matter less than 10 microns and greater than 2.5 microns (PM10*)[2], and sulfur dioxide (SO2)) per year with an associated value of $1.42 thousand (see Appendix I for more details).

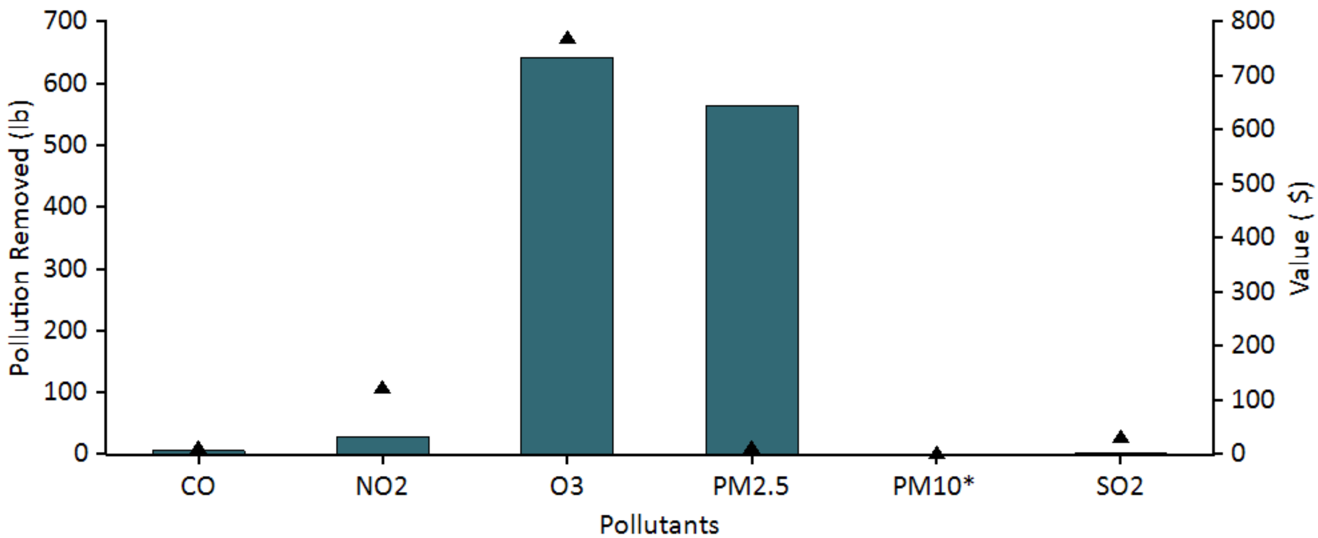


Figure 7. Annual pollution removal (points) and value (bars) by urban trees, SSL 2024 Tree Inventory

[1] PM10* is particulate matter less than 10 microns and greater than 2.5 microns. PM2.5 is particulate matter less than 2.5 microns. If PM2.5 is not monitored, PM10* represents particulate matter less than 10 microns. PM2.5 is generally more relevant in discussions concerning air pollution effects on human health.

[2] Trees remove PM2.5 and PM10* when particulate matter is deposited on leaf surfaces. This deposited PM2.5 and PM10* can be resuspended to the atmosphere or removed during rain events and dissolved or transferred to the soil. This combination of events can lead to positive or negative pollution removal and value depending on various atmospheric factors (see Appendix I for more details).

In 2024, trees in SSL 2024 Tree Inventory emitted an estimated 379 pounds of volatile organic compounds (VOCs) (151.6 pounds of isoprene and 227.3 pounds of monoterpenes). Emissions vary among species based on species characteristics (e.g. some genera such as oaks are high isoprene emitters) and amount of leaf biomass. Twenty- three percent of the urban forest's VOC emissions were from Blue spruce and White willow. These VOCs are precursor chemicals to ozone formation.[3]

General recommendations for improving air quality with trees are given in Appendix VIII.

[3] Some economic studies have estimated VOC emission costs. These costs are not included here as there is a tendency to add positive dollar estimates of ozone removal effects with negative dollar values of VOC emission effects to determine whether tree effects are positive or negative in relation to ozone. This combining of dollar values to determine tree effects should not be done, rather estimates of VOC effects on ozone formation (e.g., via photochemical models) should be conducted and directly contrasted with ozone removal by trees (i.e., ozone effects should be directly compared, not dollar estimates). In addition, air temperature reductions by trees have been shown to significantly reduce ozone concentrations (Cardelino and Chameides 1990; Nowak et al 2000), but are not considered in this analysis. Photochemical modeling that integrates tree effects on air temperature, pollution removal, VOC emissions, and emissions from power plants can be used to determine the overall effect of trees on ozone concentrations.

IV. Carbon Storage and Sequestration

Climate change is an issue of global concern. Urban trees can help mitigate climate change by sequestering atmospheric carbon (from carbon dioxide) in tissue and by altering energy use in buildings, and consequently altering carbon dioxide emissions from fossil-fuel based power sources (Abdollahi et al 2000).

Trees reduce the amount of carbon in the atmosphere by sequestering carbon in new growth every year. The amount of carbon annually sequestered is increased with the size and health of the trees. The gross sequestration of SSL 2024 Tree Inventory trees is about 17.88 tons of carbon per year with an associated value of $3.05 thousand. See Appendix I for more details on methods.

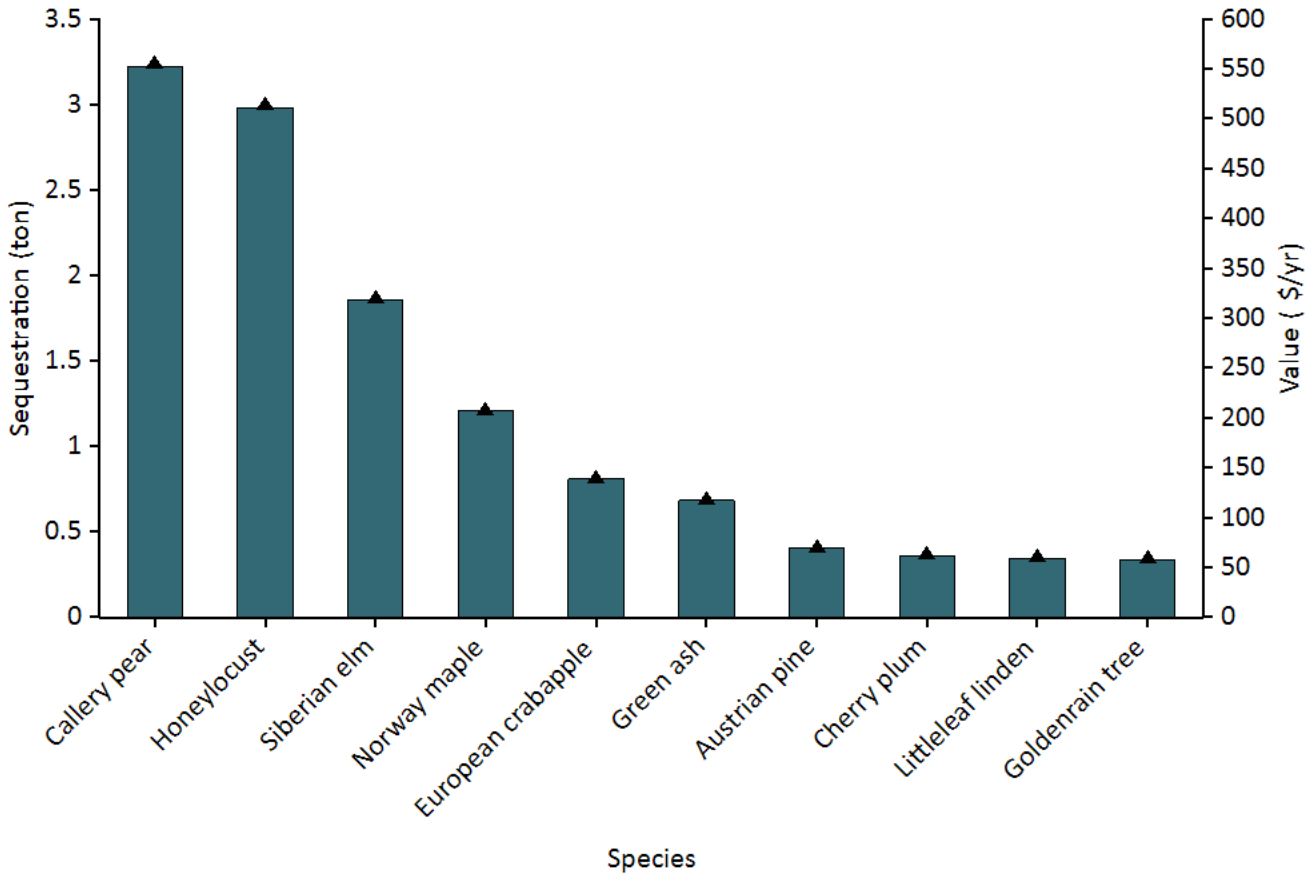


Figure 8. Estimated annual gross carbon sequestration (points) and value (bars) for urban tree species with the greatest sequestration, SSL 2024 Tree Inventory

Carbon storage is another way trees can influence global climate change. As a tree grows, it stores more carbon by holding it in its accumulated tissue. As a tree dies and decays, it releases much of the stored carbon back into the atmosphere. Thus, carbon storage is an indication of the amount of carbon that can be released if trees are allowed to die and decompose. Maintaining healthy trees will keep the carbon stored in trees, but tree maintenance can contribute to carbon emissions (Nowak et al 2002c). When a tree dies, using the wood in long-term wood products, to heat buildings, or to produce energy will help reduce carbon emissions from wood decomposition or from fossil-fuel or wood-based power plants.

Trees in SSL 2024 Tree Inventory are estimated to store 860 tons of carbon ($147 thousand). Of the species sampled, Siberian elm stores the most carbon (approximately 17.2% of the total carbon stored) and Callery pear sequesters the most (approximately 18.1% of all sequestered carbon.)

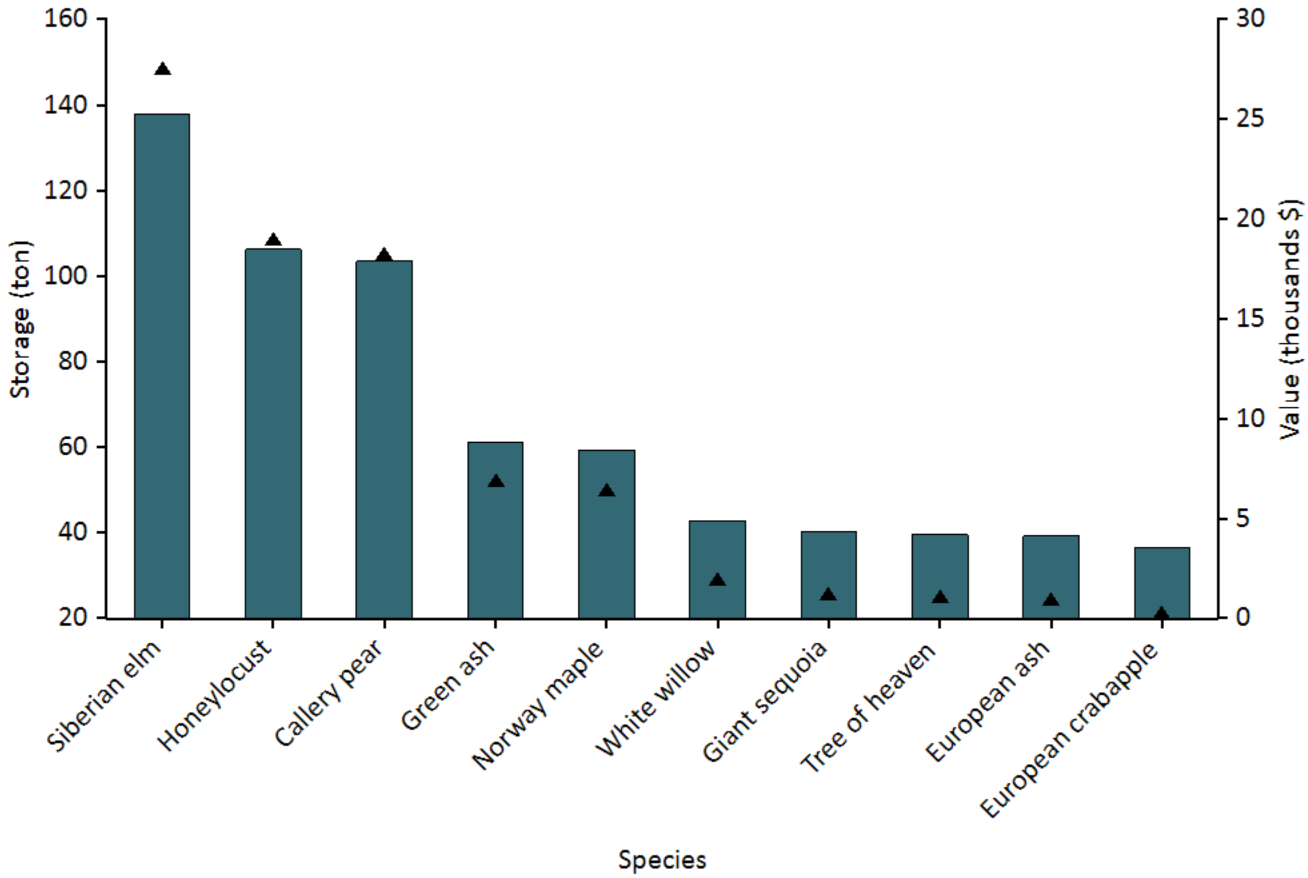


Figure 9. Estimated carbon storage (points) and values (bars) for urban tree species with the greatest storage, SSL 2024 Tree Inventory

V. Oxygen Production

Oxygen production is one of the most commonly cited benefits of urban trees. The annual oxygen production of a tree is directly related to the amount of carbon sequestered by the tree, which is tied to the accumulation of tree biomass.

Trees in SSL 2024 Tree Inventory are estimated to produce 47.68 tons of oxygen per year.[4] However, this tree benefit is relatively insignificant because of the large and relatively stable amount of oxygen in the atmosphere and extensive production by aquatic systems. Our atmosphere has an enormous reserve of oxygen. If all fossil fuel reserves, all trees, and all organic matter in soils were burned, atmospheric oxygen would only drop a few percent (Broecker 1970).

Table 2. The top 20 oxygen production species.

Species	*Oxygen (ton)*	*Gross Carbon Sequestration (pound/yr)*	*Number of Trees*	*Leaf Area (acre)*
Callery pear	8.63	6,468.87	511	13.77
Honeylocust	7.99	5,991.87	272	12.25
Siberian elm	4.97	3,726.97	119	8.52
Norway maple	3.23	2,422.55	186	3.29
European crabapple	2.17	1,627.94	230	1.96
Green ash	1.83	1,372.50	78	9.73
Austrian pine	1.09	817.50	82	3.80
Cherry plum	0.97	727.90	83	1.42
Littleleaf linden	0.93	695.12	74	2.57
Goldenrain tree	0.91	681.28	70	2.41
White mulberry	0.84	631.11	23	1.44
European ash	0.83	621.60	13	1.58
White willow	0.72	537.66	20	1.51
American elm	0.66	493.41	48	1.11
London planetree	0.61	456.82	72	2.28
Tree of heaven	0.59	442.92	22	0.95
Japanese zelkova	0.56	422.48	166	1.80
Boxelder	0.55	415.77	35	0.99
Common chokecherry	0.53	396.82	53	0.31
Blue spruce	0.51	379.35	47	1.85

VI. Avoided Runoff

Surface runoff can be a cause for concern in many urban areas as it can contribute pollution to streams, wetlands, rivers, lakes, and oceans. During precipitation events, some portion of the precipitation is intercepted by vegetation (trees and shrubs) while the other portion reaches the ground. The portion of the precipitation that reaches the ground and does not infiltrate into the soil becomes surface runoff (Hirabayashi 2012). In urban areas, the large extent of impervious surfaces increases the amount of surface runoff.

Urban trees and shrubs, however, are beneficial in reducing surface runoff. Trees and shrubs intercept precipitation, while their root systems promote infiltration and storage in the soil. The trees and shrubs of SSL 2024 Tree Inventory help to reduce runoff by an estimated 155 thousand gallons a year with an associated value of $1.4 thousand (see Appendix I for more details). Avoided runoff is estimated based on local weather from the user-designated weather station. In SSL 2024 Tree Inventory, the total annual precipitation in 2021 was 15.4 inches.

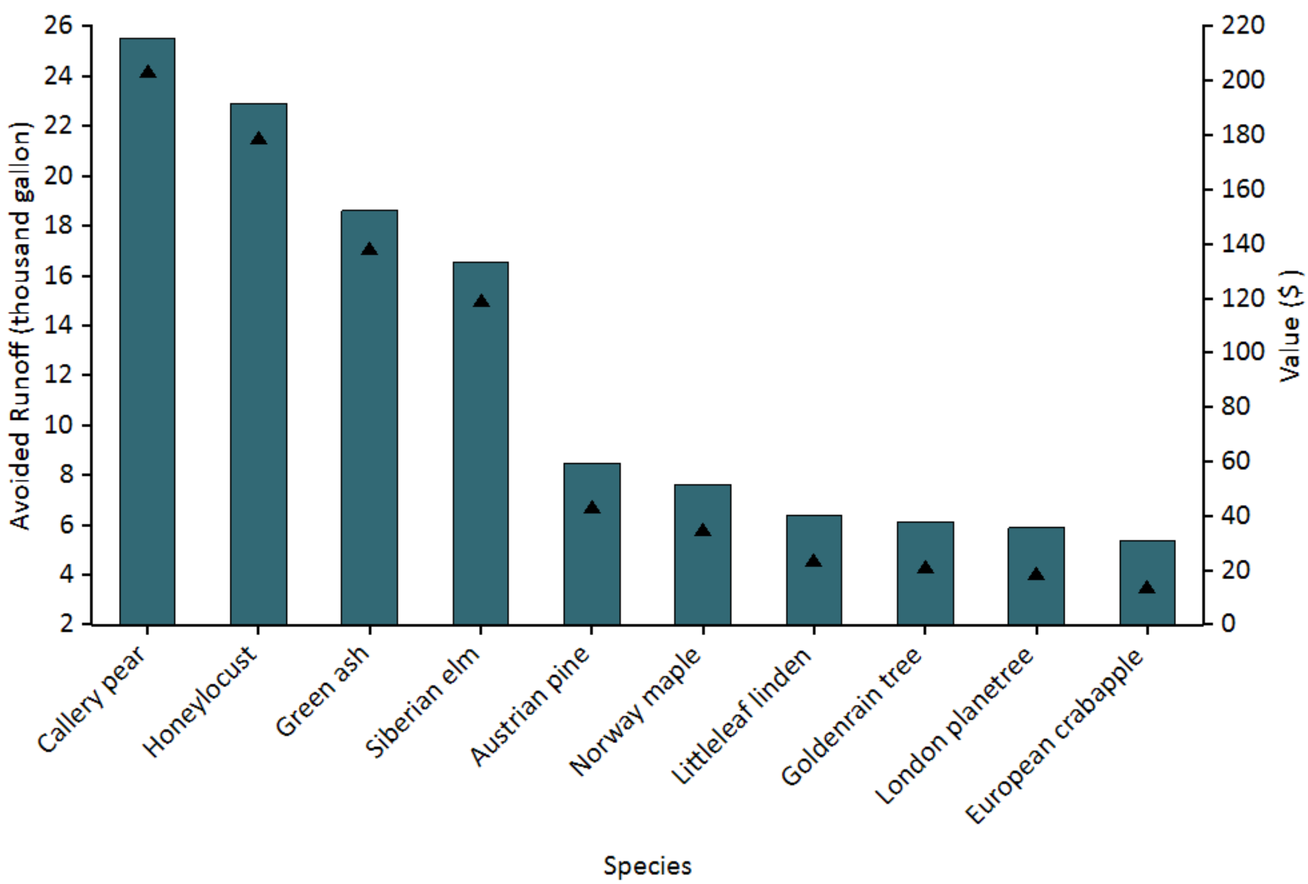


Figure 10. Avoided runoff (points) and value (bars) for species with greatest overall impact on runoff, SSL 2024 Tree Inventory

VII. Trees and Building Energy Use

Trees affect energy consumption by shading buildings, providing evaporative cooling, and blocking winter winds. Trees tend to reduce building energy consumption in the summer months and can either increase or decrease building energy use in the winter months, depending on the location of trees around the building. Estimates of tree effects on energy use are based on field measurements of tree distance and direction to space conditioned residential buildings (McPherson and Simpson 1999).

Because energy-related data were not collected, energy savings and carbon avoided cannot be calculated.

Table 3. Annual energy savings due to trees near residential buildings, SSL 2024 Tree Inventory

	Heating	*Cooling*	*Total*
MBTU[a]	0	N/A	0
MWH[b]	0	0	0
Carbon Avoided (pounds)	0	0	0

[a]MBTU - one million British Thermal Units

[b]MWH - megawatt-hour

Table 4. Annual savings [a]($) in residential energy expenditure during heating and cooling seasons, SSL 2024 Tree Inventory

	Heating	*Cooling*	*Total*
MBTU[b]	0	N/A	0
MWH[c]	0	0	0
Carbon Avoided	0	0	0

[b]Based on the prices of $103.5 per MWH and $9.37580002624597 per MBTU (see Appendix I for more details)

[c]MBTU - one million British Thermal Units

[c]MWH - megawatt-hour

[5] Trees modify climate, produce shade, and reduce wind speeds. Increased energy use or costs are likely due to these tree-building interactions creating a cooling effect during the winter season. For example, a tree (particularly evergreen species) located on the southern side of a residential building may produce a shading effect that causes increases in heating requirements.

VIII. Replacement and Functional Values

Urban forests have a replacement value based on the trees themselves (e.g., the cost of having to replace a tree with a similar tree); they also have functional values (either positive or negative) based on the functions the trees perform.

The replacement value of an urban forest tends to increase with a rise in the number and size of healthy trees (Nowak et al 2002a). Annual functional values also tend to increase with increased number and size of healthy trees. Through proper management, urban forest values can be increased; however, the values and benefits also can decrease as the amount of healthy tree cover declines.

Urban trees in SSL 2024 Tree Inventory have the following replacement values:

- Replacement value: $5.23 million
- Carbon storage: $147 thousand

Urban trees in SSL 2024 Tree Inventory have the following annual functional values:

- Carbon sequestration: $3.05 thousand
- Avoided runoff: $1.39 thousand
- Pollution removal: $1.42 thousand
- Energy costs and carbon emission values: $0

(Note: negative value indicates increased energy cost and carbon emission value)

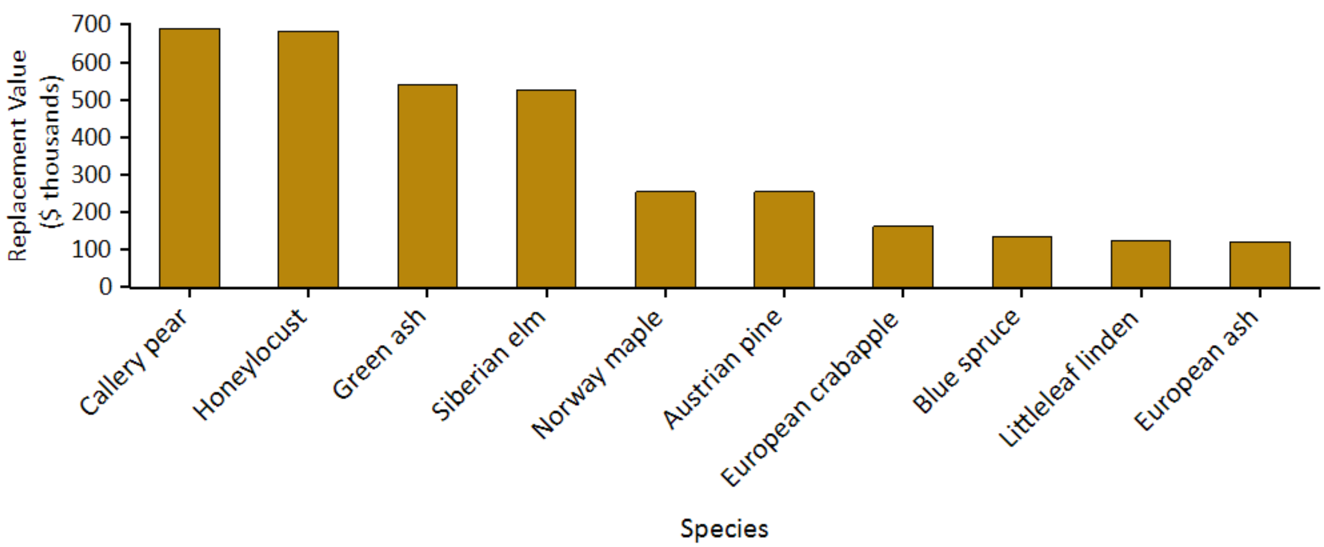


Figure 11. Tree species with the greatest replacement value, SSL 2024 Tree Inventory

IX. Potential Pest Impacts

Various insects and diseases can infest urban forests, potentially killing trees and reducing the health, replacement value and sustainability of the urban forest. As pests tend to have differing tree hosts, the potential damage or risk of each pest will differ among cities.Fifty-three pests were analyzed for their potential impact and compared with pest range maps (Forest Health Technology Enterprise Team 2014) for the conterminous United States to determine their proximity to Salt Lake County. Fourteen of the fifty-three pests analyzed are located within the county. For a complete analysis of all pests, see Appendix VII.

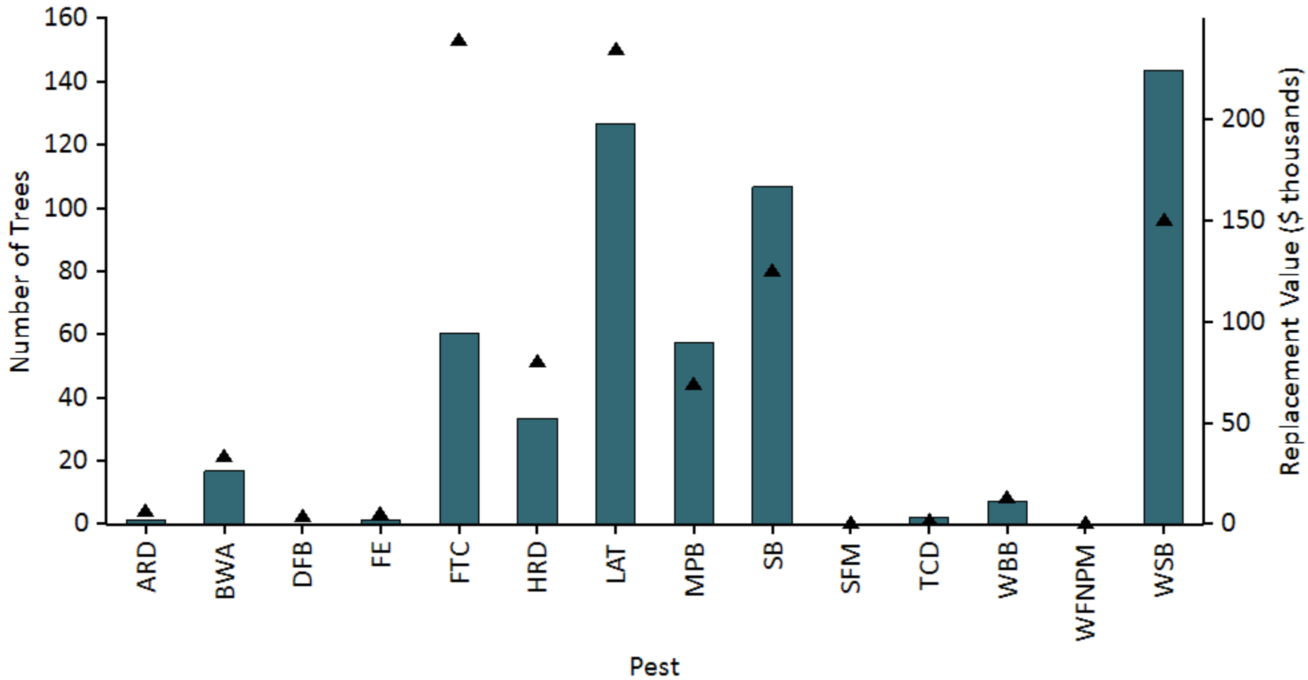


Figure 12. Number of trees at risk (points) and associated compensatory value (bars) for most threatening pests located in the county, SSL 2024 Tree Inventory

Armillaria Root Disease (ARD) poses a threat to 0.1 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $1.93 thousand in replacement value.

Balsam woolly adelgid (BWA) (Ragenovich and Mitchell 2006) is an insect that has caused significant damage to the true firs of North America. SSL 2024 Tree Inventory could possibly lose 0.6 percent of its trees to this pest ($26.3 thousand in replacement value).

Douglas-fir beetle (DFB) (Schmitz and Gibson 1996) is a bark beetle that infests Douglas-fir trees throughout the western United States, British Columbia, and Mexico. Potential loss of trees from DFB is 0.1 percent ($200 in replacement value).

One common pest of white fir, grand fir, and red fir trees is the fir engraver (FE) (Ferrell 1986). FE poses a threat to 0.1 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $1.89 thousand in replacement value.

Forest Tent Caterpillar (FTC) poses a threat to 4.7 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $94.1 thousand in replacement value.

Heterobasidion Root Disease (HRD) poses a threat to 1.6 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $52.3 thousand in replacement value.

Quaking aspen is a principal host for the defoliator, large aspen tortrix (LAT) (Ciesla and Kruse 2009). LAT poses a threat to 4.6 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $198 thousand in replacement value.

Mountain pine beetle (MPB) (Gibson et al 2009) is a bark beetle that primarily attacks pine species in the western United States. MPB has the potential to affect 1.3 percent of the population ($89.8 thousand in replacement value).

Spruce beetle (SB) (Holsten et al 1999) is a bark beetle that causes significant mortality to spruce species within its range. Potential loss of trees from SB is 2.5 percent ($167 thousand in replacement value).

Subalpine Fir Mortality (SFM) poses a threat to 0.0 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $0 in replacement value.

Thousand canker disease (TCD) (Cranshaw and Tisserat 2009; Seybold et al 2010) is an insect-disease complex that kills several species of walnuts, including black walnut. Potential loss of trees from TCD is 0.0 percent ($3.05 thousand in replacement value).

Western Bark Beetle (WBB) poses a threat to 0.2 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $11.2 thousand in replacement value.

Western Five-Needle Pine Mortality (WFNPM) poses a threat to 0.0 percent of the SSL 2024 Tree Inventory urban forest, which represents a potential loss of $0 in replacement value.

Western spruce budworm (WSB) (Fellin and Dewey 1986) is an insect that causes defoliation in western conifers. This pest threatens 2.9 percent of the population, which represents a potential loss of $224 thousand in replacement value.

Appendix I. i-Tree Eco Model and Field Measurements

i-Tree Eco is designed to use standardized field data and local hourly air pollution and meteorological data to quantify urban forest structure and its numerous effects (Nowak and Crane 2000), including:

- Urban forest structure (e.g., species composition, tree health, leaf area, etc.).
- Amount of pollution removed hourly by the urban forest, and its associated percent air quality improvement throughout a year.
- Total carbon stored and net carbon annually sequestered by the urban forest.
- Effects of trees on building energy use and consequent effects on carbon dioxide emissions from power sources.
- Replacement value of the forest, as well as the value for air pollution removal and carbon storage and sequestration.
- Potential impact of infestations by pests, such as Asian longhorned beetle, emerald ash borer, spongy moth, and Dutch elm disease.

Typically, all field data are collected during the leaf-on season to properly assess tree canopies. Typical data collection (actual data collection may vary depending upon the user) includes land use, ground and tree cover, individual tree attributes of species, stem diameter, height, crown width, crown canopy missing and dieback, and distance and direction to residential buildings (Nowak et al 2005; Nowak et al 2008).

During data collection, trees are identified to the most specific taxonomic classification possible. Trees that are not classified to the species level may be classified by genus (e.g., ash) or species groups (e.g., hardwood). In this report, tree species, genera, or species groups are collectively referred to as tree species.

<u>Tree Characteristics:</u>

Leaf area of trees was assessed using measurements of crown dimensions and percentage of crown canopy missing. In the event that these data variables were not collected, they are estimated by the model.

An analysis of invasive species is not available for studies outside of the United States. For the U.S., invasive species are identified using an invasive species list (Arizona Wildland Invasive Plant Working Group 2005; Colorado Weed Management Association; Stoddard et al)for the state in which the urban forest is located. These lists are not exhaustive and they cover invasive species of varying degrees of invasiveness and distribution. In instances where a state did not have an invasive species list, a list was created based on the lists of the adjacent states. Tree species that are identified as invasive by the state invasive species list are cross-referenced with native range data. This helps eliminate species that are on the state invasive species list, but are native to the study area.

<u>Air Pollution Removal:</u>

Pollution removal is calculated for ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, particulate matter less than 2.5 microns, and particulate matter less than 10 microns and greater than 2.5 microns. PM2.5 is generally more relevant in discussions concerning air pollution effects on human health.

Air pollution removal estimates are derived from calculated hourly tree-canopy resistances for ozone, and sulfur and nitrogen dioxides based on a hybrid of big-leaf and multi-layer canopy deposition models (Baldocchi 1988; Baldocchi et al 1987). As the removal of carbon monoxide and particulate matter by vegetation is not directly related to transpiration, removal rates (deposition velocities) for these pollutants were based on average measured values from the literature (Bidwell and Fraser 1972; Lovett 1994) that were adjusted depending on leaf phenology and leaf area. Particulate removal incorporated a 50 percent resuspension rate of particles back to the atmosphere (Zinke 1967). Recent updates (2011) to air quality modeling are based on improved leaf area index simulations, weather and pollution processing and interpolation, and updated pollutant monetary values (Hirabayashi et al 2011; Hirabayashi et al 2012;

Hirabayashi 2011).

Trees remove PM2.5 and PM10* when particulate matter is deposited on leaf surfaces (Nowak et al 2013). This deposited PM2.5 and PM10* can be resuspended to the atmosphere or removed during rain events and dissolved or transferred to the soil. This combination of events can lead to positive or negative pollution removal and value depending on various atmospheric factors. Generally, PM2.5 and PM10* removal is positive with positive benefits. However, there are some cases when net removal is negative or resuspended particles lead to increased pollution concentrations and negative values. During some months (e.g., with no rain), trees resuspend more particles than they remove. Resuspension can also lead to increased overall PM2.5 and PM10* concentrations if the boundary layer conditions are lower during net resuspension periods than during net removal periods. Since the pollution removal value is based on the change in pollution concentration, it is possible to have situations when trees remove PM2.5 and PM10* but increase concentrations and thus have negative values during periods of positive overall removal. These events are not common, but can happen.

For reports in the United States, default air pollution removal value is calculated based on local incidence of adverse health effects and national median externality costs. The number of adverse health effects and associated economic value is calculated for ozone, sulfur dioxide, nitrogen dioxide, and particulate matter less than 2.5 microns using data from the U.S. Environmental Protection Agency's Environmental Benefits Mapping and Analysis Program (BenMAP) (Nowak et al 2014). The model uses a damage-function approach that is based on the local change in pollution concentration and population. National median externality costs were used to calculate the value of carbon monoxide removal (Murray et al 1994).

For international reports, user-defined local pollution values are used. For international reports that do not have local values, estimates are based on either European median externality values (van Essen et al 2011) or BenMAP regression equations (Nowak et al 2014) that incorporate user-defined population estimates. Values are then converted to local currency with user-defined exchange rates.

For this analysis, pollution removal value is calculated based on the prices of $1,488 per ton (carbon monoxide), $2,189 per ton (ozone), $611 per ton (nitrogen dioxide), $95 per ton (sulfur dioxide), $134,389 per ton (particulate matter less than 2.5 microns), $0 per ton (particulate matter less than 10 microns and greater than 2.5 microns).

<u>Carbon Storage and Sequestration:</u>

Carbon storage is the amount of carbon bound up in the above-ground and below-ground parts of woody vegetation. To calculate current carbon storage, biomass for each tree was calculated using equations from the literature and measured tree data. Open-grown, maintained trees tend to have less biomass than predicted by forest-derived biomass equations (Nowak 1994). To adjust for this difference, biomass results for open-grown urban trees were multiplied by 0.8. No adjustment was made for trees found in natural stand conditions. Tree dry-weight biomass was converted to stored carbon by multiplying by 0.5.

Carbon sequestration is the removal of carbon dioxide from the air by plants. To estimate the gross amount of carbon sequestered annually, average diameter growth from the appropriate genera and diameter class and tree condition was added to the existing tree diameter (year x) to estimate tree diameter and carbon storage in year x+1.

Carbon storage and carbon sequestration values are based on estimated or customized local carbon values. For international reports that do not have local values, estimates are based on the carbon value for the United States (U.S. Environmental Protection Agency 2015, Interagency Working Group on Social Cost of Carbon 2015) and converted to local currency with user-defined exchange rates.

For this analysis, carbon storage and carbon sequestration values are calculated based on $171 per ton.

<u>Oxygen Production:</u>

The amount of oxygen produced is estimated from carbon sequestration based on atomic weights: net O2 release (kg/yr) = net C sequestration (kg/yr) × 32/12. To estimate the net carbon sequestration rate, the amount of carbon sequestered as a result of tree growth is reduced by the amount lost resulting from tree mortality. Thus, net carbon sequestration and net annual oxygen production of the urban forest account for decomposition (Nowak et al 2007). For complete inventory projects, oxygen production is estimated from gross carbon sequestration and does not account for decomposition.

Avoided Runoff:

Annual avoided surface runoff is calculated based on rainfall interception by vegetation, specifically the difference between annual runoff with and without vegetation. Although tree leaves, branches, and bark may intercept precipitation and thus mitigate surface runoff, only the precipitation intercepted by leaves is accounted for in this analysis.

The value of avoided runoff is based on estimated or user-defined local values. For international reports that do not have local values, the national average value for the United States is utilized and converted to local currency with user-defined exchange rates. The U.S. value of avoided runoff is based on the U.S. Forest Service's Community Tree Guide Series (McPherson et al 1999; 2000; 2001; 2002; 2003; 2004; 2006a; 2006b; 2006c; 2007; 2010; Peper et al 2009; 2010; Vargas et al 2007a; 2007b; 2008).

For this analysis, avoided runoff value is calculated based on the price of $0.01 per gallon.

Building Energy Use:

If appropriate field data were collected, seasonal effects of trees on residential building energy use were calculated based on procedures described in the literature (McPherson and Simpson 1999) using distance and direction of trees from residential structures, tree height and tree condition data. To calculate the monetary value of energy savings, local or custom prices per MWH or MBTU are utilized.

For this analysis, energy saving value is calculated based on the prices of $103.50 per MWH and $9.38 per MBTU.

Replacement Values:

Replacement value is the value of a tree based on the physical resource itself (e.g., the cost of having to replace a tree with a similar tree). Replacement values were based on valuation procedures of the Council of Tree and Landscape Appraisers, which uses tree species, diameter, condition, and location information (Nowak et al 2002a; 2002b). Replacement value may not be included for international projects if there is insufficient local data to complete the valuation procedures.

Potential Pest Impacts:

The complete potential pest risk analysis is not available for studies outside of the United States. The number of trees at risk to the pests analyzed is reported, though the list of pests is based on known insects and disease in the United States.

For the U.S., potential pest risk is based on pest range maps and the known pest host species that are likely to experience mortality. Pest range maps for 2012 from the Forest Health Technology Enterprise Team (FHTET) (Forest Health Technology Enterprise Team 2014) were used to determine the proximity of each pest to the county in which the urban forest is located. For the county, it was established whether the insect/disease occurs within the county, is within 250 miles of the county edge, is between 250 and 750 miles away, or is greater than 750 miles away. FHTET did not have pest range maps for Dutch elm disease and chestnut blight. The range of these pests was based on known occurrence and the host range, respectively (Eastern Forest Environmental Threat Assessment Center; Worrall 2007).

Relative Tree Effects:

The relative value of tree benefits reported in Appendix II is calculated to show what carbon storage and sequestration, and air pollutant removal equate to in amounts of municipal carbon emissions, passenger automobile emissions, and house emissions.

Municipal carbon emissions are based on 2010 U.S. per capita carbon emissions (Carbon Dioxide Information Analysis Center 2010). Per capita emissions were multiplied by city population to estimate total city carbon emissions.

Light duty vehicle emission rates (g/mi) for CO, NOx, VOCs, PM10, SO2 for 2010 (Bureau of Transportation Statistics 2010; Heirigs et al 2004), PM2.5 for 2011-2015 (California Air Resources Board 2013), and CO2 for 2011 (U.S. Environmental Protection Agency 2010) were multiplied by average miles driven per vehicle in 2011 (Federal Highway Administration 2013) to determine average emissions per vehicle.

Household emissions are based on average electricity kWh usage, natural gas Btu usage, fuel oil Btu usage, kerosene Btu usage, LPG Btu usage, and wood Btu usage per household in 2009 (Energy Information Administration 2013; Energy Information Administration 2014)

- CO2, SO2, and NOx power plant emission per KWh are from Leonardo Academy 2011. CO emission per kWh assumes 1/3 of one percent of C emissions is CO based on Energy Information Administration 1994. PM10 emission per kWh from Layton 2004.
- CO2, NOx, SO2, and CO emission per Btu for natural gas, propane and butane (average used to represent LPG), Fuel #4 and #6 (average used to represent fuel oil and kerosene) from Leonardo Academy 2011.
- CO2 emissions per Btu of wood from Energy Information Administration 2014.
- CO, NOx and SOx emission per Btu based on total emissions and wood burning (tons) from (British Columbia Ministry 2005; Georgia Forestry Commission 2009).

Appendix II. Relative Tree Effects

The urban forest in SSL 2024 Tree Inventory provides benefits that include carbon storage and sequestration, and air pollutant removal. To estimate the relative value of these benefits, tree benefits were compared to estimates of average municipal carbon emissions, average passenger automobile emissions, and average household emissions. See Appendix I for methodology.

Carbon storage is equivalent to:

- Amount of carbon emitted in SSL 2024 Tree Inventory in 3 days
- Annual carbon (C) emissions from 609 automobiles
- Annual C emissions from 249 single-family houses

Carbon monoxide removal is equivalent to:

- Annual carbon monoxide emissions from 0 automobiles
- Annual carbon monoxide emissions from 0 single-family houses

Nitrogen dioxide removal is equivalent to:

- Annual nitrogen dioxide emissions from 8 automobiles
- Annual nitrogen dioxide emissions from 3 single-family houses

Sulfur dioxide removal is equivalent to:

- Annual sulfur dioxide emissions from 141 automobiles
- Annual sulfur dioxide emissions from 0 single-family houses

Annual carbon sequestration is equivalent to:

- Amount of carbon emitted in SSL 2024 Tree Inventory in 0.1 days
- Annual C emissions from 0 automobiles
- Annual C emissions from 0 single-family houses

Appendix III. Comparison of Urban Forests

A common question asked is, "How does this city compare to other cities?" Although comparison among cities should be made with caution as there are many attributes of a city that affect urban forest structure and functions, summary data are provided from other cities analyzed using the i-Tree Eco model.

I. City totals for trees

City	*% Tree Cover*	*Number of Trees*	*Carbon Storage (tons)*	*Carbon Sequestration (tons/yr)*	*Pollution Removal (tons/yr)*
Toronto, ON, Canada	26.6	10,220,000	1,221,000	51,500	2,099
Atlanta, GA	36.7	9,415,000	1,344,000	46,400	1,663
Los Angeles, CA	11.1	5,993,000	1,269,000	77,000	1,975
New York, NY	20.9	5,212,000	1,350,000	42,300	1,676
London, ON, Canada	24.7	4,376,000	396,000	13,700	408
Chicago, IL	17.2	3,585,000	716,000	25,200	888
Phoenix, AZ	9.0	3,166,000	315,000	32,800	563
Baltimore, MD	21.0	2,479,000	570,000	18,400	430
Philadelphia, PA	15.7	2,113,000	530,000	16,100	575
Washington, DC	28.6	1,928,000	525,000	16,200	418
Oakville, ON , Canada	29.1	1,908,000	147,000	6,600	190
Albuquerque, NM	14.3	1,846,000	332,000	10,600	248
Boston, MA	22.3	1,183,000	319,000	10,500	283
Syracuse, NY	26.9	1,088,000	183,000	5,900	109
Woodbridge, NJ	29.5	986,000	160,000	5,600	210
Minneapolis, MN	26.4	979,000	250,000	8,900	305
San Francisco, CA	11.9	668,000	194,000	5,100	141
Morgantown, WV	35.5	658,000	93,000	2,900	72
Moorestown, NJ	28.0	583,000	117,000	3,800	118
Hartford, CT	25.9	568,000	143,000	4,300	58
Jersey City, NJ	11.5	136,000	21,000	890	41
Casper, WY	8.9	123,000	37,000	1,200	37
Freehold, NJ	34.4	48,000	20,000	540	22

II. Totals per acre of land area

City	*Number of Trees/ac*	*Carbon Storage (tons/ac)*	*Carbon Sequestration (tons/ac/yr)*	*Pollution Removal (lb/ac/yr)*
Toronto, ON, Canada	64.9	7.8	0.33	26.7
Atlanta, GA	111.6	15.9	0.55	39.4
Los Angeles, CA	19.6	4.2	0.16	13.1
New York, NY	26.4	6.8	0.21	17.0
London, ON, Canada	75.1	6.8	0.24	14.0
Chicago, IL	24.2	4.8	0.17	12.0
Phoenix, AZ	12.9	1.3	0.13	4.6
Baltimore, MD	48.0	11.1	0.36	16.6
Philadelphia, PA	25.1	6.3	0.19	13.6
Washington, DC	49.0	13.3	0.41	21.2
Oakville, ON , Canada	78.1	6.0	0.27	11.0
Albuquerque, NM	21.8	3.9	0.12	5.9
Boston, MA	33.5	9.1	0.30	16.1
Syracuse, NY	67.7	10.3	0.34	13.6
Woodbridge, NJ	66.5	10.8	0.38	28.4
Minneapolis, MN	26.2	6.7	0.24	16.3
San Francisco, CA	22.5	6.6	0.17	9.5
Morgantown, WV	119.2	16.8	0.52	26.0
Moorestown, NJ	62.1	12.4	0.40	25.1
Hartford, CT	50.4	12.7	0.38	10.2
Jersey City, NJ	14.4	2.2	0.09	8.6
Casper, WY	9.1	2.8	0.09	5.5
Freehold, NJ	38.3	16.0	0.44	35.3

Appendix IV. General Recommendations for Air Quality Improvement

Urban vegetation can directly and indirectly affect local and regional air quality by altering the urban atmosphere environment. Four main ways that urban trees affect air quality are (Nowak 1995):

- Temperature reduction and other microclimate effects
- Removal of air pollutants
- Emission of volatile organic compounds (VOC) and tree maintenance emissions
- Energy effects on buildings

The cumulative and interactive effects of trees on climate, pollution removal, and VOC and power plant emissions determine the impact of trees on air pollution. Cumulative studies involving urban tree impacts on ozone have revealed that increased urban canopy cover, particularly with low VOC emitting species, leads to reduced ozone concentrations in cities (Nowak 2000). Local urban management decisions also can help improve air quality.

Urban forest management strategies to help improve air quality include (Nowak 2000):

Strategy	*Result*
Increase the number of healthy trees	Increase pollution removal
Sustain existing tree cover	Maintain pollution removal levels
Maximize use of low VOC-emitting trees	Reduces ozone and carbon monoxide formation
Sustain large, healthy trees	Large trees have greatest per-tree effects
Use long-lived trees	Reduce long-term pollutant emissions from planting and removal
Use low maintenance trees	Reduce pollutants emissions from maintenance activities
Reduce fossil fuel use in maintaining vegetation	Reduce pollutant emissions
Plant trees in energy conserving locations	Reduce pollutant emissions from power plants
Plant trees to shade parked cars	Reduce vehicular VOC emissions
Supply ample water to vegetation	Enhance pollution removal and temperature reduction
Plant trees in polluted or heavily populated areas	Maximizes tree air quality benefits
Avoid pollutant-sensitive species	Improve tree health
Utilize evergreen trees for particulate matter	Year-round removal of particles

Appendix V. Invasive Species of the Urban Forest

The following inventoried tree species were listed as invasive on the Utah invasive species list (Arizona Wildland Invasive Plant Working Group 2005; Colorado Weed Management Association; Stoddard et al):

Species Name[a]	*Number of Trees*	*% of Trees*	*Leaf Area (ac)*	*Percent Leaf Area*
Siberian elm	119	3.6	8.5	9.6
Total	**119**	**3.65**	**8.52**	**9.61**

[a]Species are determined to be invasive if they are listed on the state's invasive species list

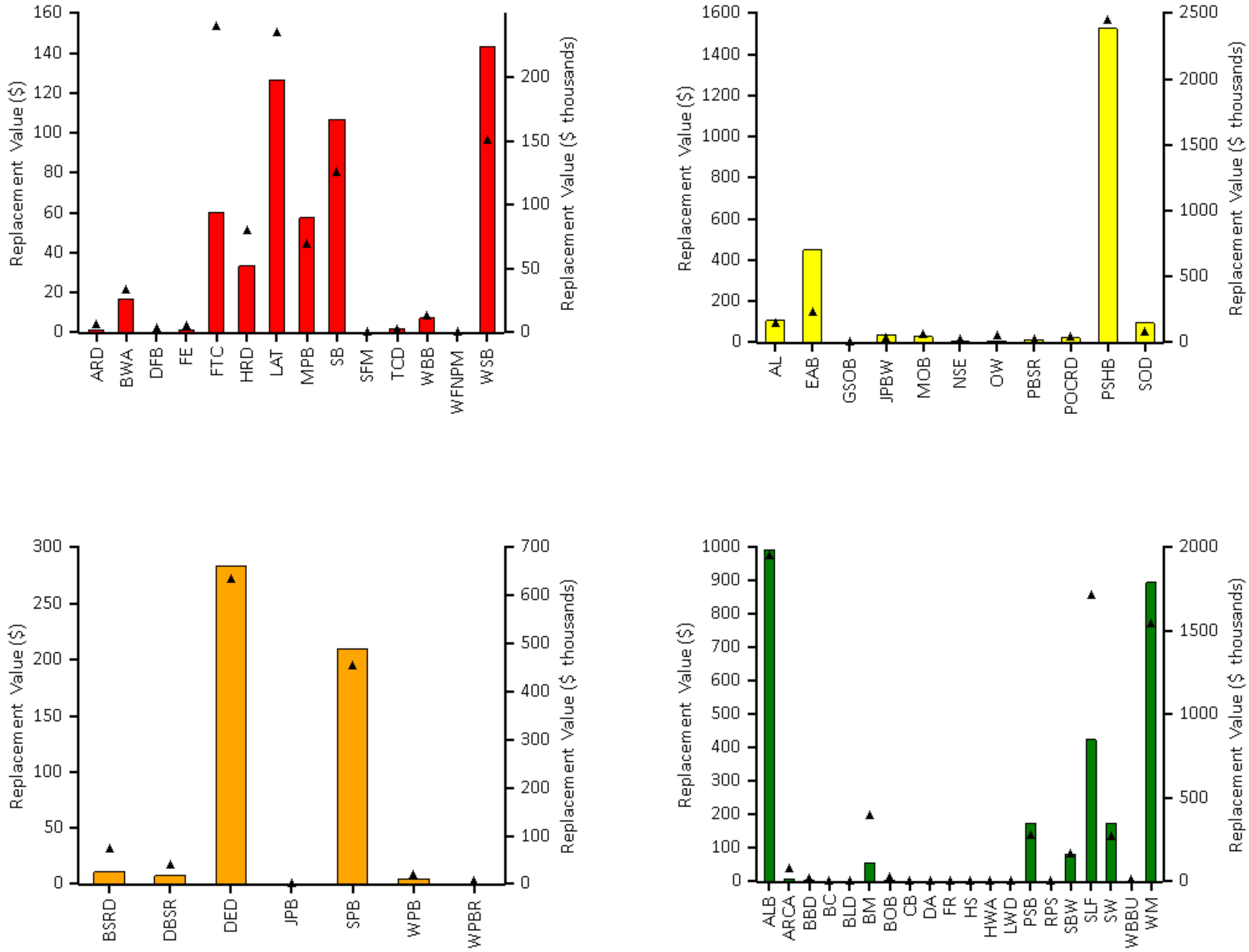
Appendix VI. Potential Risk of Pests

Fifty-three insects and diseases were analyzed to quantify their potential impact on the urban forest. As each insect/ disease is likely to attack different host tree species, the implications for {0} will vary. The number of trees at risk reflects only the known host species that are likely to experience mortality.

Code	Scientific Name	Common Name	Trees at Risk (#)	Value ($ thousands)
AL	Phyllocnistis populiella	Aspen Leafminer	91	167.73
ALB	Anoplophora glabripennis	Asian Longhorned Beetle	975	1,987.00
ARCA	Neodothiora populina	Aspen Running Canker	38	17.22
ARD	Armillaria spp.	Armillaria Root Disease	4	1.93
BBD	Neonectria faginata	Beech Bark Disease	8	7.27
BC	Sirococcus clavigignenti juglandacearum	Butternut Canker	1	3.05
BLD	Litylenchus crenatae mccannii	Beech Leaf Disease	0	0.00
BM	Euproctis chrysorrhoea	Browntail Moth	195	114.05
BOB	Tubakia iowensis	Bur Oak Blight	11	7.87
BSRD	Leptographium wageneri	Black Stain Root Disease	31	25.06
BWA	Adelges piceae	Balsam Woolly Adelgid	21	26.32
CB	Cryphonectria parasitica	Chestnut Blight	0	0.00
DA	Discula destructiva	Dogwood Anthracnose	1	0.13
DBSR	Leptographium wageneri var. pseudotsugae	Douglas-fir Black Stain Root Disease	16	17.68
DED	Ophiostoma novo-ulmi	Dutch Elm Disease	271	662.31
DFB	Dendroctonus pseudotsugae	Douglas-Fir Beetle	2	0.20
EAB	Agrilus planipennis	Emerald Ash Borer	143	701.71
FE	Scolytus ventralis	Fir Engraver	3	1.89
FR	Cronartium quercuum f. sp. Fusiforme	Fusiform Rust	0	0.00
FTC	Malacosoma disstria	Forest Tent Caterpillar	153	94.09
GSOB	Agrilus auroguttatus	Goldspotted Oak Borer	0	0.00
HRD	Heterobasidion irregulare/ occidentale	Heterobasidion Root Disease	51	52.30
HS	Neodiprion tsugae	Hemlock Sawfly	0	0.00
HWA	Adelges tsugae	Hemlock Woolly Adelgid	0	0.00
JPB	Dendroctonus jeffreyi	Jeffrey Pine Beetle	0	0.00
JPBW	Choristoneura pinus	Jack Pine Budworm	20	57.24
LAT	Choristoneura conflictana	Large Aspen Tortrix	150	197.68
LWD	Raffaelea lauricola	Laurel Wilt	0	0.00
MOB	Xyleborus monographus	Mediterranean Oak Borer	34	43.06
MPB	Dendroctonus ponderosae	Mountain Pine Beetle	44	89.78
NSE	Ips perturbatus	Northern Spruce Engraver	12	7.17
OW	Ceratocystis fagacearum	Oak Wilt	29	13.68
PBSR	Leptographium wageneri var. ponderosum	Pine Black Stain Root Disease	14	17.48
POCRD	Phytophthora lateralis	Port-Orford-Cedar Root Disease	25	32.89
PSB	Tomicus piniperda	Pine Shoot Beetle	137	349.78

Code	Scientific Name	Common Name	Trees at Risk (#)	Value ($ thousands)
PSHB	Euwallacea nov. sp.	Polyphagous Shot Hole Borer	1,564	2,383.14
RPS	Matsucoccus resinosae	Red Pine Scale	1	0.40
SB	Dendroctonus rufipennis	Spruce Beetle	80	166.79
SBW	Choristoneura fumiferana	Spruce Budworm	81	165.31
SFM	subalpine fir mortality summary	Subalpine Fir Mortality	0	0.00
SLF	Lycorma delicatula	Spotted Lanternfly	855	850.47
SOD	Phytophthora ramorum	Sudden Oak Death	49	148.33
SPB	Dendroctonus frontalis	Southern Pine Beetle	194	490.06
SW	Sirex noctilio	Sirex Wood Wasp	135	349.58
TCD	Geosmithia morbida	Thousand Canker Disease	1	3.05
WBB	Dryocoetes confusus	Western Bark Beetle	8	11.19
WBBU	Acleris gloverana	Western Blackheaded Budworm	2	0.20
WFNPM	western five-needle pine mortality summary	Western Five-Needle Pine Mortality	0	0.00
WM	Operophtera brumata	Winter Moth	769	1,789.27
WPB	Dendroctonus brevicomis	Western Pine Beetle	8	11.19
WPBR	Cronartium ribicola	White Pine Blister Rust	2	1.14
WSB	Choristoneura occidentalis	Western Spruce Budworm	96	223.95

In the following graph, the pests are color coded according to the county's proximity to the pest occurrence in the United States. Red indicates that the pest is within the county; orange indicates that the pest is within 250 miles of the county; yellow indicates that the pest is within 750 miles of the county; and green indicates that the pest is outside of these ranges.



Note: points - Number of trees, bars - Replacement value

Based on the host tree species for each pest and the current range of the pest (Forest Health Technology Enterprise Team 2014), it is possible to determine what the risk is that each tree species in the urban forest could be attacked by an insect or disease.

Spp. Risk	Risk Weight	Species Name	AL	ALB	ARCA	ARD	BBD	BC	BLD	BM	BOB	BSRD	BWA	CB	DA	DBSR	DED	DFB	EAB	FE	FR	FTC	GSOB	HRD	HS	HWA	JPB	JPBW	LAT	LWD	MOB	MPB	NSE	OW	PBSR
	32	Ponderosa pine																																	
	31	Douglas fir																																	
	28	Engelmann spruce																																	
	26	Norway spruce																																	
	23	Lodgepole pine																																	
	21	White spruce																																	
	15	Quaking aspen																																	
	15	Scots pine																																	
	15	Eastern white pine																																	
	12	Blue spruce																																	
	12	Plum spp																																	
	12	Pinyon pine																																	
	10	Elm spp																																	
	10	White willow																																	
	8	English elm																																	
	8	Northern red oak																																	
	8	Glossy buckthorn																																	
	8	European white birch																																	
	8	Bebb willow																																	
	7	American elm																																	
	7	European beech																																	
	7	Swiss mountain pine																																	
	7	Sugar maple																																	
	7	Weeping willow																																	
	7	Laurel willow																																	
	7	Black walnut																																	
	7	Pin oak																																	
	6	Common chokecherry																																	
	6	European ash																																	
	6	Bur oak																																	
	6	Water birch																																	
	6	Japanese black pine																																	
	5	Siberian elm																																	
	5	Austrian pine																																	
	5	Boxelder																																	
	5	California white oak																																	
	4	Green ash																																	
	4	London planetree																																	
	4	American basswood																																	
	4	Freeman maple																																	
	4	Japanese maple																																	
	4	Peach																																	

Spp. Risk	Risk Weight	Species Name	AL	ALB	ARCA	ARD	BBD	BC	BLD	BM	BOB	BSRD	BWA	CB	DA	DBSR	DED	DFB	EAB	FE	FR	FTC	GSOB	HRD	HS	HWA	JPB	JPBW	LAT	LWD	MOB	MPB	NSE	OW	PBSR
	4	English oak																																	
	4	Persian silk tree																																	
	4	Incense cedar																																	
	3	Norway maple																																	
	3	Japanese zelkova																																	
	3	Japanese flowering cherry																																	
	3	White ash																																	
	3	Pear spp																																	
	3	Northern white cedar																																	
	3	White mulberry																																	
	3	Tree of heaven																																	
	3	Chinese elm																																	
	3	Fremont cottonwood																																	
	3	Common lilac																																	
	3	Tulip tree																																	
	3	Red maple																																	
	3	Pagoda tree																																	
	3	Horse chestnut																																	
	3	Silver maple																																	
	3	Swamp white oak																																	
	3	Chinkapin oak																																	
	3	Japanese persimmon																																	
	2	Callery pear																																	
	2	Honeylocust																																	
	2	Goldenrain tree																																	
	2	Bigtooth maple																																	
	2	Northern catalpa																																	
	2	Eastern cottonwood																																	
	2	Sweetgum																																	
	2	Magnolia spp																																	
	2	European hornbeam																																	
	2	Baldcypress																																	
	2	Rocky mountain maple																																	
	2	Atlas cedar																																	
	2	Arizona ash																																	
	1	Amur maple																																	
	1	Northern hackberry																																	
	1	Black locust																																	
	1	American hornbeam																																	
	1	Apricot																																	
	1	Gambel oak																																	
	1	Purple blow maple																																	
	1	Hedge maple																																	
	1	Vine maple																																	
	1	Red horsechestnut																																	

Spp. Risk	Risk Weight	Species Name	AL	ALB	ARCA	ARD	BBD	BC	BLD	BM	BOB	BSRD	BWA	CB	DA	DBSR	DED	DFB	EAB	FE	FR	FTC	GSOB	HRD	HS	HWA	JPB	JPBW	LAT	LWD	MOB	MPB	NSE	OW	PBSR
Green	1	Red buckeye		Green																															
Green	1	American hazelnut																																	
Green	1	Cornelian cherry													Green																				
Green	1	Plains cottonwood																																	

Spp. Risk	Risk Weight	Species Name	POCRD	PSB	PSHB	RPS	SB	SBW	SFM	SLF	SOD	SPB	SW	TCD	WBB	WBBU	WFNPM	WM	WPB	WPBR	WSB
Red	32	Ponderosa pine		Green								Orange	Green		Red				Orange		Red
Red	31	Douglas fir		Green				Green			Yellow					Green					Red
Red	28	Engelmann spruce					Red					Orange									Red
Red	26	Norway spruce		Green			Red	Green				Orange	Green								Red
Red	23	Lodgepole pine		Green								Orange	Green								
Red	21	White spruce					Red	Green				Orange									Red
Red	15	Quaking aspen			Yellow													Green			
Red	15	Scots pine		Green								Orange	Green								Red
Red	15	Eastern white pine		Green						Green		Orange	Green							Orange	
Red	12	Blue spruce					Red	Green				Orange									Red
Red	12	Plum spp																			
Red	12	Pinyon pine		Green								Orange	Green								
Red	10	Elm spp								Green											
Red	10	White willow			Yellow													Green			
Orange	8	English elm			Yellow																
Yellow	8	Northern red oak			Yellow						Yellow							Green			
Red	8	Glossy buckthorn																			
Red	8	European white birch			Yellow					Green											
Red	8	Bebb willow																Green			
Orange	7	American elm			Yellow													Green			
Yellow	7	European beech			Yellow						Yellow										
Orange	7	Swiss mountain pine		Green								Orange	Green								
Red	7	Sugar maple								Green								Green			
Red	7	Weeping willow																			
Red	7	Laurel willow																			
Red	7	Black walnut			Yellow									Red							
Yellow	7	Pin oak			Yellow						Yellow							Green			
Red	6	Common chokecherry																Green			
Yellow	6	European ash			Yellow						Yellow										
Yellow	6	Bur oak			Yellow													Green			
Red	6	Water birch																Green			
Orange	6	Japanese black pine		Green		Green						Orange	Green								
Orange	5	Siberian elm																Green			
Orange	5	Austrian pine		Green								Orange	Green								
Yellow	5	Boxelder			Yellow					Green								Green			
Yellow	5	California white oak			Yellow													Green			
Yellow	4	Green ash																Green			
Yellow	4	London planetree			Yellow					Green											
Yellow	4	American basswood			Yellow					Green								Green			

Spp. Risk	Risk Weight	Species Name	POCRD	PSB	PSHB	RPS	SB	SBW	SFM	SLF	SOD	SPB	SW	TCD	WBB	WBBU	WFNPM	WM	WPB	WPBR	WSB
	4	Freeman maple																			
	4	Japanese maple																			
	4	Peach																			
	4	English oak																			
	4	Persian silk tree																			
	4	Incense cedar																			
	3	Norway maple																			
	3	Japanese zelkova																			
	3	Japanese flowering cherry																			
	3	White ash																			
	3	Pear spp																			
	3	Northern white cedar																			
	3	White mulberry																			
	3	Tree of heaven																			
	3	Chinese elm																			
	3	Fremont cottonwood																			
	3	Common lilac																			
	3	Tulip tree																			
	3	Red maple																			
	3	Pagoda tree																			
	3	Horse chestnut																			
	3	Silver maple																			
	3	Swamp white oak																			
	3	Chinkapin oak																			
	3	Japanese persimmon																			
	2	Callery pear																			
	2	Honeylocust																			
	2	Goldenrain tree																			
	2	Bigtooth maple																			
	2	Northern catalpa																			
	2	Eastern cottonwood																			
	2	Sweetgum																			
	2	Magnolia spp																			
	2	European hornbeam																			
	2	Baldcypress																			
	2	Rocky mountain maple																			
	2	Atlas cedar																			
	2	Arizona ash																			
	1	Amur maple																			
	1	Northern hackberry																			
	1	Black locust																			
	1	American hornbeam																			
	1	Apricot																			
	1	Gambel oak																			
	1	Purple blow maple																			

Spp. Risk	Risk Weight	Species Name	POCRD	PSB	PSHB	RPS	SB	SBW	SFM	SLF	SOD	SPB	SW	TCD	WBB	WBBU	WFNPM	WM	WPB	WPBR	WSB
	1	Hedge maple																			
	1	Vine maple																			
	1	Red horsechestnut																			
	1	Red buckeye																			
	1	American hazelnut																			
	1	Cornelian cherry																			
	1	Plains cottonwood																			

<u>Note:</u>
Species that are not listed in the matrix are not known to be hosts to any of the pests analyzed.

<u>Species Risk:</u>

- Red indicates that tree species is at risk to at least one pest within county
- Orange indicates that tree species has no risk to pests in county, but has a risk to at least one pest within 250 miles from the county
- Yellow indicates that tree species has no risk to pests within 250 miles of county, but has a risk to at least one pest that is 250 and 750 miles from the county
- Green indicates that tree species has no risk to pests within 750 miles of county, but has a risk to at least one pest that is greater than 750 miles from the county

<u>Risk Weight:</u>
Numerical scoring system based on sum of points assigned to pest risks for species. Each pest that could attack tree species is scored as 4 points if red, 3 points if orange, 2 points if yellow and 1 point if green.

<u>Pest Color Codes:</u>

- Red indicates pest is within Salt Lake county
- Red indicates pest is within 250 miles county
- Yellow indicates pest is within 750 miles of Salt Lake county
- Green indicates pest is outside of these ranges

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RESOLUTION NO. R2026-_____

A RESOLUTION OF THE SOUTH SALT LAKE CITY COUNCIL AUTHORIZING PARTICIPATION ON THE CENTRAL VALLEY WATER RECLAMATION FACILITY BOARD AND RECEIPT OF COMPENSATION FOR BOARD MEMBERSHIP.

WHEREAS, the City of South Salt Lake ("City") has entered into an interlocal agreement with the member entities of the Central Valley Water Reclamation Facility; and

WHEREAS, the interlocal agreement states that each member entity may appoint one of its elected officials to serve as a member of the board; and

WHEREAS, the members of the Central Valley Water Reclamation Facility Board have duties that increase the demands on the board members' time and other resources, including but not limited to supervising, managing, and directing: the planning, financing, construction, operation, maintenance, enlargement, and improvement of the Central Valley Water Reclamation Facility; acquisition of real property, insurance coverage, personal property and equipment to be utilized in connection with the Facility; employment of professional services and professional firms necessary for accomplishing the work of the Facility; engaging in rulemaking authority to create or amend the necessary rules, regulations, or surcharge penalties deemed necessary for the orderly and proper operation of the Facility; prosecution of actions in the name of the Board for violations of any applicable laws, rules, or regulations which may be or have been adopted for the proper function and operation of the Facility; and

WHEREAS, due to the demands on the board members' time and resources, Central Valley Water Reclamation Facility has decided to provide compensation to its board members; and

WHEREAS, Utah Code Ann. §11-13-403(1)(e) authorizes such compensation if the City annually approves the participating elected official's receipt of compensation after an analysis of the duties and responsibilities of service on the Board; and

WHEREAS, the City Council has undertaken an analysis of the duties and responsibilities of the participating elected official's service on the Board;

NOW THEREFORE BE IT RESOLVED, by the City Council of the City of South Salt Lake, that pursuant to Utah Code §11-13-403, Council member __________________, is authorized to serve on the Central Valley Water Reclamation Facility Board and receive compensation for that service as authorized by that Board and pursuant to all applicable federal, state, and local laws and regulations.

APPROVED AND ADOPTED by the City Council of the City of South Salt Lake, Utah, on this ______ day of __________, 2026.

BY THE CITY COUNCIL:

____
Sharla Bynum, Council Chair

City Council Vote as Recorded:

Bynum	______
Williams	______
Thomas	______
Mitchell	______
deWolfe	______

ATTEST:

____
Ariel Andrus, City Recorder