Story Mill Landfill Update

Community Meeting
November 6, 2013

Introductions

- Sean Becker, Mayor
- Craig Woolard, Public Works Director
- Carol Ballew, Senior Epidemiologist Montana Department of Public Health and Human Services
- City Staff
- TetraTech Staff
- Department of Environmental Quality Staff

Guiding Principles

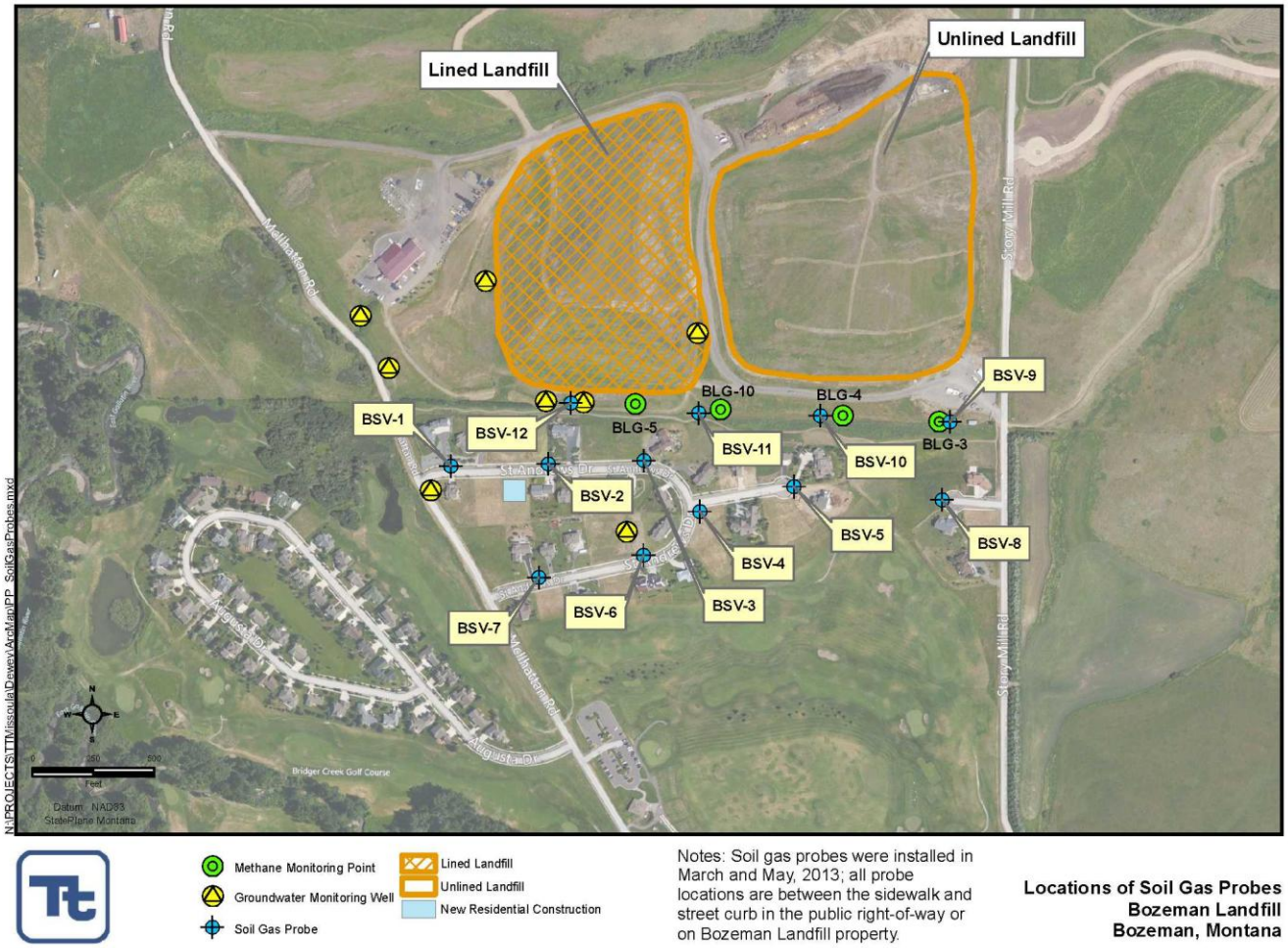
- Health and well being is our primary concern
- Timely information
- Commitment to resolve gas contamination caused by the City's landfill
- Deliberate, science based decision making

Tonight's Meeting

- Progress Report
- Site Model
- Health Risk Discussion
- Next Steps
- Information Sessions

Progress Report

- Background
  - Sampling
  - Regional Screening Level (RSL)



Progress Report

- Phase III
  - Data summary
    - Street samples
    - Indoor air sampling
    - Sub-slab sampling
    - Subsurface geology
  - One compound above RSL =>Mitigation system installation offered
  - Overview of results

Phase III Air Sampling Results Summary

COMPOUND RANGES FOR BOZEMAN LANDFILL SOIL GAS PROJECT - PHASE III (All Concentrations in ug/m3)						
Compound	**Soil Gas Probes**	**Sub-Slab**	**Indoor Air**	**RSL***	**MRL****	**DEQ Study*****
Bromomethane	ND	ND- 16	ND	5.2	19.40	<0.77 - <1.3
2-Butanone (Methyl Ethyl Ketone)	6.6 - 160	ND - 6200	1.3 - 28	5200	no data	<7.7 - 18
Tetrahydrofuran	ND - 46	ND - 5700	ND - 32	2090	27.00	<0.80 - 4.2
Carbon Tetrachloride	ND	ND - 0.78	ND - 0.84	0.406	188.62	<0.77 - 1.5
1,4-Dioxane	ND	ND - 6.3	ND - 7.3	0.316	108.04	<0.77 - <1.3
1,2,4-Trimethylbenzene	ND - 9.1	ND - 24	ND - 52	7.3	21,800†	<0.86 - 8.7
Vinyl Chloride	ND - 850	ND - 0.58	ND - 0.25	0.16	76.64	<0.038 - <0.064
Benzene	0.92 - 16	ND - 14	0.14 - 34	0.31	9.58	0.52 - 12
1,2-Dichloroethane	ND - 0.050	ND - 14	ND - 350	0.094	2426.98	0.11 - 1.2
Trichloroethene	ND - 24	ND - 5.6	ND - 3.1	0.43	2.15	<0.042 - 1.3
Tetrachloroethene	3.9 - 790	ND - 340	ND - 15	9.4	271.13	0.061 - 2.8
Ethyl Benzene	0.28 - 7.9	ND - 36	0.025 - 30	0.97	260.38	0.41 - 6.0
m,p-Xylene	0.33 - 32	ND - 39	0.080 - 140	104	216.98	<1.7 - 24
Chloroform	ND - 14	ND - 1.6	ND - 18	0.11	97.59	<0.82 - 3.6

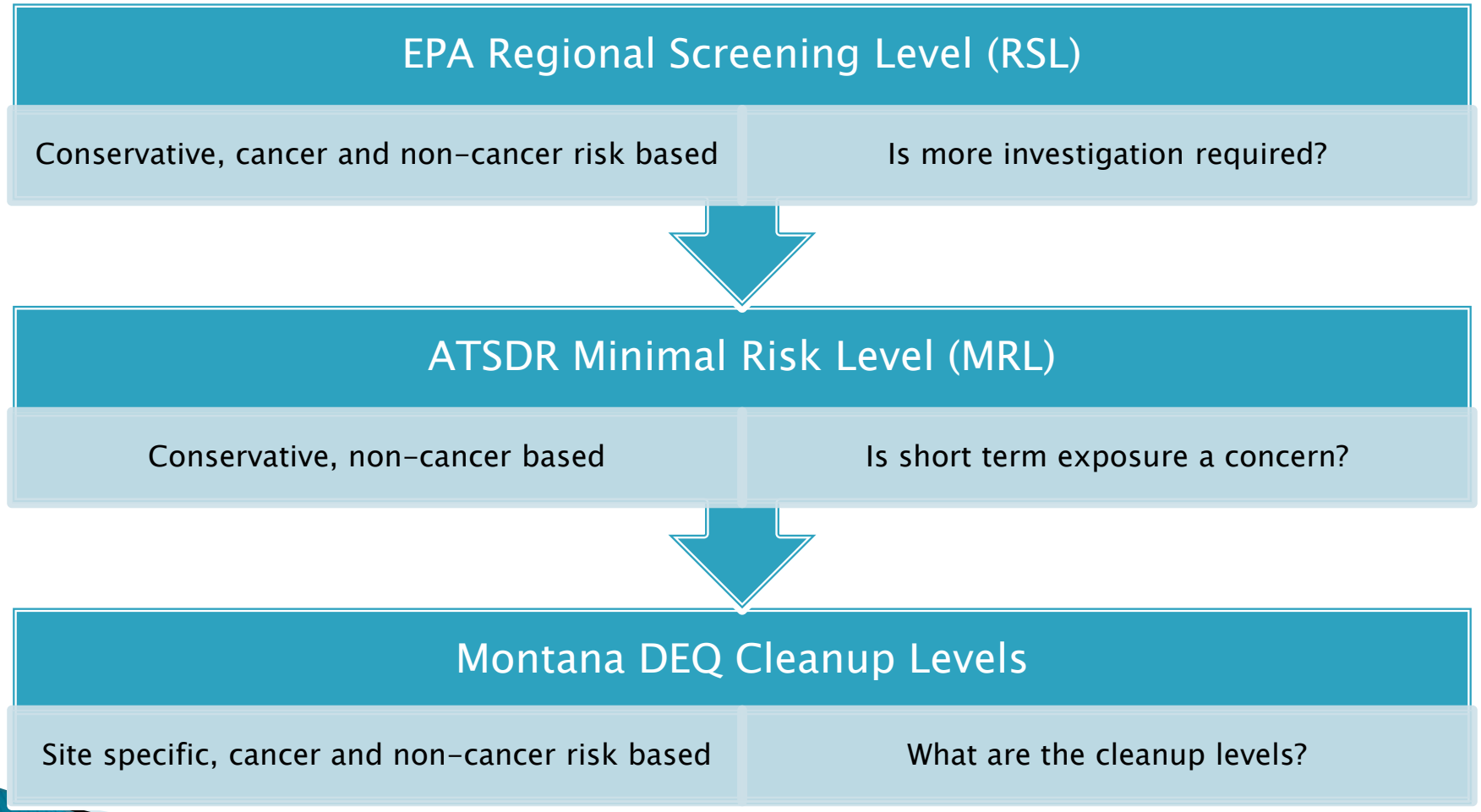
*RSL-EPA Regional screening level (ug/m3)

**MRL-Minimal Risk Level (ug/m3); below the MRL there is no known non-cancer human health risk for chronic exposure (daily for 1 year or more)

***25th percentile - 95th percentile (ug/m3)

† MRL not available; NOAEL (No Observed AdverseEffect Level used).

Screening, Risk and Cleanup Levels



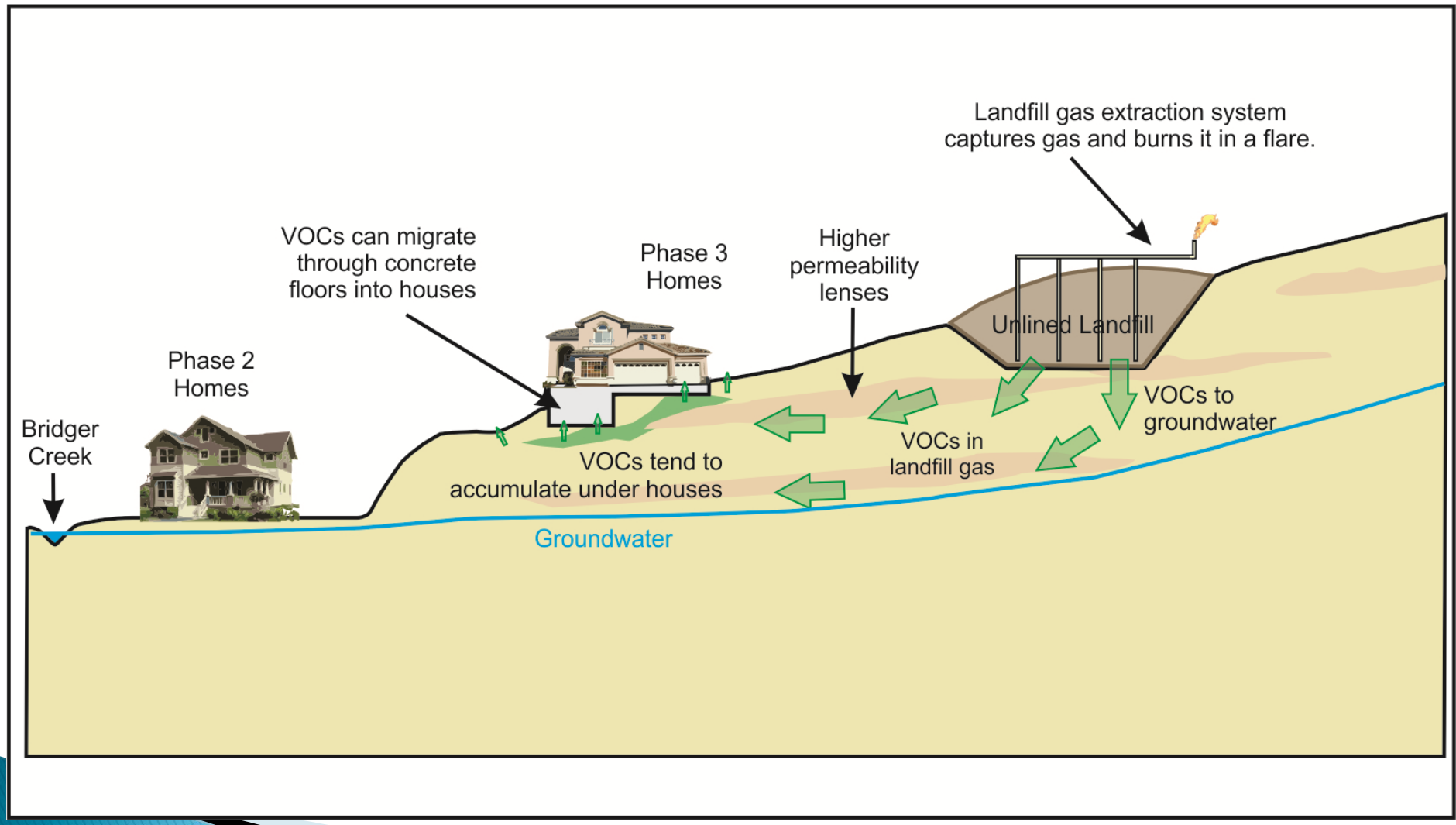
Progress Report

- Phase II
  - Data summary
    - Indoor air sampling
    - Sub-slab sampling
    - Subsurface geology
  - Overview of results

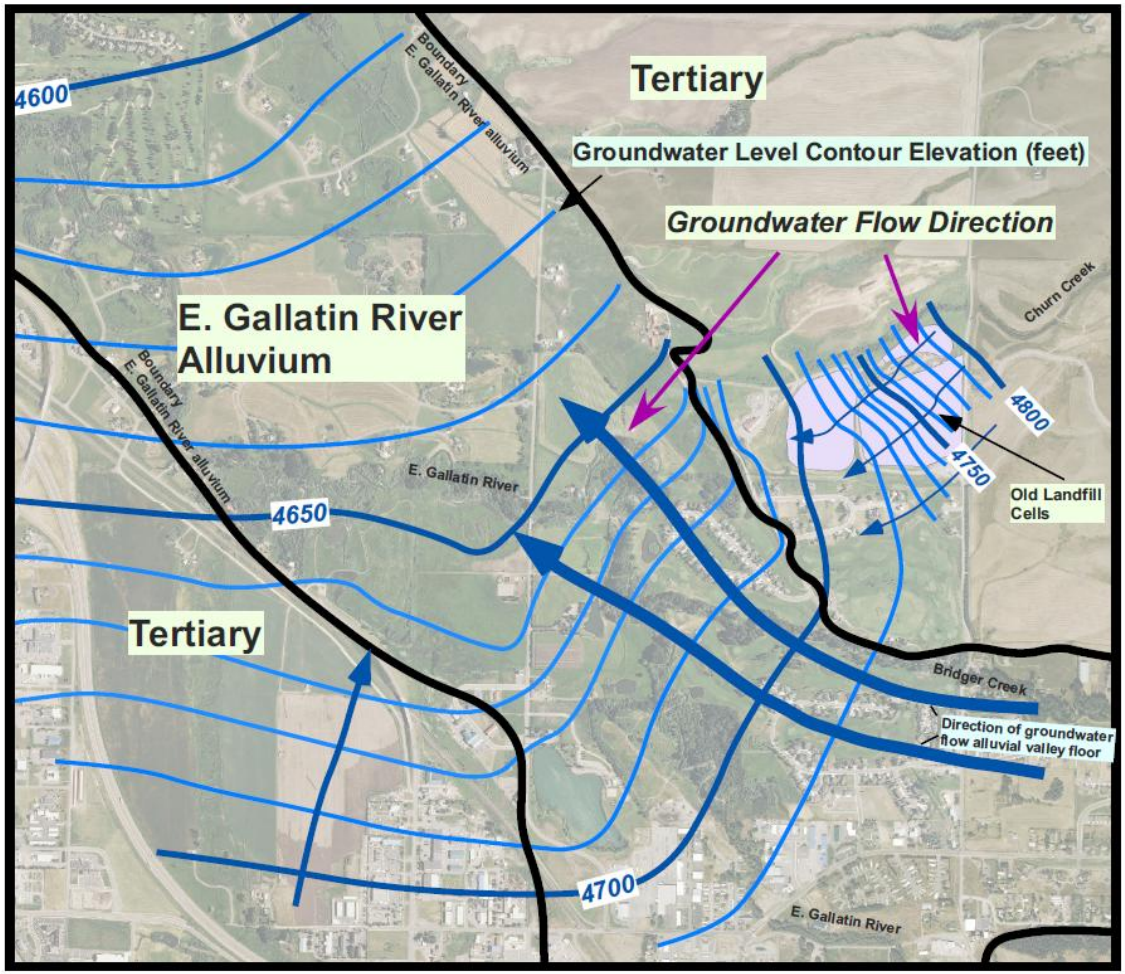
Phase II Air Sampling Results Summary

COMPOUND RANGES FOR BOZEMAN LANDFILL SOIL GAS PROJECT - PHASE II (All Concentrations in ug/m3)					
Compound	**Sub-Slab**	**Indoor Air**	**EPA RSL***	**MRL****	**DEQ Study*****
Carbon Tetrachloride	ND - 0.65	0.26 - 0.70	0.406	188.62	<0.77 - 1.5
1,2,4-Trimethylbenzene	0.83 - 25	ND - 8.1	7.3	21,800	<0.86 - 8.7
Benzene	0.098 - 14	ND - 3.1	0.31	9.58	0.52 - 12
1,2-Dichloroethane	ND - 0.20	0.055 - 2	0.094	2426.98	0.11 - 1.2
Ethyl Benzene	ND - 22	ND - 3.5	0.97	260.38	0.41 - 6.0
Chloroform	ND - 4.4	ND - 1.7	0.11	97.59	<0.82 - 3.6
*RSL-EPA Regional screening level (ug/m3)					
**MRL- Minimal Risk Level (ug/m3)					
***25th percentile - 95th percentile (ug/m3)					

Conceptual Site Model



Groundwater Flow



Interpretative Groundwater Level Contours (Potentiometric Head)
and
General Direction of Groundwater Flow

Site Model

- Implications for Bridger Creek Subdivisions
  - Potential for vapor migration highest in Phase III
  - Reduced vapor migration potential in Phase II
  - Bridger Creek forms a barrier to vapor migration
  - Control at the source

Health Risks

- Dr. Carol Ballew, Senior Epidemiologist, Montana Department of Public Health and Human Services

Next Steps

- Continue with mitigation in Phase III
- Additional groundwater monitoring
- Ambient air study
- Continued monitoring in Phase II
- No air testing south of Bridger Creek
- Initiate remediation at the landfill
  - DEQ process to evaluate options
  - Early evaluation of vapor extraction system

Concluding Comments

- Mayor Sean Becker
- Presentations will be posted on website
- Information Sessions
  - Mitigation and Sampling
  - Health and Risk
  - Landfill