

Near Road NO₂ Monitoring Pilot Study Progress Report

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3 Major Components of Pilot Study

- Selection, installation and operation of a permanent near-road NO₂ ambient air monitoring station.
- Conduct an area-wide passive monitoring study.
- Assist with EPA modeling of NO₂ distribution using AERMOD by providing modeling inputs.

Boise Idaho Near – Road NO2 Monitoring Pilot Study

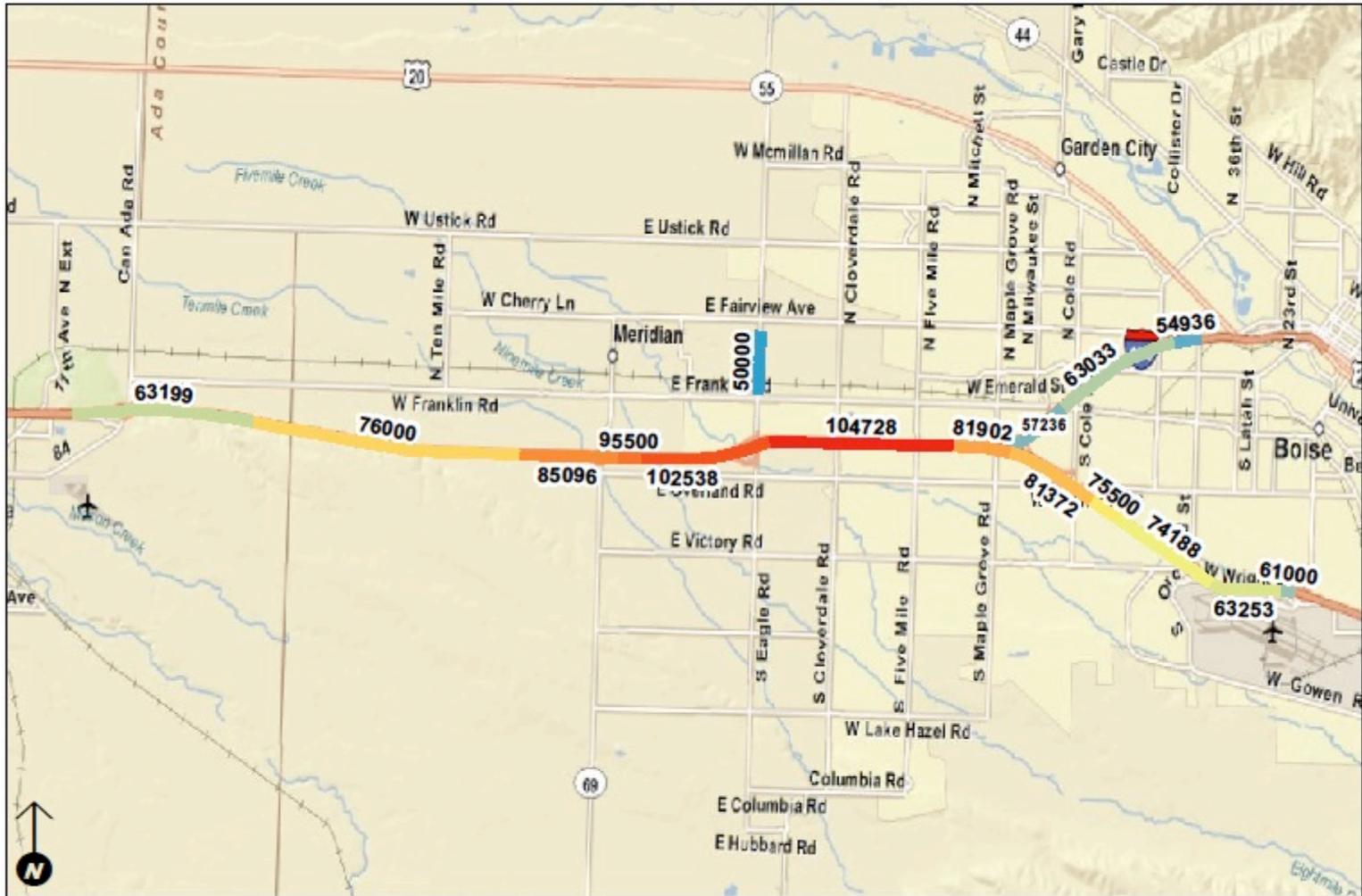
- Permanent monitoring site criteria:
 - Evaluate AADT data (HPMS)
 - Evaluate Heavy Duty vehicle data (fleet mix)
 - Evaluate traffic congestion data
 - Evaluate wind rose data
 - Identify potential candidate sites, including potential for safe access, permissions, power etc.

Boise: Top 20 Road Segments Using 2009 HPMS and Local* HD Data

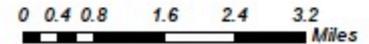
HPMS		AADT-				HD- Estimated		
ID	Location	ROUTE	LANES	RANK	AADT	Rank	HD	ModAADT
19	I-84 east of Five Mile to Eagle Road	84	6	1	104,728	1	6,900	166,828
18	I-84 Eagle Road to east of Meridian Road	84	6	2	102,538	3	6,700	162,838
17	I-84 small segment east of Meridian Road	84	6	3	95,500	3	6,700	155,800
16	I-84 small segment east of Meridian Road	84	6	3	95,500	3	6,700	155,800
20	I-84 Y to east of Five Mile	84	8	6	81,902	1	6,900	144,002
15	I-84 Meridian Road to Linder	84	4	5	85,096	10	6,400	142,696
21	I-84 Cole to Y	84	6	7	81,372	16	6,100	136,272
22	I-84 Targee to Cole	84	6	12	75,500	6	6,600	134,900
14	I-84 Linder to east of Ten Mile	84	4	8	76,000	10	6,400	133,600
13	I-84 east of Ten Mile to Ten Mile	84	4	8	76,000	10	6,400	133,600
12	I-84 Ten Mile to County Line	84	4	8	76,000	10	6,400	133,600
843	I-84 County Line to Flamingo	84	4	8	76,000	10	6,400	133,600
23	I-84 Orchard to Targee	84	4	13	74,188	6	6,600	133,588
24	I-84 Owyhee to Orchard	84	4	14	63,253	6	6,600	122,653
842	I-84 Flamingo to Garrity	84	4	15	63,199	10	6,400	120,799
25	I-84 Vista to Owyhee	84	4	17	61,000	6	6,600	120,400
121	184 Curtis to Franklin	184	6	16	63,033	18	2,900	89,133
120	184 Franklin to I-84	184	4	18	57,236	18	2,900	83,336
122	184 Orchard to Curtis	184	7	19	54,936	17	3,000	81,936
56	Eagle Road Franklin to Fairview	00SH055	4	20	50,000	20	900	58,100

* Local HD data provided by Idaho Transportation Department

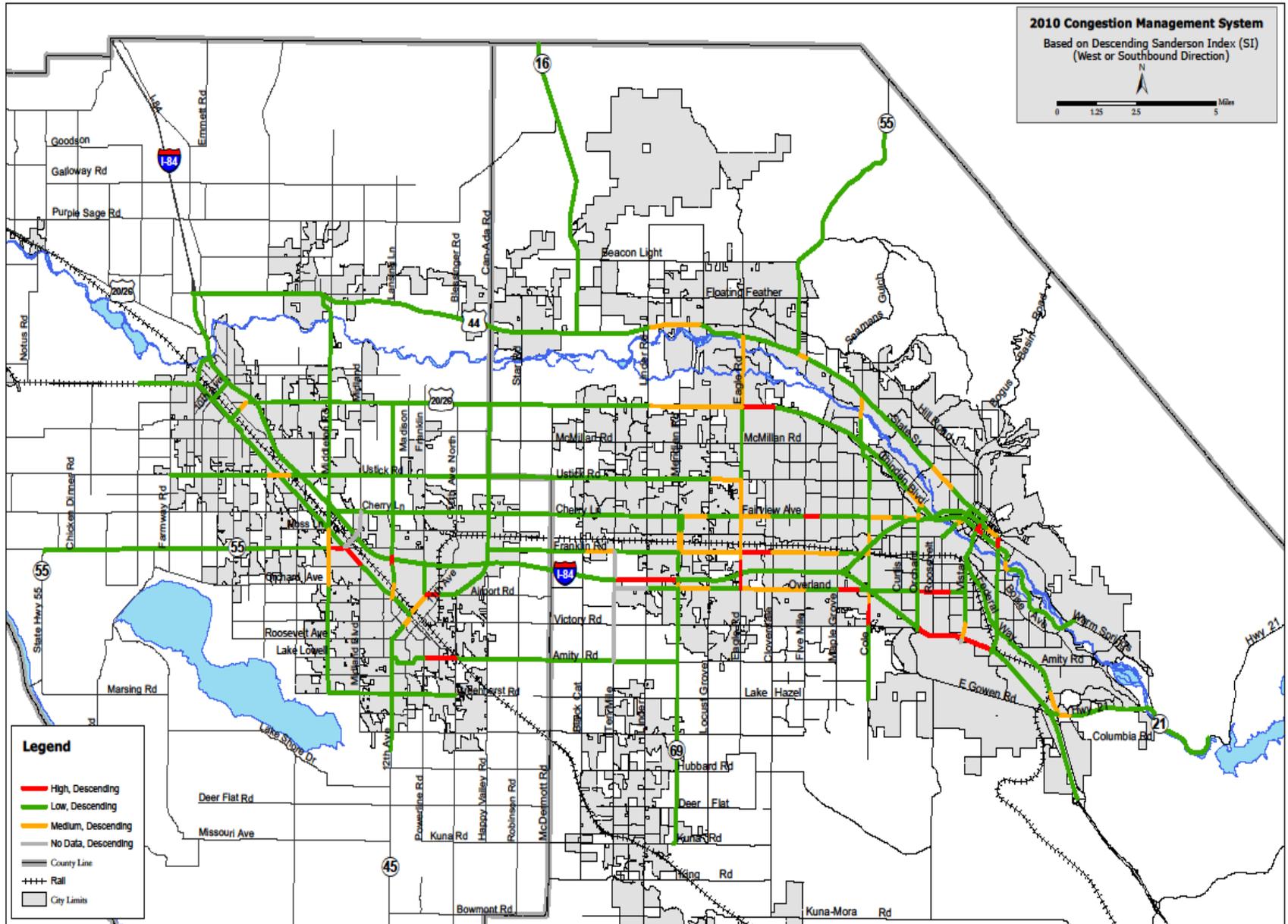
Boise Top 20 Road Segments



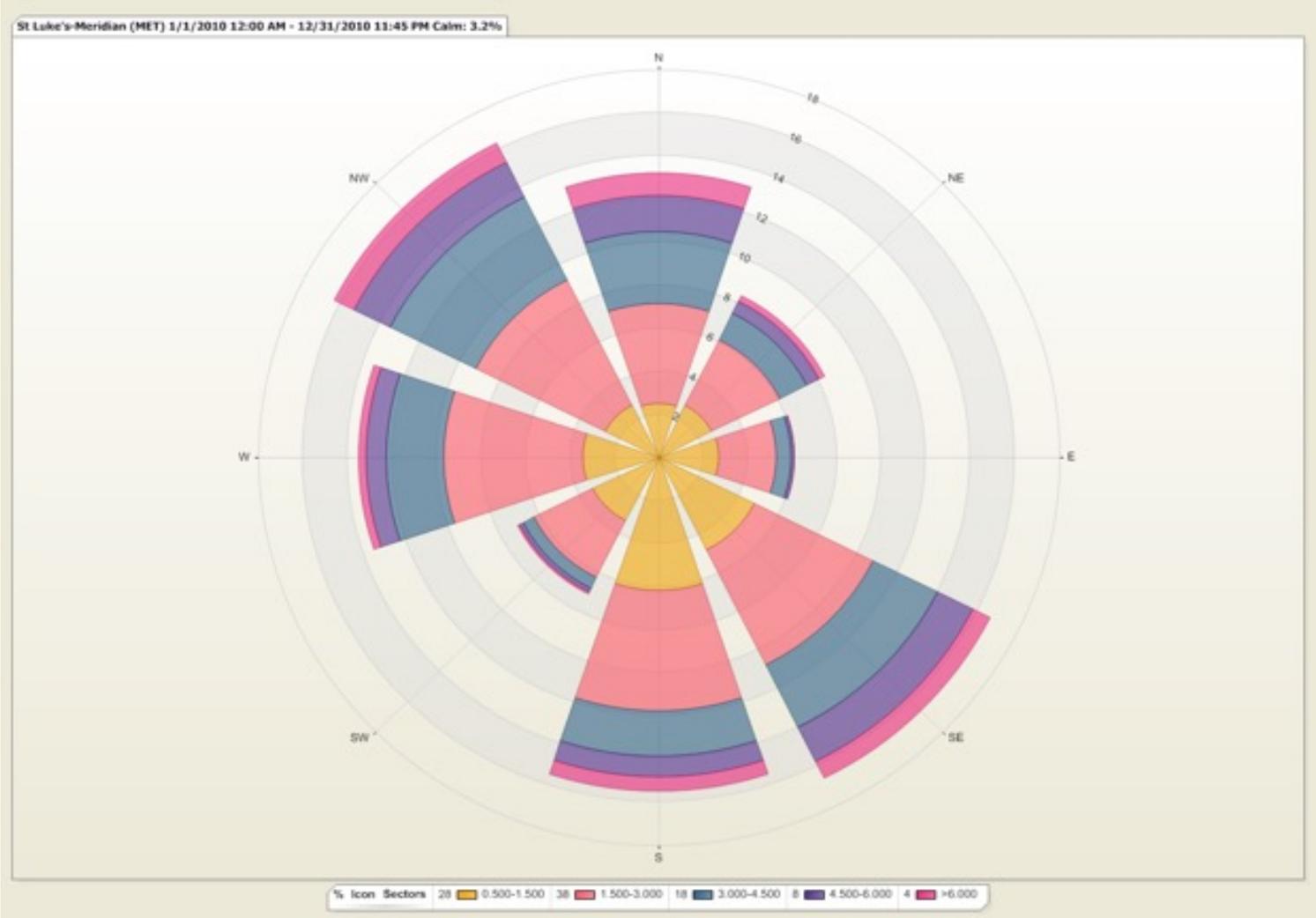
Labels on road segments are 2010 AADT volumes from HPMS.



COMPASS (MPO) Congestion Map – 2010 CMS Report

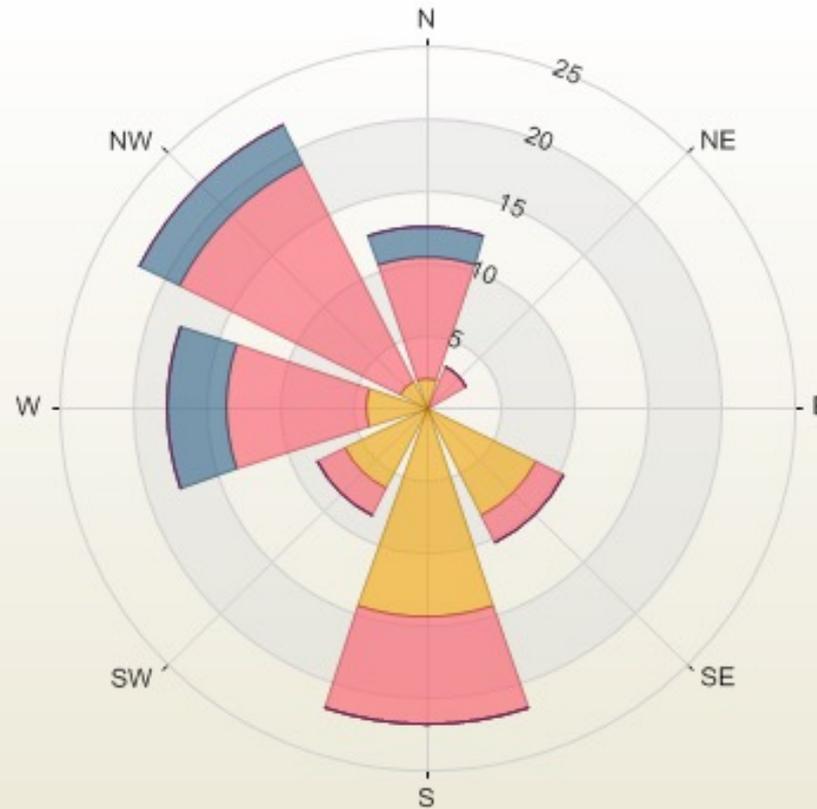


St. Lukes – Meridian(NCore) 2010 Annual Wind Rose



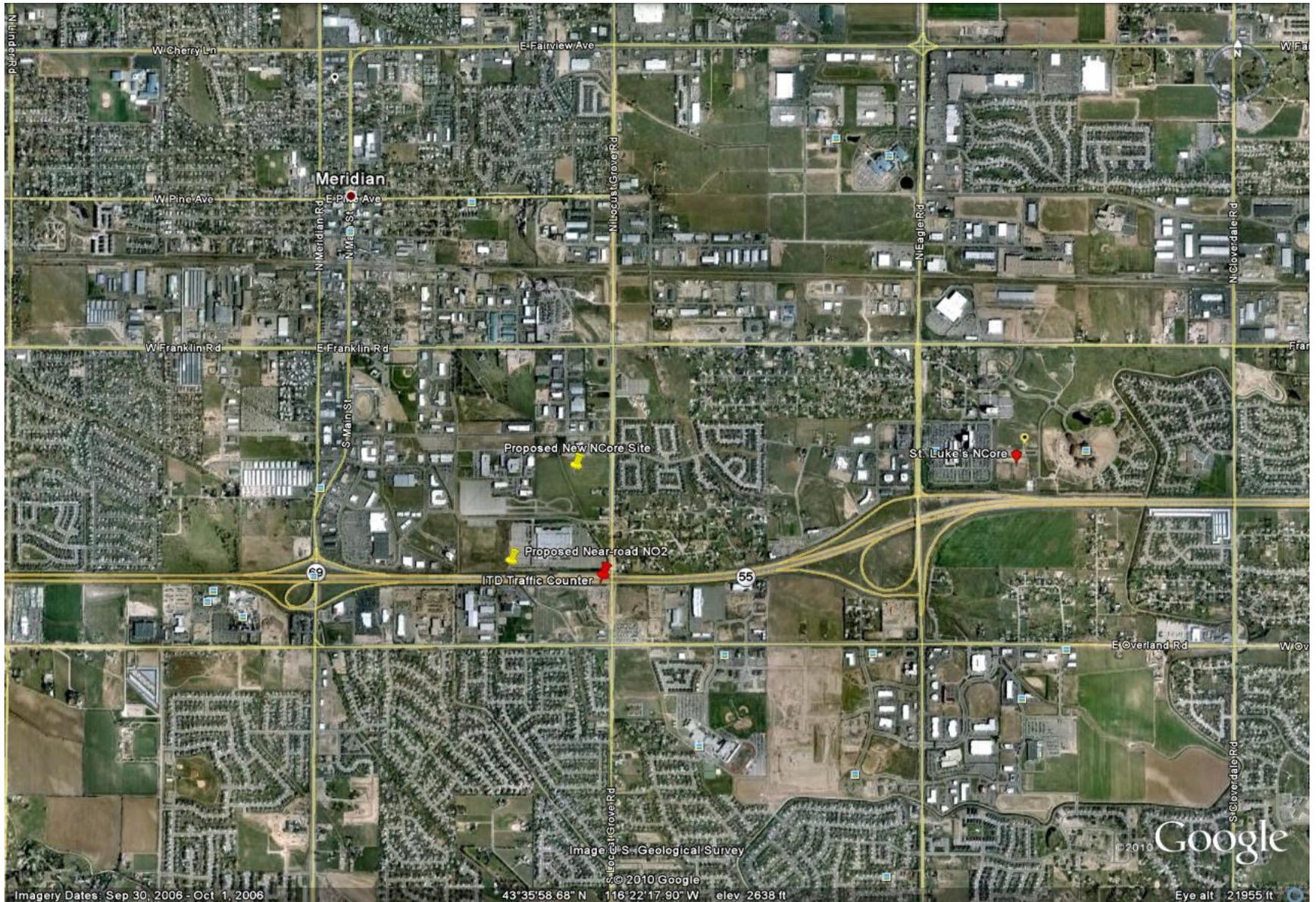
St. Lukes – Meridian (NCore) Typical Summer Daily Wind Distribution

St Luke's-Meridian (MET) 8/2/2010 12:00 AM - 8/2/2010 11:45 PM Calm: 4.2%

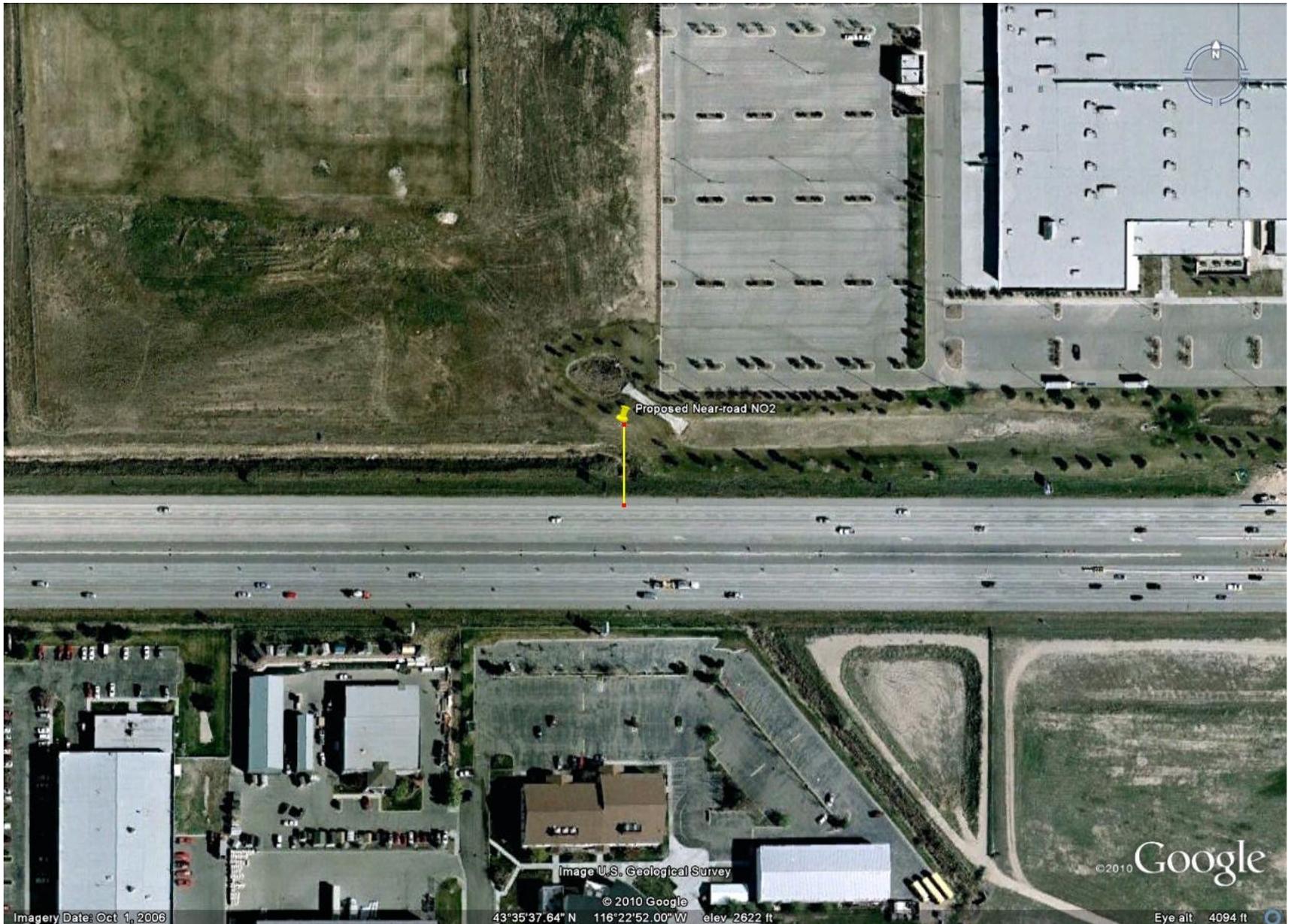


% Icon Sectors	37	0.500-1.500	49	1.500-3.000	9	3.000-4.500	0	4.500-6.000	0	>6.000
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Proposed Near Road NO2 Monitoring Site



Proposed Near-road NO2 Monitoring Site



Physical Location of Proposed Site



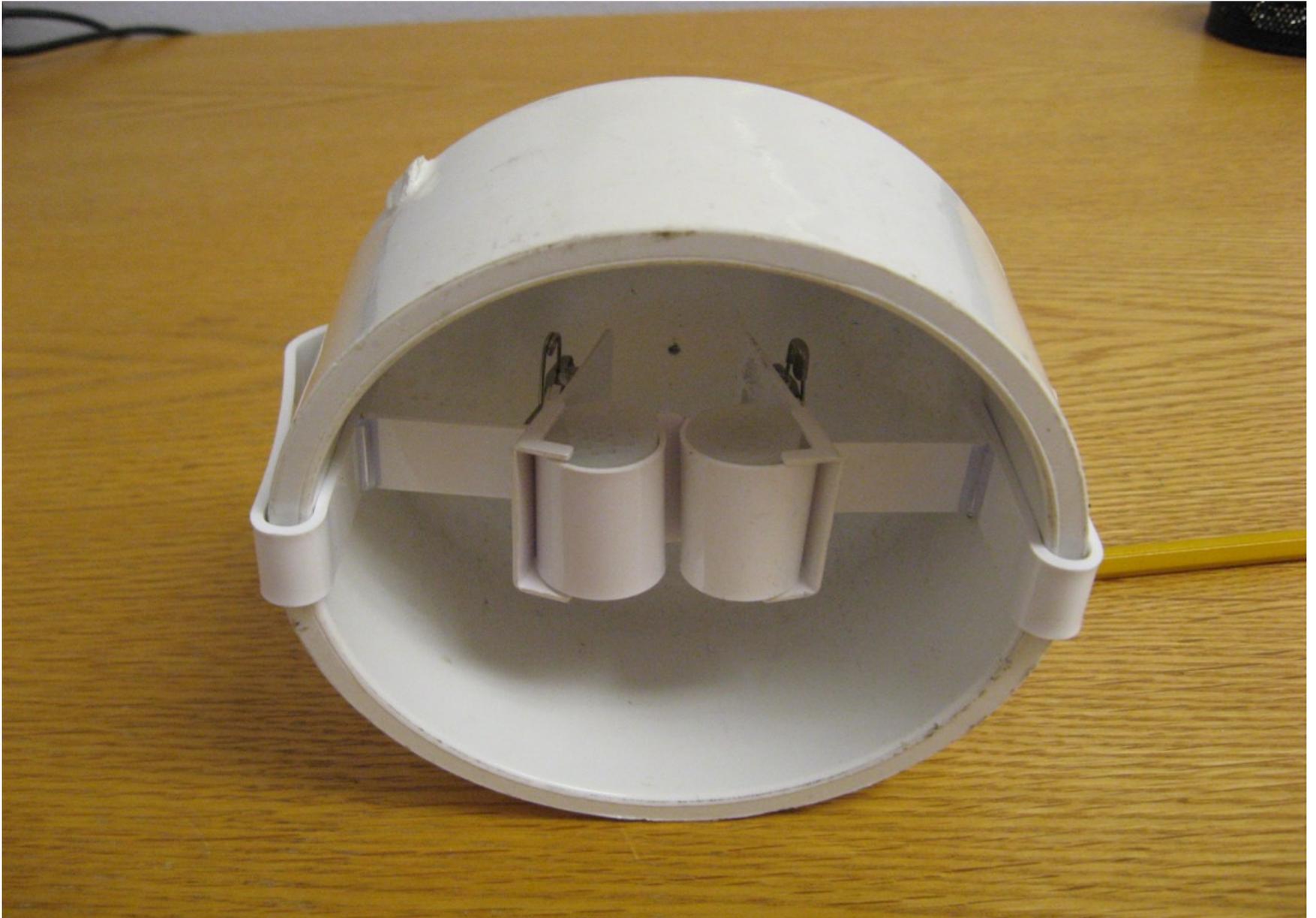
Capital Expenditures - NO2 Pilot Study Monitoring Equipment

Air Monitoring Shelter		Quoted Price	Preferred Vendor	Comments
Ecotech 20' Air Monitoring Container Shelter	Should be large enough for multi-pollutant monitoring Consider potential for future rooftop monitoring Temperature control critical, separate room for analyzers R25 insulation w/ +/- 3 degree C	\$66,775.00	American Ecotech	On-site integration
Air Sampling Instrumentation				
T-API T200U w/ Photolytic Conv. Option	Photolytic-chemiluminescent NO2 analyzer	\$25,422.00	TAPI	
T-API T300U	Trace-level CO analyzer	\$11,899.00	TAPI	
Magee AE22	Black Carbon Aethalometer	\$19,545.00	Magee	
TSI 3031 UFP Counter	Ultra-fine particle or particle size distribution analyzer - default to TSI Particle Counter	\$65,826.00	TSI	
T-API 701H	Zero air generator	\$7,455.00	TAPI	
T-API 700EU (Options TBD)	Calibration system	\$19,349.00	TAPI	
Meteorological Instrumentation				
81000 Ultrasonic Anemometer - 10m	3-D Ultrasonic Anemometer	\$2,590.00	RM Young	
05305 RM Young Wind Monitor AQ (audit)	Vane Anemometer - 10m	\$1,054.00	RM Young	Collocation WS&WD
41382 Temperature/RH Sensor - 10m	Temperature & Humidity	\$788.00	RM Young	
41003P Multi-plate Radiation Shield	For Temp/RH sensor	\$146.00	RM Young	
41390 Accessory Junction Box	For Radiation Shield	\$90.00	RM Young	
32400 Serial Interface	For Temp/RH sensor	\$536.00	RM Young	
Cables	For 10m Installation	\$132.00	RM Young	
Data logging hardware, software and supporting documentation				
DR-DAS / Envidas Ultimate, Advantech Computer logger	Should be consistent with existing infrastructure	\$7,126.00	DR DAS	
Total		\$228,733.00		

Passive Monitoring Study

- Six passive monitoring sites total – NO_x & NO₂ Ogawa passive sampler devices (PSD)
- Five along I-84, one collocated at our community-oriented NO/NO₂/NO_x monitoring site (ITD)
- One “transect” at the proposed near-road monitoring station (JBL) – distance from nearest traffic lane = 12, 22, 32, and 42 meters
 - 12 meter pole has 2m and 7m probe(s)
- All other probes 2m above ground level
- Sample interval = 1 week
- Sample period = 5 consecutive weeks
- All samples in duplicate – 2 PSD’s installed in one shelter
- 1 field and 1 trip blank each sample interval

2 PSD's Installed in Shelter

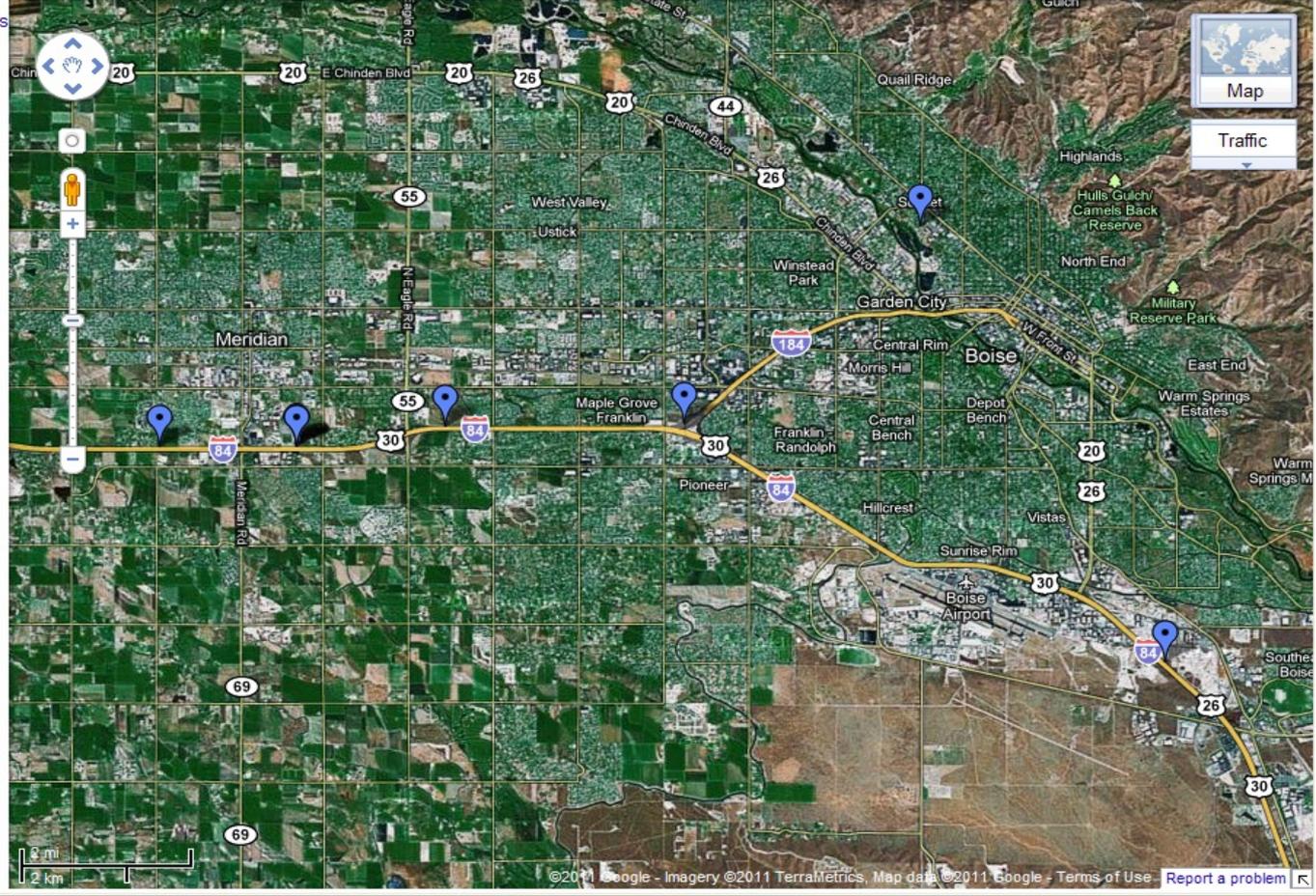


Treasure Valley – NO2 Passive Monitoring Network

Boise, ID Passive Monitoring Sites
 6 views - Unlisted
 Created on Apr 11 - Updated Apr 11
 By Matt
 Rate this map - Write a comment

- [Linder Road Site - LDR](#)
43.59375 N, -116.41321 W
- [Old Jabil Property - JBL](#)
12 m mount - 43.59375 N, -116.38111 W
- [Old Jabil Property - JBL](#)
22 m mount - 43.59384 N, -116.38111 W
- [Old Jabil Property - JBL](#)
32 m mount - 43.59384 N, -116.38111 W
- [Old Jabil Property - JBL](#)
42 m mount - 43.59405 N, -116.38111 W
- [St Lukes Site - STL](#)
43.59759 N, -116.34584 W
- [Flying Wye Site - FLY](#)
43.59792 N, -116.28963 W
- [Idaho Trans. Dept. Site - ITD](#)
43.63460 N, -116.23388 W
- [Western Truss Site - WT](#)
43.55409 N, -116.17628 W

Report a problem



Western Truss (WT) - ~ 2 miles East of Last Urban Interchange



04/01/2011

Flying Wye (FLY)



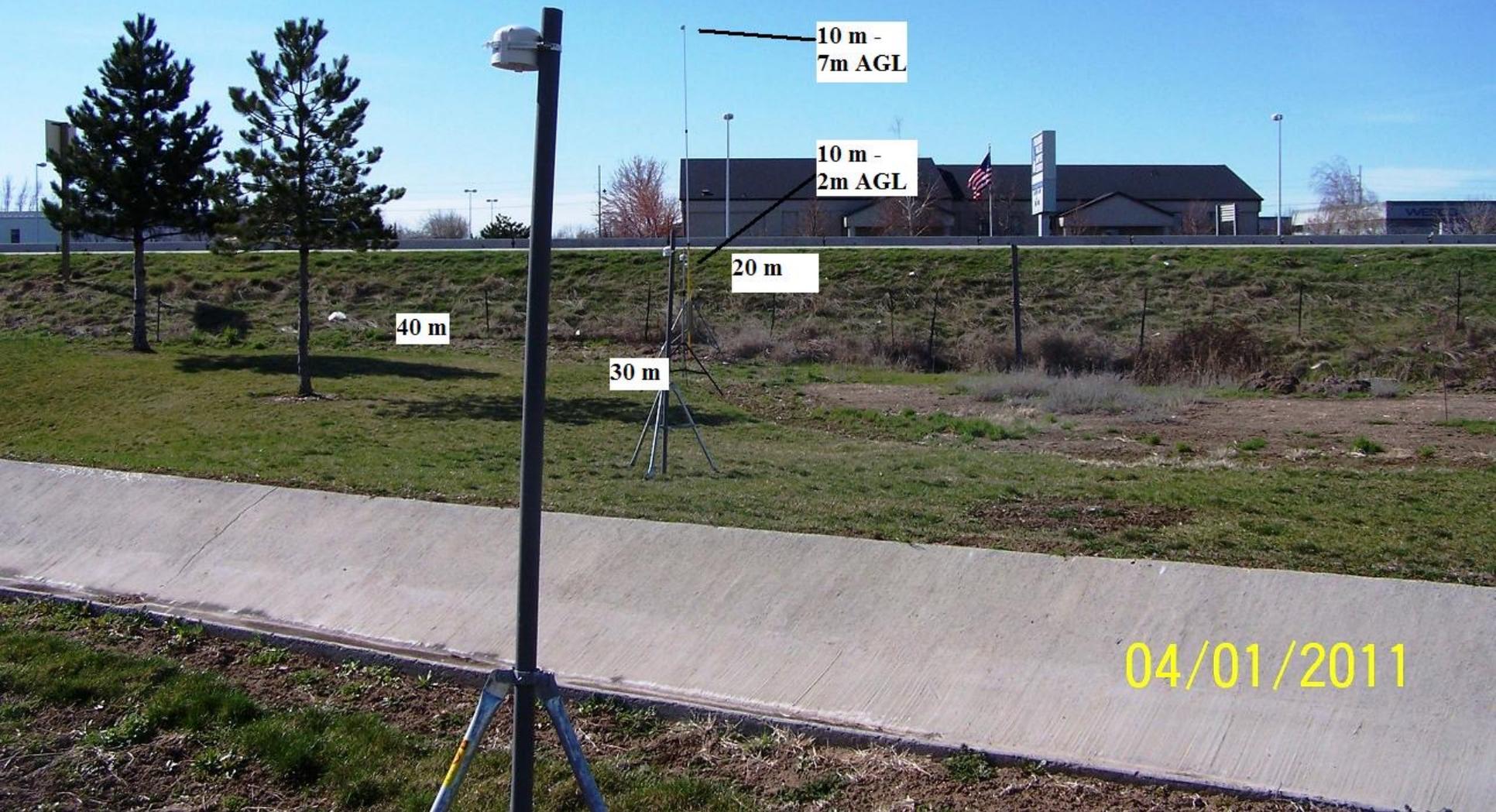
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St. Luke's (STL) – ~ 290 m North of NCore Station



04/01/2011

Jabil (JBL) – Site of Permanent Monitoring Station – Transect Site



Linder Road (LDR)



04/01/2011

Idaho Transportation Department (ITD) – Collocated with NOx FRM



04/01/2011



Site Information Sheet
Near-road NO₂ Pilot Passive Sampling

Site name Flying Wye - FLY

Site address
none

Target roadway information (Name/ID)

Est. AADT & rank	AADT - 81,902 Rank -6	Est. heavy duty count	6,900
Est. fleet equiv. AADT & rank	AADT - 144,002 Rank - 1		

Site access and safety (including entry/egress points and any suggested or required safety procedures)
accessed via pulling off westbound lane of I-184 onto ITD property; potentially heavy traffic area requiring departure from roadway at undeveloped location; low-speed road departure/re-entry required with other vehicles accessing I-84 west at freeway speed

PSD Mount Information

Number of PSD mounts on site

PSD Mount 1

Latitude 43.59792 N
Longitude -116.28966 W
Distance from road (m) 12 m
PSD mount height (m) 2 m

PSD Mount 2

Latitude n/a
Longitude
Distance from road (m)
PSD mount height (m)

PSD Mount 3

Latitude
Longitude
Distance from road (m)
PSD mount height (m)



Miscellaneous information:



Passive Sampling Device (PSD) Chain of Custody Form

(For use with each PSD clip, which may have duplicate media within)

Field Log

PSD ID <u>B0-013</u>		PSD receipt date (optional)
Substrate information <input checked="" type="checkbox"/> NO ₂ <input type="checkbox"/> NO _x		
Type of use <input checked="" type="checkbox"/> Sample <input type="checkbox"/> Field Blank <input type="checkbox"/> Trip Blank		
Site name <u>Old Jabil Property - JBL</u>	Exposure date and time (mm/dd/yy hh:mm) <u>4-3-2011</u> <u>12:39</u>	
PSD mount no. <u>5</u>		
Latitude <u>43.59405 N</u>		
Longitude <u>(- 116.38111 W)</u>		
Distance from road (m) <u>42 m</u>	Recovery date and time (mm/dd/yy hh:mm) <u>4-10-2011</u> <u>12:23</u>	
PSD mount height (m) <u>2 m</u>		
Field notes		

Chain of Custody Log

Shipping Information	
Shipped to lab by <u>Scott Peifer</u>	Date <u>4-11-2011</u>
FedEx tracking number <u>7940 3453 5250</u>	
Lab Receipt Information (Lab Use Only)	
Received at lab by	Date
Condition of container/PSDs	