![American Forests logo - americanforests.org]

Analysis Report
for
Washoe County Agriculture

![CITYgreen logo - calculating the value of nature]

Land cover in acres and percentages

	Land cover	Acres	Percent
■	Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	102.6	12.4%
■	Impervious Surfaces: Paved: Drain to sewer	26.1	3.1%
■	Impervious Surfaces: Unpaved: Dirt	9.1	1.1%
■	Open Space - Grass/Scattered Trees: Grass cover > 75%	657.9	79.2%
■	Trees: Grass/turf understory: Ground cover > 75%	28.2	3.4%
■	Trees: Impervious understory	0.0	0.0%
■	Water Area	6.9	0.8%
	Total:	830.9	100.0%

Tree Canopy: 28.2 acres (3.4%)

Air Pollution Removal

By absorbing and filtering out nitrogen dioxide (NO2), sulfur dioxide (SO2), ozone (O3), carbon monoxide (CO), and particulate matter less than 10 microns (PM10), trees perform a vital air cleaning service that directly affects the well-being of urban dwellers. CITYgreen estimates the annual air pollution removal rate of trees within a defined study area for these five pollutants based on research conducted by David Nowak, PhD, of the U.S. Forest Service. Economists use "externality" costs, or indirect costs borne by society such as rising health care expenditures and reduced tourism revenue to determine the dollar value of air pollutant removal. The externality costs used in CITYgreen are set by each state's Public Services Commission.

Nearest Air Quality Reference City: ***Salt Lake City***

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	76	37
Ozone:	755	$2,668
Nitrogen Dioxide:	403	$1,423
Particulate Matter:	1,309	$3,087
Sulfur Dioxide:	126	$109
Totals:	**2,668**	**7,323**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

Trees remove carbon dioxide from the air through their leaves and store carbon in their biomass. Approximately half of a tree's dry weight is carbon. For this reason, large-scale tree planting projects are recognized as a legitimate tool in many national carbon-reduction programs. CITYgreen estimates the carbon storage capacity and sequestration rates of trees within a defined study area. The carbon storage and sequestration model was developed using research conducted by David Nowak, E. Gregory McPherson, and Rowan Rowntree of the U.S. Forest Service.

Tons Stored **(Total)**:	1,215
Tons Sequestered **(Annually)**:	9

Analysis Report

for

Washoe County Agriculture

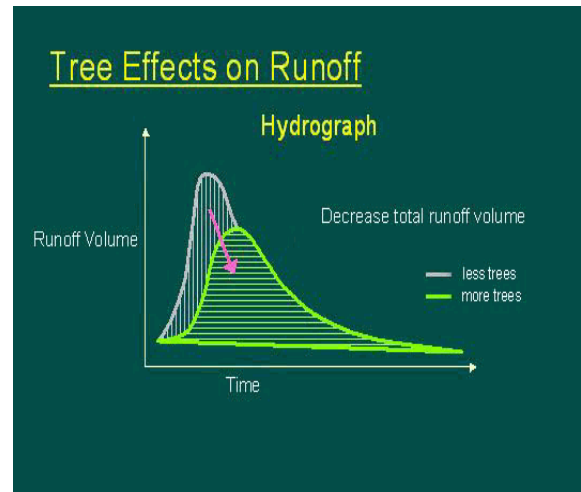## Stormwater Management

Water Quantity (Runoff Volume)

Trees decrease total runoff volume, helping cities to decrease their stormwater management costs. CITYgreen calculates the volume of runoff in a 2-year 24-hour storm event that would need to be contained if all trees were removed. To do this, CITYgreen uses a model developed by the Natural Resources Conservation Service (NRCS) called TR-55, based on a system of curve numbers. Curve numbers are an index of potential runoff within a specified drainage area. Curve numbers range from 30 to 100, with a higher number indicating greater runoff potential.

CITYgreen calculates two curve numbers for the stormwater analysis: one reflecting existing land cover conditions and the other reflecting the replacement of tree canopy in the study area by a user-defined replacement land cover (specified in the CITYgreen Preferences.) The difference in curve numbers and local rainfall determine the change in storage volume between the two different land cover scenarios (with and without trees). To determine the dollar amount of stormwater-related savings resulting from tree canopy, this calculated volume is then multiplied by the user-specified local construction cost.

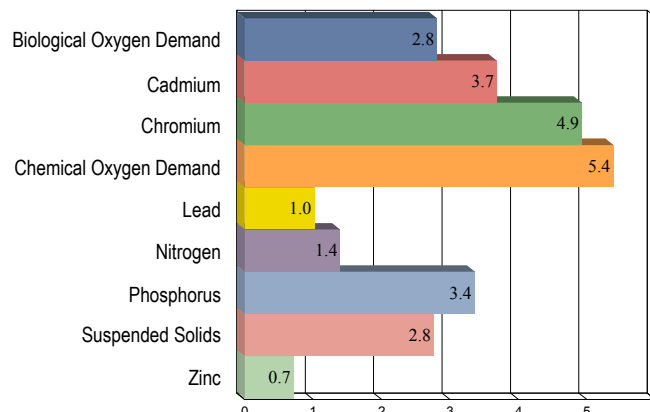|	
2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	74
Curve Number of replacement land cover:	74
Dominant soil type: **C**	
Replacement land cover type: (existing condition)	
Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	**61,003**
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$183,010**
Annual Stormwater Value:	**$15,956**
(based on 20-year financing at 6% interest)	

### Water Quality (Contaminant Loading)

Trees filter surface water and prevent erosion, both of which maintain or improve water quality. American Forests developed the CITYgreen water quality model using data from the US Environmental Protection Agency (EPA) and Purdue University's L-Thia spreadsheet water quality model. The water quality model estimates the change in the concentration of pollutants in runoff during a typical storm event, by replacing the tree canopy in a specified study area with the user-defined replacement land cover (specified in the CITYgreen Preferences) and comparing the results. The model estimates the event mean concentrations of nitrogen, phosphorus, suspended solids, zinc, lead, cadmium, chromium, chemical oxygen demand (COD), and biological oxygen demand (BOD).

Percent change in contaminant loadings

Analysis Report

for

Washoe County Commercial

Land cover in acres and percentages
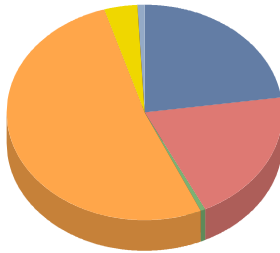
■	Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	694.7	22.7%
■	Impervious Surfaces: Paved: Drain to sewer	609.9	20.0%
■	Impervious Surfaces: Unpaved: Dirt	16.2	0.5%
■	Open Space - Grass/Scattered Trees: Grass cover > 75%	1,587.4	52.0%
■	Trees: Grass/turf understory: Ground cover > 75%	120.4	3.9%
■	Trees: Impervious understory	0.4	0.0%
■	Water Area	25.3	0.8%
	Total:	3,054.2	100.0%

Tree Canopy: 120.8 acres (4.0%)

Air Pollution Removal

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Nearest Air Quality Reference City: *Salt Lake City*

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	323	158
Ozone:	3,229	$11,409
Nitrogen Dioxide:	1,722	$6,085
Particulate Matter:	5,597	$13,204
Sulfur Dioxide:	538	$464
Totals:	**11,410**	**31,321**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

Trees remove carbon dioxide from the air through their leaves and store carbon in their biomass. Approximately half of a tree's dry weight is carbon. For this reason, large-scale tree planting projects are recognized as a legitimate tool in many national carbon-reduction programs. CITYgreen estimates the carbon storage capacity and sequestration rates of trees within a defined study area. The carbon storage and sequestration model was developed using research conducted by David Nowak, E. Gregory McPherson, and Rowan Rowntree of the U.S. Forest Service.

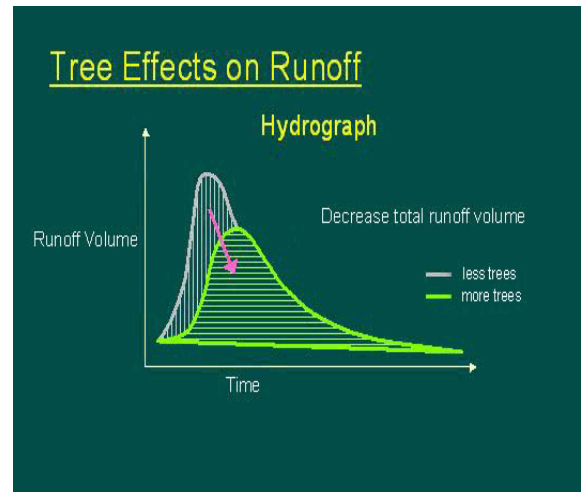|	
Tons Stored **(Total)**:	**5,196**
Tons Sequestered **(Annually)**:	**40**

Washoe County Commercial

Stormwater Management

Water Quantity (Runoff Volume)

Trees decrease total runoff volume, helping cities to decrease their stormwater management costs. CITYgreen calculates the volume of runoff in a 2-year 24-hour storm event that would need to be contained if all trees were removed. To do this, CITYgreen uses a model developed by the Natural Resources Conservation Service (NRCS) called TR-55, based on a system of curve numbers. Curve numbers are an index of potential runoff within a specified drainage area. Curve numbers range from 30 to 100, with a higher number indicating greater runoff potential.

CITYgreen calculates two curve numbers for the stormwater analysis: one reflecting existing land cover conditions and the other reflecting the replacement of tree canopy in the study area by a user-defined replacement land cover (specified in the CITYgreen Preferences.) The difference in curve numbers and local rainfall determine the change in storage volume between the two different land cover scenarios (with and without trees). To determine the dollar amount of stormwater-related savings resulting from tree canopy, this calculated volume is then multiplied by the user-specified local construction cost.
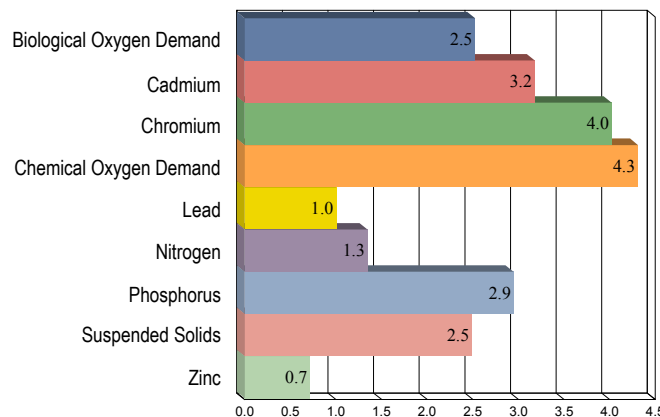
2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	76
Curve Number of replacement land cover:	77
Dominant soil type: **C**	
Replacement land cover type: (existing condition)	
Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	**259,738**
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$779,215**
Annual Stormwater Value:	**$67,936**
(based on 20-year financing at 6% interest)	

Tree Effects on Runoff — Hydrograph: Runoff Volume vs Time. Decrease total runoff volume. less trees / more trees
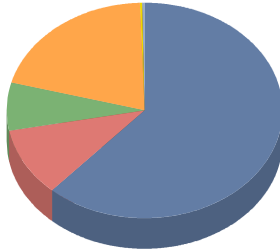
Water Quality (Contaminant Loading)

Trees filter surface water and prevent erosion, both of which maintain or improve water quality. American Forests developed the CITYgreen water quality model using data from the US Environmental Protection Agency (EPA) and Purdue University's L-Thia spreadsheet water quality model. The water quality model estimates the change in the concentration of pollutants in runoff during a typical storm event, by replacing the tree canopy in a specified study area with the user-defined replacement land cover (specified in the CITYgreen Preferences) and comparing the results. The model estimates the event mean concentrations of nitrogen, phosphorus, suspended solids, zinc, lead, cadmium, chromium, chemical oxygen demand (COD), and biological oxygen demand (BOD).

Percent change in contaminant loadings

Contaminant	Percent change
Biological Oxygen Demand	2.5
Cadmium	3.2
Chromium	4.0
Chemical Oxygen Demand	4.3
Lead	1.0
Nitrogen	1.3
Phosphorus	2.9
Suspended Solids	2.5
Zinc	0.7

Analysis Report

for

Washoe County Industrial

Land cover in acres and percentages

■ Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	1,079.4	61.6%
■ Impervious Surfaces: Paved: Drain to sewer	178.9	10.2%
■ Impervious Surfaces: Unpaved: Dirt	130.2	7.4%
■ Open Space - Grass/Scattered Trees: Grass cover > 75%	354.4	20.2%
■ Trees: Grass/turf understory: Ground cover > 75%	3.6	0.2%
■ Trees: Impervious understory	0.0	0.0%
■ Water Area	4.9	0.3%
Total:	1,751.4	100.0%

Tree Canopy: 3.6 acres (0.2%)

Air Pollution Removal

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Nearest Air Quality Reference City: *Salt Lake City*

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	10	5
Ozone:	97	$342
Nitrogen Dioxide:	52	$183
Particulate Matter:	168	$396
Sulfur Dioxide:	16	$14
Totals:	**342**	**940**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

Trees remove carbon dioxide from the air through their leaves and store carbon in their biomass. Approximately half of a tree's dry weight is carbon. For this reason, large-scale tree planting projects are recognized as a legitimate tool in many national carbon-reduction programs. CITYgreen estimates the carbon storage capacity and sequestration rates of trees within a defined study area. The carbon storage and sequestration model was developed using research conducted by David Nowak, E. Gregory McPherson, and Rowan Rowntree of the U.S. Forest Service.

Tons Stored **(Total)**:	156
Tons Sequestered **(Annually)**:	1

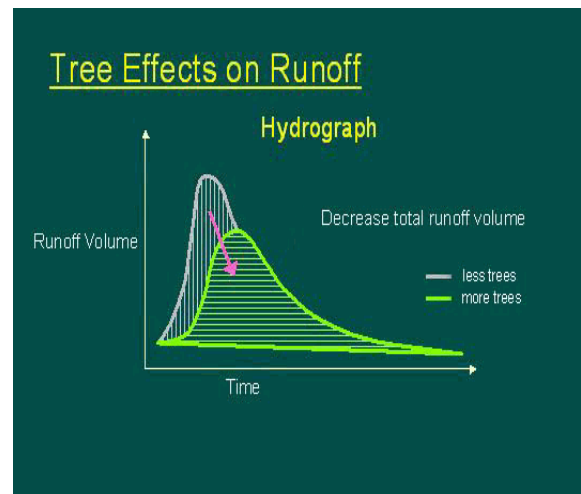## Stormwater Management

Water Quantity (Runoff Volume)

Trees decrease total runoff volume, helping cities to decrease their stormwater management costs. CITYgreen calculates the volume of runoff in a 2-year 24-hour storm event that would need to be contained if all trees were removed. To do this, CITYgreen uses a model developed by the Natural Resources Conservation Service (NRCS) called TR-55, based on a system of curve numbers. Curve numbers are an index of potential runoff within a specified drainage area. Curve numbers range from 30 to 100, with a higher number indicating greater runoff potential.

CITYgreen calculates two curve numbers for the stormwater analysis: one reflecting existing land cover conditions and the other reflecting the replacement of tree canopy in the study area by a user-defined replacement land cover (specified in the CITYgreen Preferences.) The difference in curve numbers and local rainfall determine the change in storage volume between the two different land cover scenarios (with and without trees). To determine the dollar amount of stormwater-related savings resulting from tree canopy, this calculated volume is then multiplied by the user-specified local construction cost.

2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	71
Curve Number of replacement land cover:	71
Dominant soil type: C	
Replacement land cover type: (existing condition) Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	**6,665**
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$19,995**
Annual Stormwater Value: (based on 20-year financing at 6% interest)	**$1,743**

Tree Effects on Runoff — Hydrograph — Decrease total runoff volume — Runoff Volume — Time — less trees — more trees

Water Quality (Contaminant Loading)

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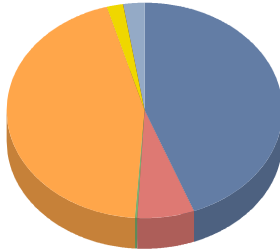Percent change in contaminant loadings

Contaminant	Value
Biological Oxygen Demand	0.2
Cadmium	0.3
Chromium	0.4
Chemical Oxygen Demand	0.5
Lead	0.1
Nitrogen	0.1
Phosphorus	0.2
Suspended Solids	0.2
Zinc	0.0

Analysis Report

for

Washoe County Public

Land cover in acres and percentages

■ Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	1,367.2	44.3%
■ Impervious Surfaces: Paved: Drain to sewer	205.6	6.7%
■ Impervious Surfaces: Unpaved: Dirt	7.5	0.2%
■ Open Space - Grass/Scattered Trees: Grass cover > 75%	1,370.6	44.4%
■ Trees: Grass/turf understory: Ground cover > 75%	62.4	2.0%
■ Trees: Impervious understory	0.3	0.0%
■ Water Area	74.1	2.4%
Total:	3,087.7	100.0%

Tree Canopy: 62.7 acres (2.0%)

Air Pollution Removal

By absorbing and filtering out nitrogen dioxide (NO2), sulfur dioxide (SO2), ozone (O3), carbon monoxide (CO), and particulate matter less than 10 microns (PM10), trees perform a vital air cleaning service that directly affects the well-being of urban dwellers. CITYgreen estimates the annual air pollution removal rate of trees within a defined study area for these five pollutants based on research conducted by David Nowak, PhD, of the U.S. Forest Service. Economists use "externality" costs, or indirect costs borne by society such as rising health care expenditures and reduced tourism revenue to determine the dollar value of air pollutant removal. The externality costs used in CITYgreen are set by each state's Public Services Commission.

Nearest Air Quality Reference City: *Salt Lake City*

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	168	82
Ozone:	1,676	$5,920
Nitrogen Dioxide:	894	$3,157
Particulate Matter:	2,904	$6,851
Sulfur Dioxide:	279	$241
Totals:	**5,921**	**16,252**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

Trees remove carbon dioxide from the air through their leaves and store carbon in their biomass. Approximately half of a tree's dry weight is carbon. For this reason, large-scale tree planting projects are recognized as a legitimate tool in many national carbon-reduction programs. CITYgreen estimates the carbon storage capacity and sequestration rates of trees within a defined study area. The carbon storage and sequestration model was developed using research conducted by David Nowak, E. Gregory McPherson, and Rowan Rowntree of the U.S. Forest Service.

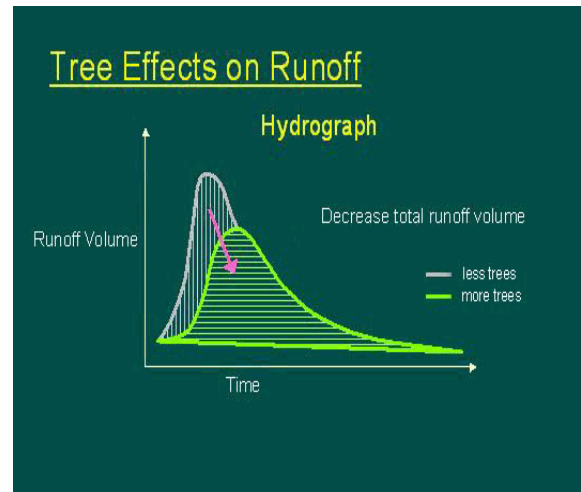|	
Tons Stored **(Total)**:	**2,696**
Tons Sequestered **(Annually)**:	**21**

Stormwater Management

Water Quantity (Runoff Volume)

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CITYgreen calculates two curve numbers for the stormwater analysis: one reflecting existing land cover conditions and the other reflecting the replacement of tree canopy in the study area by a user-defined replacement land cover (specified in the CITYgreen Preferences.) The difference in curve numbers and local rainfall determine the change in storage volume between the two different land cover scenarios (with and without trees). To determine the dollar amount of stormwater-related savings resulting from tree canopy, this calculated volume is then multiplied by the user-specified local construction cost.
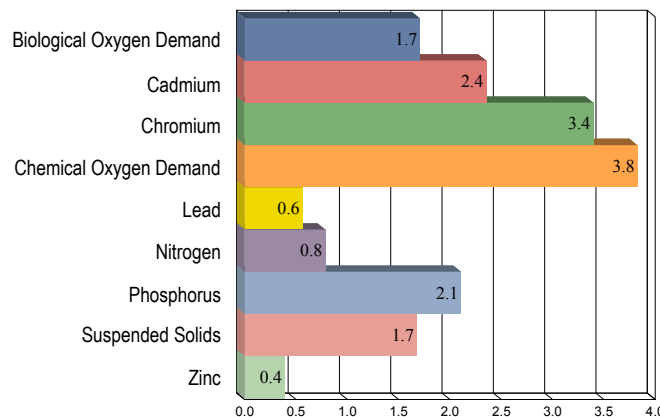
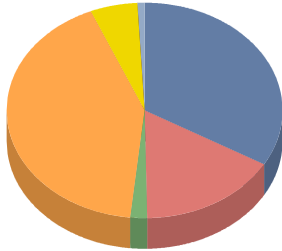|	
2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	71
Curve Number of replacement land cover:	72
Dominant soil type: **C**	
Replacement land cover type: (existing condition) Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	**107,695**
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$323,085**
Annual Stormwater Value: (based on 20-year financing at 6% interest)	**$28,168**

Water Quality (Contaminant Loading)

Trees filter surface water and prevent erosion, both of which maintain or improve water quality. American Forests developed the CITYgreen water quality model using data from the US Environmental Protection Agency (EPA) and Purdue University's L-Thia spreadsheet water quality model. The water quality model estimates the change in the concentration of pollutants in runoff during a typical storm event, by replacing the tree canopy in a specified study area with the user-defined replacement land cover (specified in the CITYgreen Preferences) and comparing the results. The model estimates the event mean concentrations of nitrogen, phosphorus, suspended solids, zinc, lead, cadmium, chromium, chemical oxygen demand (COD), and biological oxygen demand (BOD).

Percent change in contaminant loadings

Analysis Report

for

Washoe County Residential

Land cover in acres and percentages

◼ Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	11,907.0	33.3%
◼ Impervious Surfaces: Paved: Drain to sewer	5,868.1	16.4%
◼ Impervious Surfaces: Unpaved: Dirt	669.0	1.9%
◼ Open Space - Grass/Scattered Trees: Grass cover > 75%	15,070.2	42.1%
◼ Trees: Grass/turf understory: Ground cover > 75%	1,938.8	5.4%
◼ Trees: Impervious understory	5.8	0.0%
◼ Water Area	315.3	0.9%
Total:	35,774.2	100.0%

Tree Canopy: 1,944.5 acres (5.4%)

Air Pollution Removal

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Nearest Air Quality Reference City: *Salt Lake City*

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	5,200	2,552
Ozone:	52,001	$183,723
Nitrogen Dioxide:	27,734	$97,985
Particulate Matter:	90,135	$212,616
Sulfur Dioxide:	8,667	$7,480
Totals:	**183,737**	**504,355**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

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Tons Stored **(Total)**:	83,676
Tons Sequestered **(Annually)**:	651

Analysis Report
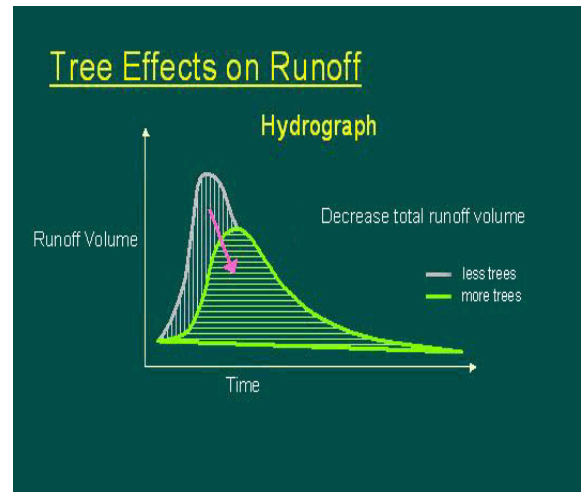
for

Washoe County Residential

Stormwater Management

Water Quantity (Runoff Volume)

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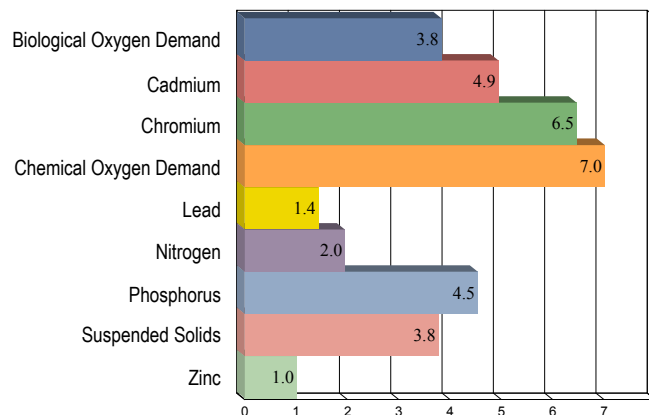
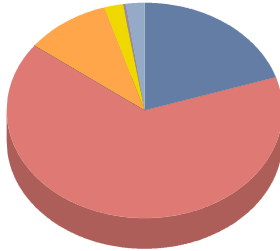|	
2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	75
Curve Number of replacement land cover:	75
Dominant soil type: **C**	
Replacement land cover type: (existing condition)	
Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	**3,944,235**
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$11,832,704**
Annual Stormwater Value:	**$1,031,629**
(based on 20-year financing at 6% interest)	

Water Quality (Contaminant Loading)

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Percent change in contaminant loadings

Contaminant	Value
Biological Oxygen Demand	3.8
Cadmium	4.9
Chromium	6.5
Chemical Oxygen Demand	7.0
Lead	1.4
Nitrogen	2.0
Phosphorus	4.5
Suspended Solids	3.8
Zinc	1.0

Analysis Report

for

Washoe County Right of Way

Land cover in acres and percentages

■ Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	912.7	20.0%
■ Impervious Surfaces: Paved: Drain to sewer	2,970.6	65.1%
■ Impervious Surfaces: Unpaved: Dirt	0.0	0.0%
■ Open Space - Grass/Scattered Trees: Grass cover > 75%	467.0	10.2%
■ Trees: Grass/turf understory: Ground cover > 75%	102.0	2.2%
■ Trees: Impervious understory	11.4	0.3%
■ Water Area	97.0	2.1%
Total:	4,560.8	100.0%

Tree Canopy: 113.4 acres (2.5%)

Air Pollution Removal

By absorbing and filtering out nitrogen dioxide (NO2), sulfur dioxide (SO2), ozone (O3), carbon monoxide (CO), and particulate matter less than 10 microns (PM10), trees perform a vital air cleaning service that directly affects the well-being of urban dwellers. CITYgreen estimates the annual air pollution removal rate of trees within a defined study area for these five pollutants based on research conducted by David Nowak, PhD, of the U.S. Forest Service. Economists use "externality" costs, or indirect costs borne by society such as rising health care expenditures and reduced tourism revenue to determine the dollar value of air pollutant removal. The externality costs used in CITYgreen are set by each state's Public Services Commission.

Nearest Air Quality Reference City: *Salt Lake City*

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	303	149
Ozone:	3,033	$10,717
Nitrogen Dioxide:	1,618	$5,716
Particulate Matter:	5,258	$12,402
Sulfur Dioxide:	506	$436
Totals:	**10,718**	**29,420**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

Trees remove carbon dioxide from the air through their leaves and store carbon in their biomass. Approximately half of a tree's dry weight is carbon. For this reason, large-scale tree planting projects are recognized as a legitimate tool in many national carbon-reduction programs. CITYgreen estimates the carbon storage capacity and sequestration rates of trees within a defined study area. The carbon storage and sequestration model was developed using research conducted by David Nowak, E. Gregory McPherson, and Rowan Rowntree of the U.S. Forest Service.

Tons Stored (**Total**):	**4,881**
Tons Sequestered (**Annually**):	**38**

Analysis Report
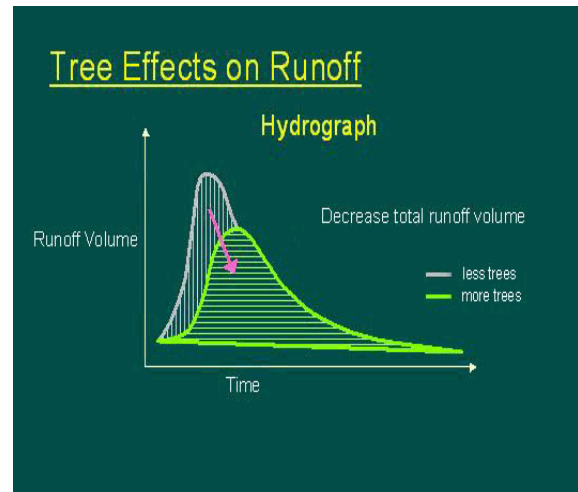## for
Washoe County Right of Way

Stormwater Management

Water Quantity (Runoff Volume)

Trees decrease total runoff volume, helping cities to decrease their stormwater management costs. CITYgreen calculates the volume of runoff in a 2-year 24-hour storm event that would need to be contained if all trees were removed. To do this, CITYgreen uses a model developed by the Natural Resources Conservation Service (NRCS) called TR-55, based on a system of curve numbers. Curve numbers are an index of potential runoff within a specified drainage area. Curve numbers range from 30 to 100, with a higher number indicating greater runoff potential.

CITYgreen calculates two curve numbers for the stormwater analysis: one reflecting existing land cover conditions and the other reflecting the replacement of tree canopy in the study area by a user-defined replacement land cover (specified in the CITYgreen Preferences.) The difference in curve numbers and local rainfall determine the change in storage volume between the two different land cover scenarios (with and without trees). To determine the dollar amount of stormwater-related savings resulting from tree canopy, this calculated volume is then multiplied by the user-specified local construction cost.
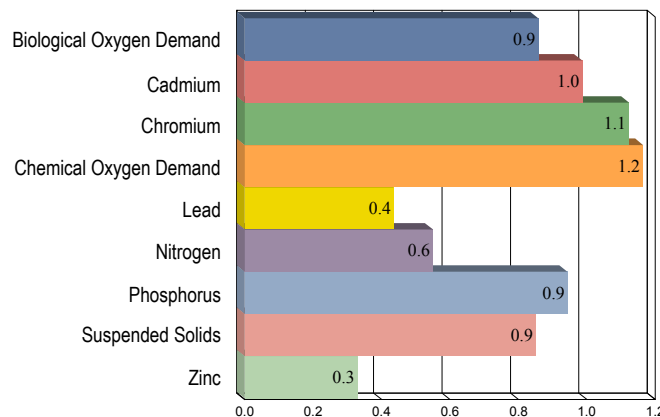
2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	88
Curve Number of replacement land cover:	88
Dominant soil type: **C**	
Replacement land cover type: (existing condition)	
Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	**323,260**
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$969,780**
Annual Stormwater Value:	**$84,550**
(based on 20-year financing at 6% interest)	

Tree Effects on Runoff
Hydrograph
Runoff Volume
Decrease total runoff volume
less trees
more trees
Time

Water Quality (Contaminant Loading)

Trees filter surface water and prevent erosion, both of which maintain or improve water quality. American Forests developed the CITYgreen water quality model using data from the US Environmental Protection Agency (EPA) and Purdue University's L-Thia spreadsheet water quality model. The water quality model estimates the change in the concentration of pollutants in runoff during a typical storm event, by replacing the tree canopy in a specified study area with the user-defined replacement land cover (specified in the CITYgreen Preferences) and comparing the results. The model estimates the event mean concentrations of nitrogen, phosphorus, suspended solids, zinc, lead, cadmium, chromium, chemical oxygen demand (COD), and biological oxygen demand (BOD).

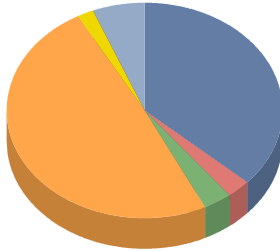Percent change in contaminant loadings

Contaminant	Value
Biological Oxygen Demand	0.9
Cadmium	1.0
Chromium	1.1
Chemical Oxygen Demand	1.2
Lead	0.4
Nitrogen	0.6
Phosphorus	0.9
Suspended Solids	0.9
Zinc	0.3

Analysis Report

for

Washoe County Vacant

Land cover in acres and percentages

Arid & Semi-Arid Rangeland: Sagebrush: Ground cover 30% - 70%	3,204.9	36.7%
Impervious Surfaces: Paved: Drain to sewer	244.4	2.8%
Impervious Surfaces: Unpaved: Dirt	293.7	3.4%
Open Space - Grass/Scattered Trees: Grass cover > 75%	4,294.2	49.2%
Trees: Grass/turf understory: Ground cover > 75%	166.6	1.9%
Trees: Impervious understory	0.8	0.0%
Water Area	527.9	6.0%
Total:	8,732.6	100.0%

Tree Canopy: 167.4 acres (1.9%)

Air Pollution Removal

By absorbing and filtering out nitrogen dioxide (NO2), sulfur dioxide (SO2), ozone (O3), carbon monoxide (CO), and particulate matter less than 10 microns (PM10), trees perform a vital air cleaning service that directly affects the well-being of urban dwellers. CITYgreen estimates the annual air pollution removal rate of trees within a defined study area for these five pollutants based on research conducted by David Nowak, PhD, of the U.S. Forest Service. Economists use "externality" costs, or indirect costs borne by society such as rising health care expenditures and reduced tourism revenue to determine the dollar value of air pollutant removal. The externality costs used in CITYgreen are set by each state's Public Services Commission.

Nearest Air Quality Reference City: *Salt Lake City*

	Lbs. Removed/yr	Dollar Value/yr
Carbon Monoxide:	448	220
Ozone:	4,478	$15,820
Nitrogen Dioxide:	2,388	$8,437
Particulate Matter:	7,761	$18,308
Sulfur Dioxide:	746	$644
Totals:	**15,821**	**43,429**

Dollar values are based on 2009 dollars

Carbon Storage and Sequestration

Trees remove carbon dioxide from the air through their leaves and store carbon in their biomass. Approximately half of a tree's dry weight is carbon. For this reason, large-scale tree planting projects are recognized as a legitimate tool in many national carbon-reduction programs. CITYgreen estimates the carbon storage capacity and sequestration rates of trees within a defined study area. The carbon storage and sequestration model was developed using research conducted by David Nowak, E. Gregory McPherson, and Rowan Rowntree of the U.S. Forest Service.

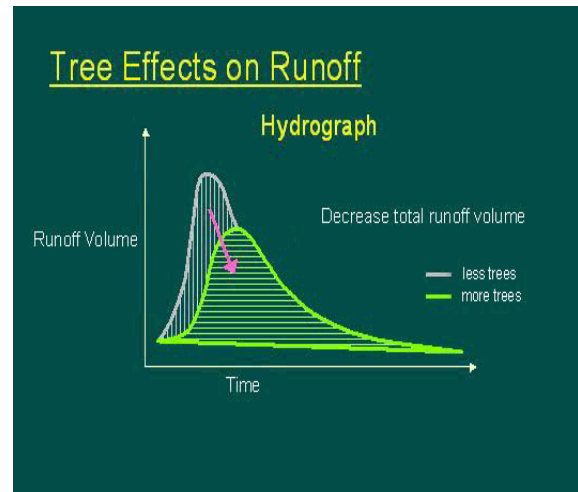|	
Tons Stored **(Total)**:	**7,205**
Tons Sequestered **(Annually)**:	**56**

Stormwater Management

Water Quantity (Runoff Volume)

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CITYgreen calculates two curve numbers for the stormwater analysis: one reflecting existing land cover conditions and the other reflecting the replacement of tree canopy in the study area by a user-defined replacement land cover (specified in the CITYgreen Preferences.) The difference in curve numbers and local rainfall determine the change in storage volume between the two different land cover scenarios (with and without trees). To determine the dollar amount of stormwater-related savings resulting from tree canopy, this calculated volume is then multiplied by the user-specified local construction cost.

2-yr, 24-hr Rainfall in inches:	2.50
Curve Number reflecting existing conditions:	73
Curve Number of replacement land cover:	73
Dominant soil type: **C**	
Replacement land cover type: (existing condition)	
Urban: Western Desert: Natural Landscaping	
Additional cu. ft. storage needed:	305,706
Construction cost per cu. ft.:	$3.00
Total Stormwater Value:	**$917,119**
Annual Stormwater Value:	**$79,959**
(based on 20-year financing at 6% interest)	

Water Quality (Contaminant Loading)

Trees filter surface water and prevent erosion, both of which maintain or improve water quality. American Forests developed the CITYgreen water quality model using data from the US Environmental Protection Agency (EPA) and Purdue University's L-Thia spreadsheet water quality model. The water quality model estimates the change in the concentration of pollutants in runoff during a typical storm event, by replacing the tree canopy in a specified study area with the user-defined replacement land cover (specified in the CITYgreen Preferences) and comparing the results. The model estimates the event mean concentrations of nitrogen, phosphorus, suspended solids, zinc, lead, cadmium, chromium, chemical oxygen demand (COD), and biological oxygen demand (BOD).

Percent change in contaminant loadings