

APPENDIX A

FIRE MODELING

Modules: SURFACE

Description TPM 20777- slope aspect 0 degrees from north
 Fuel/Vegetation, Surface/Understory ^{20784, 20798}

Fuel Model 4

Fuel/Vegetation, Overstory

Canopy Cover % 0

Canopy Height ft

Crown Ratio

Fuel Moisture

Moisture Scenario d111

Weather

20-ft Wind Speed mi/h 75

Wind Direction (from north) deg 0, 45, 90

Terrain

Slope Steepness % 20

Aspect (from north) deg 0

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

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Input Worksheet (continued)

Notes

The results of this run are using the fuel model for chaparral, a Santa Ana wind condition of 75 mph, with a calculated wind adjustment factor and a very low fuel moisture scenario (3,4,5,30,60). The aspect from north is 0 degrees and the slope is assumed to be 20%.

Input Worksheet (continued)

Notes

The results of this run are using the fuel model for manzanita, a Santa Ana wind condition of 75 mph, with a calculated wind adjustment factor and a very low fuel moisture scenario (3,4,5,30,60). The aspect from north is 0 degrees and the slope is assumed to be 20%.

TPM 20777 - slope aspect 0 degrees from north - manzanita

Wind Dir (north) deg	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg
0	164.5	33.1	180
45	164.1	33.1	225
90	163.0	33.0	269

TPM 20777 - slope aspect 0 degrees from north- manzanita

Wind / Slope / Fire Directions

Wind Direction (from north) : 0 deg

North



Direction of Maximum Spread (from north)

Wind Direction (from north)

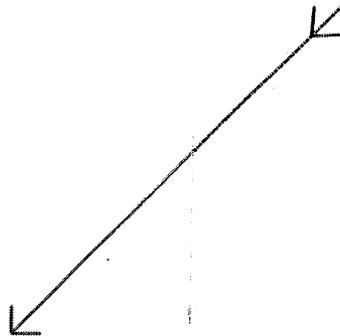
Up Slope

South

Direction of Maximum Spread (from north) 180 deg

Wind Direction (from north) : 45 deg

North



Direction of Maximum Spread (from north)

Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 225 deg

TPM 20777 - slope aspect 0 degrees from north - manzanita

Wind / Slope / Fire Directions

Wind Direction (from north) : 90 deg

North



→ Direction of Maximum Spread (from north)

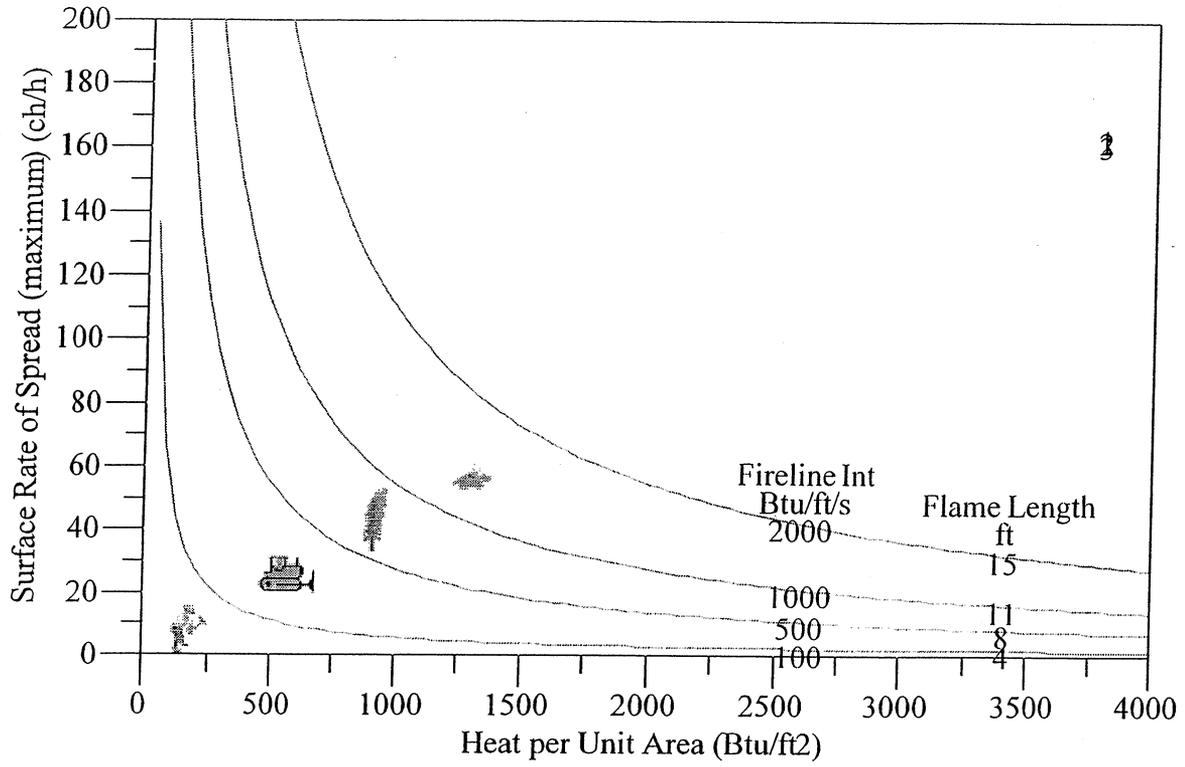
→ Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 269 deg

TPM 20777- slope aspect 0 degrees from north- manzanita
Fire Characteristics Chart



TPM 20777 - slope aspect 0 degrees from north

Wind Dir (north) deg	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg
0	2385.9	104.5	180
45	2383.7	104.5	225
90	2378.2	104.4	270

TPM 20777 - slope aspect 0 degrees from north

Wind / Slope / Fire Directions



Wind Direction (from north) : 0 deg

North



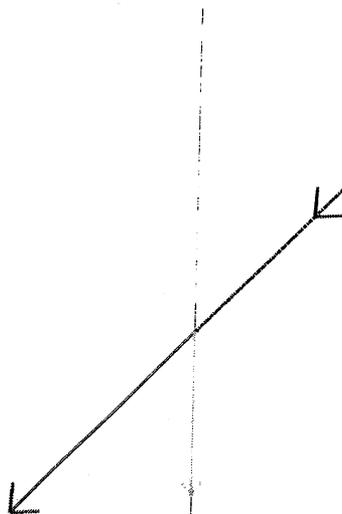
South

Direction of Maximum Spread (from north)
Wind Direction (from north)
Up Slope

Direction of Maximum Spread (from north) 180 deg

Wind Direction (from north) : 45 deg

North



South

Direction of Maximum Spread (from north)
Wind Direction (from north)
Up Slope

Direction of Maximum Spread (from north) 225 deg

TPM 20777 - slope aspect 0 degrees from north

Wind / Slope / Fire Directions

Wind Direction (from north) : 90 deg

North



Direction of Maximum Spread (from north)

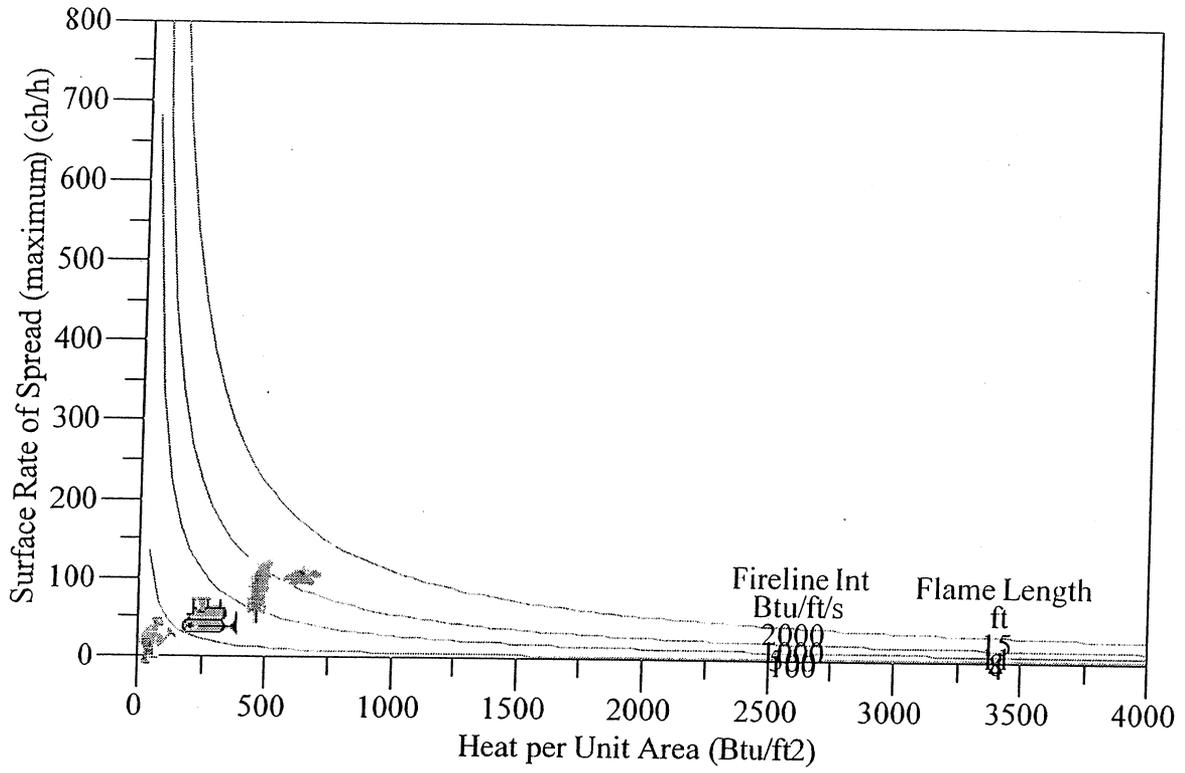
Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 270 deg

TPM 20777 - slope aspect 0 degrees from north
Fire Characteristics Chart



Discrete Variable Codes Used
TPM 20777 - slope aspect 0 degrees from north

Fuel Model

4 Chaparral (S)

Moisture Scenario

d111 D1L1 - Very low dead, fully cured herb (3,4,5,30,60)

Modules: SURFACE

Description TPM 20777- slope aspect 45 degrees from north
 Fuel/Vegetation, Surface/Understory ^{20784, 20798}

Fuel Model 4

Fuel/Vegetation, Overstory

Canopy Cover % 0

Canopy Height ft

Crown Ratio

Fuel Moisture

Moisture Scenario d111

Weather

20-ft Wind Speed mi/h 75

Wind Direction (from north) deg 0, 45, 90

Terrain

Slope Steepness % 20

Aspect (from north) deg 45

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
 for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

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Input Worksheet (continued)

Notes

The results of this run are using the fuel model for chaparral, a Santa Ana wind condition of 75 mph, with a calculated wind adjustment factor and a very low fuel moisture scenario (3,4,5,30,60). The aspect from north is 45 degrees and the slope is assumed to be 20%.

TPM 20777 - slope aspect 45 degrees from north

Wind Dir (north) deg	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg
0	2383.7	104.5	180
45	2385.9	104.5	225
90	2383.7	104.5	270

TPM 20777 - slope aspect 45 degrees from north

Wind / Slope / Fire Directions

Wind Direction (from north): 0 deg

North



South

Direction of Maximum Spread (from north) 180 deg

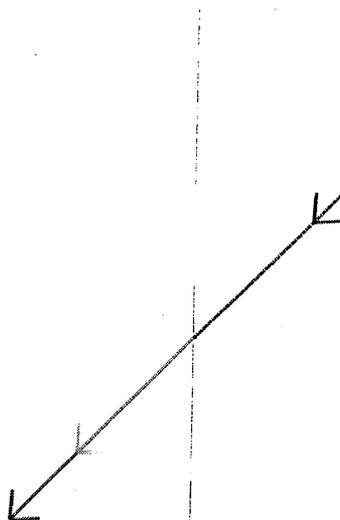
Direction of Maximum Spread (from north)

Wind Direction (from north)

Up Slope

Wind Direction (from north): 45 deg

North



South

Direction of Maximum Spread (from north) 225 deg

Direction of Maximum Spread (from north)

Wind Direction (from north)

Up Slope

TPM 20777 - slope aspect 45 degrees from north

Wind / Slope / Fire Directions

Wind Direction (from north) : 90 deg

North



Direction of Maximum Spread (from north)

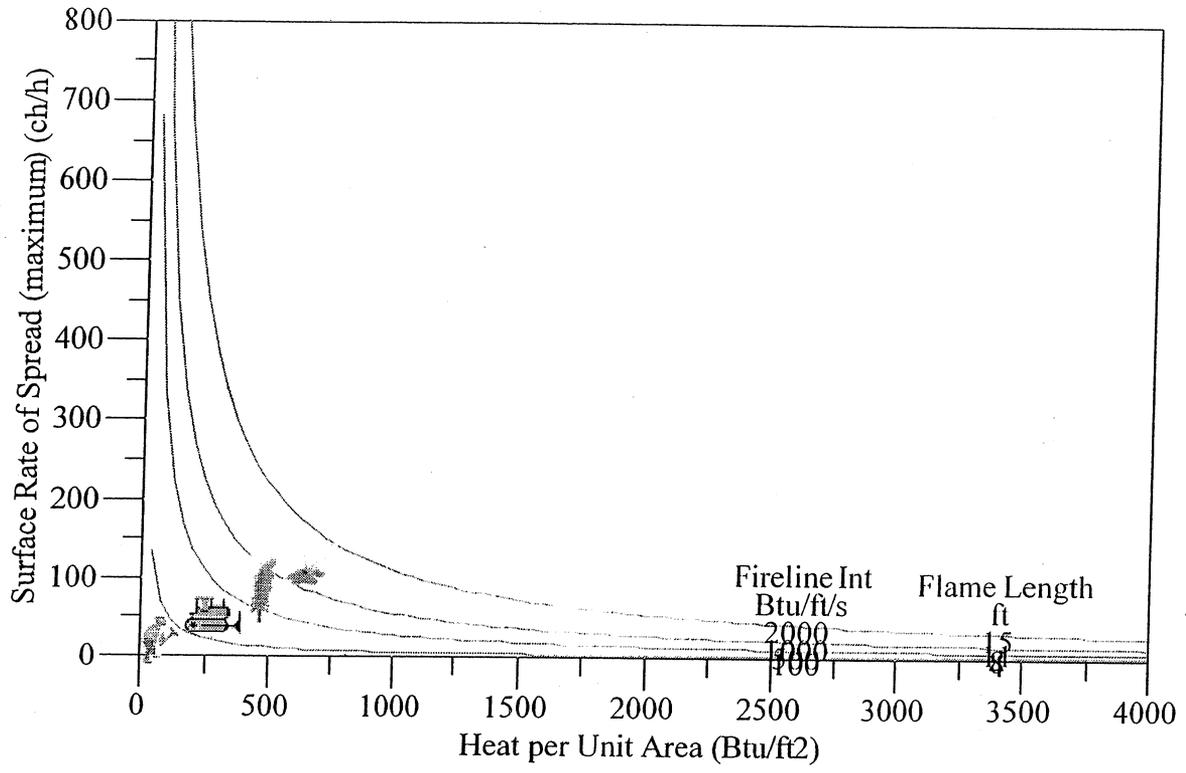
Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 270 deg

TPM 20777- slope aspect 45 degrees from north Fire Characteristics Chart



Discrete Variable Codes Used

TPM 20777 - slope aspect 45 degrees from north

Fuel Model

4 Chaparral (S)

Moisture Scenario

d111 D1L1 - Very low dead, fully cured herb (3,4,5,30,60)

Modules: SURFACE

Description TPM 20777 - slope aspect 90 degrees from north
 20784, 20798

Fuel/Vegetation, Surface/Understory

Fuel Model 4

Fuel/Vegetation, Overstory

Canopy Cover % 0

Canopy Height ft

Crown Ratio

Fuel Moisture

Moisture Scenario d111

Weather

20-ft Wind Speed mi/h 75

Wind Direction (from north) deg 0, 45, 90

Terrain

Slope Steepness % 20

Aspect (from north) deg 90

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

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Input Worksheet (continued)

Notes

The results of this run are using the fuel model for chaparral, a Santa Ana wind condition of 75 mph, with a calculated wind adjustment factor and a very low fuel moisture scenario (3,4,5,30,60). The aspect from north is 90 degrees and the slope is assumed to be 20%.

TPM 20777 - slope aspect 90 degrees from north

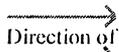
Wind Dir (north) deg	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg
0	2378.2	104.4	180
45	2383.7	104.5	225
90	2385.9	104.5	270

TPM 20777 - slope aspect 90 degrees from north

Wind / Slope / Fire Directions

Wind Direction (from north) : 0 deg

North



Direction of Maximum Spread (from north)

Wind Direction (from north)

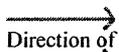
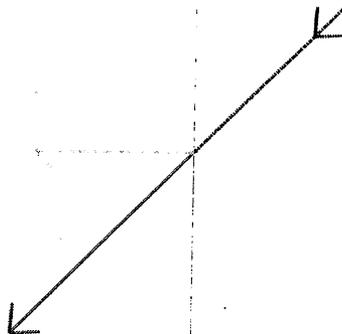
Up Slope

South

Direction of Maximum Spread (from north) 180 deg

Wind Direction (from north) : 45 deg

North



Direction of Maximum Spread (from north)

Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 225 deg

TPM 20777 - slope aspect 90 degrees from north

Wind / Slope / Fire Directions

Wind Direction (from north) : 90 deg

North



→ Direction of Maximum Spread (from north)

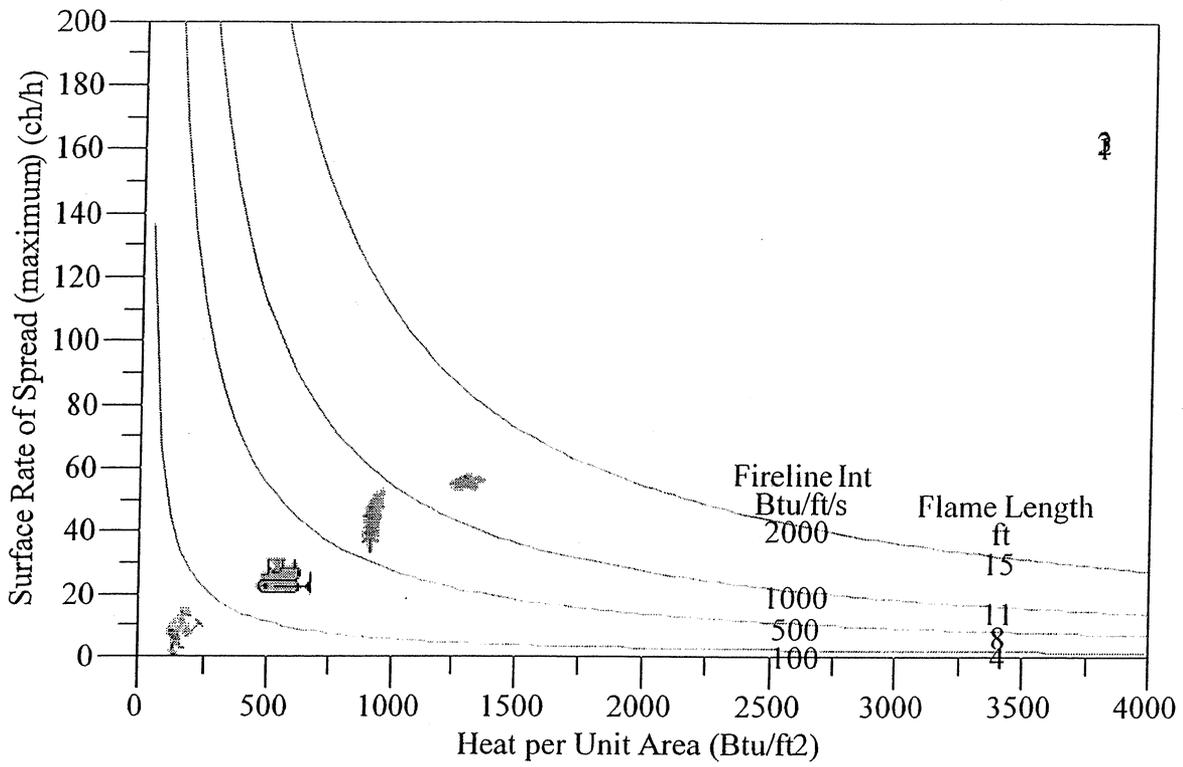
→ Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 270 deg

TPM 20777 - slope aspect 90 degrees from north Fire Characteristics Chart



Discrete Variable Codes Used
TPM 20777 - slope aspect 90 degrees from north

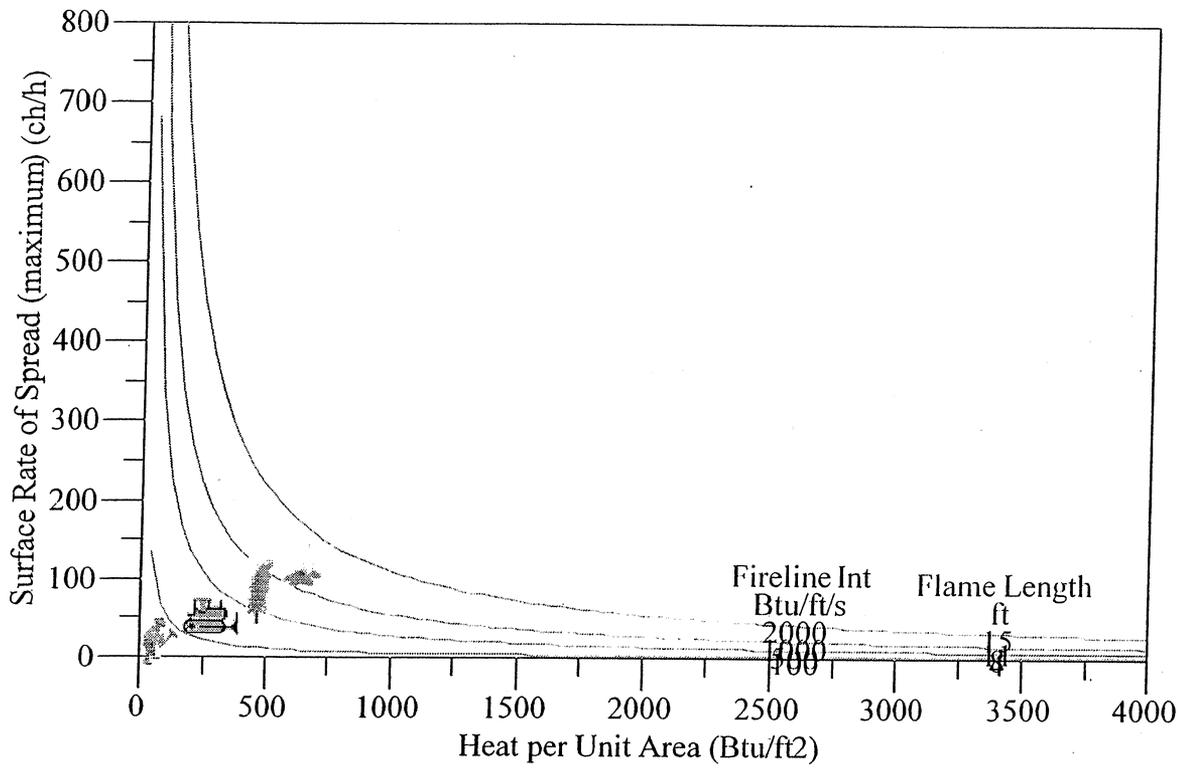
Fuel Model

4 Chaparral (S)

Moisture Scenario

d111 D1L1 - Very low dead, fully cured herb (3,4,5,30,60)

TPM 20777 - slope aspect 90 degrees from north Fire Characteristics Chart



Discrete Variable Codes Used
TPM 20777 - slope aspect 90 degrees from north

Fuel Model

SCAL14 Manzanita

Moisture Scenario

d111 D1L1 - Very low dead, fully cured herb (3,4,5,30,60)

Modules: SURFACE

Description TPM 20777- slope aspect 0 degrees from north- man
 Fuel/Vegetation, Surface/Understory ^{20784, 20798}

Fuel Model SCAL14

Fuel/Vegetation, Overstory

Canopy Cover % 0

Canopy Height ft

Crown Ratio

Fuel Moisture

Moisture Scenario d111

Weather

20-ft Wind Speed mi/h 75

Wind Direction (from north) deg 0, 45, 90

Terrain

Slope Steepness % 20

Aspect (from north) deg 0

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
 for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

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Discrete Variable Codes Used

TPM 20777 - slope aspect 0 degrees from north - manzanita

Fuel Model

SCAL14 Manzanita

Moisture Scenario

d111 D1L1 - Very low dead, fully cured herb (3,4,5,30,60)

Modules: SURFACE

Description TPM 20777, - slope aspect 45 degrees from north - ma
 20164, 20798

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL14

Fuel/Vegetation, Overstory

Canopy Cover % 0

Canopy Height ft

Crown Ratio

Fuel Moisture

Moisture Scenario d111

Weather

20-ft Wind Speed mi/h 75

Wind Direction (from north) deg 0, 45, 90

Terrain

Slope Steepness % 20

Aspect (from north) deg 45

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
 for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

(continued on next page)

Input Worksheet (continued)

Notes

The results of this run are using the fuel model for manzanita, a Santa Ana wind condition of 75 mph, with a calculated wind adjustment factor and a very low fuel moisture scenario (3,4,5,30,60). The aspect from north is 45 degrees and the slope is assumed to be 20%.

TPM 20777 - slope aspect 45 degrees from north - manzanita

Wind Dir (north) deg	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg
0	164.1	33.1	180
45	164.5	33.1	225
90	164.1	33.1	270

TPM 20777 - slope aspect 45 degrees from north - manzanita

Wind / Slope / Fire Directions

Wind Direction (from north) : 0 deg

North



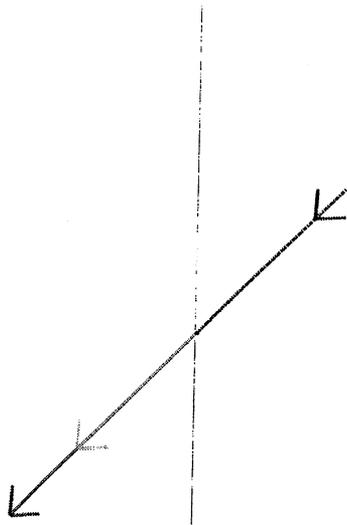
South

Direction of Maximum Spread (from north) 180 deg

Direction of Maximum Spread (from north)
Wind Direction (from north)
Up Slope

Wind Direction (from north) : 45 deg

North



South

Direction of Maximum Spread (from north) 225 deg

Direction of Maximum Spread (from north)
Wind Direction (from north)
Up Slope

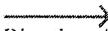
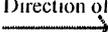
TPM 20777 - slope aspect 45 degrees from north - manzanita

Wind / Slope / Fire Directions

Wind Direction (from north) : 90 deg

North



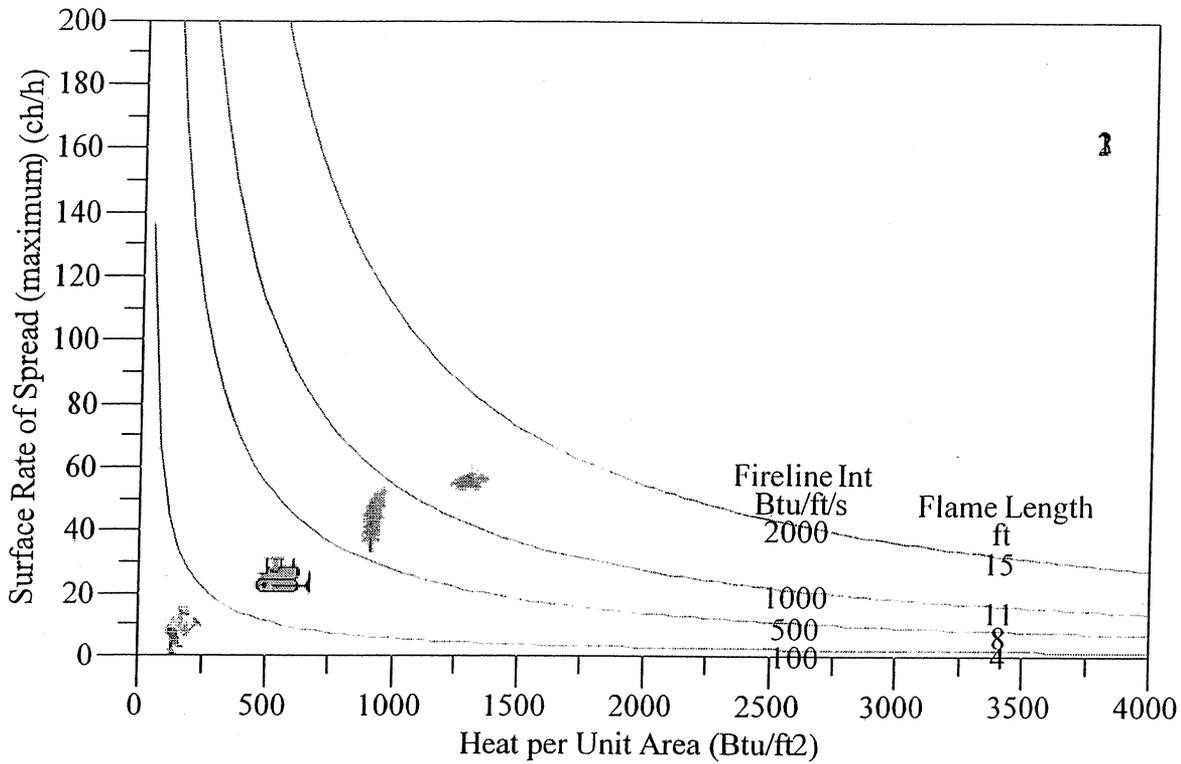
 Direction of Maximum Spread (from north)
 Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 270 deg

TPM 20777 - slope aspect 45 degrees from north- manzanita Fire Characteristics Chart



Discrete Variable Codes Used

TPM 20777 - slope aspect 45 degrees from north - manzanita

Fuel Model

SCAL 14 Manzanita

Moisture Scenario

d111 D1L1 - Very low dead, fully cured herb (3,4,5,30,60)

Modules: SURFACE

Description TPM 20777 - slope aspect 90 degrees from north
 20781, 20790

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL14

Fuel/Vegetation, Overstory

Canopy Cover % 0

Canopy Height ft

Crown Ratio

Fuel Moisture

Moisture Scenario d111

Weather

20-ft Wind Speed mi/h 75

Wind Direction (from north) deg 0, 45, 90

Terrain

Slope Steepness % 20

Aspect (from north) deg 90

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
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Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

(continued on next page)

Input Worksheet (continued)

Notes

The results of this run are using the fuel model for chaparral, a Santa Ana wind condition of 75 mph, with a calculated wind adjustment factor and a very low fuel moisture scenario (3,4,5,30,60). The aspect from north is 90 degrees and the slope is assumed to be 20%.

TPM 20777 - slope aspect 90 degrees from north

Wind Dir (north) deg	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg
0	163.0	33.0	181
45	164.1	33.1	225
90	164.5	33.1	270

TPM 20777 - slope aspect 90 degrees from north

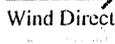
Wind / Slope / Fire Directions

Wind Direction (from north) : 90 deg

North



Direction of Maximum Spread (from north)



Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 270 deg

TPM 20777 - slope aspect 90 degrees from north

Wind / Slope / Fire Directions

Wind Direction (from north) : 0 deg

North



Direction of Maximum Spread (from north)

Direction of Maximum Spread (from north)

Wind Direction (from north)

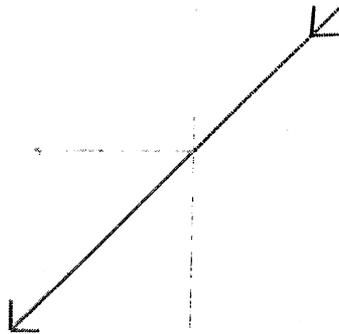
Up Slope

South

Direction of Maximum Spread (from north) 181 deg

Wind Direction (from north) : 45 deg

North



Direction of Maximum Spread (from north)

Direction of Maximum Spread (from north)

Wind Direction (from north)

Up Slope

South

Direction of Maximum Spread (from north) 225 deg