

# Billings Public Schools, MT 2022 Redistricting Study

**-School Board Recommendations-**

**November 2022**

**CropperGIS**

# *Welcome and Introductions*

# *Who We Are*

## Cropper GIS Consulting

K-12 school planning is our business and our passion. Our specialty is school redistricting.

Cropper works with K-12 school districts to:

- develop redistricting plans,
- facilitate community engagement,
- research, map and write demographic studies,
- prepare long-range facility master plans,
- author site feasibility studies,
- conduct & publish housing impact and yield factor studies, and
- provide GIS implementation & training.

Cropper GIS is an ESRI Authorized Business Partner





# The Company

## Recent Projects:

- Billings Public Schools, MT
- Great Falls Public Schools, MT
- Helena Public Schools, MT
- Missoula Public Schools, MT
- Richmond Public Schools, VA
- Henrico County Public Schools, VA
- Charleston County School District, SC
- Cabarrus County Schools, NC
- Baltimore County Public Schools, MD
- Frederick County Public Schools, MD
- Columbus Public Schools, OH



Who We Are

# *Why We're Here*



# *Why We're Here*

In 2017, Billings Public Schools (BPS) implemented new school attendance boundaries to accommodate the alignment to the K-5, 6-8, 9-12 educational model and the opening two new middle schools, Medicine Crow and Ben Steele.

BPS is continuing to be impacted by growth in new areas and a shift in demographics, causing overcrowding in many schools. The district is continuing to work with Cropper GIS Consulting to analyze current and projected enrollments, which includes considering the impact of new developments that have been approved by the city and county.

The primary objective is to examine the district's attendance areas at all 3 levels (Elementary, Middle, and High) with a focus on establishing a feeder system that best meets the needs of ALL students in the district as best as possible.

# Project Objectives

1. To explore and develop school redistricting options through an administrative and community-based process, leading to a recommendation from the consultant, Cropper GIS Consulting (Cropper).
2. Focus on developing options and recommendations for all school levels within the district that best meet the district's redistricting criteria.
3. Address imbalances in utilization of schools, as some schools are over-utilized while others are under-utilized. In particular, address overcrowding at the district's west end schools.

**Implementation of a board approved boundary changes is expected to occur in Fall 2023.**

**The district is asking the board to approve a plan no later than February 2023**

Cropper GIS Consulting was hired by Billings Public Schools to facilitate and manage the project. Our firm is tasked to:

- A. Develop supporting materials to help facilitate the study.
- B. Facilitate the process of developing a student redistricting plan.
- C. Empower the community throughout the process.
- D. Leverage expertise to develop logical, efficient, and effective student redistricting options with the planning team.
- E. Recommend a redistricting plan to the School Board.



# Redistricting Guiding Principles / Criteria

## *Rules to Follow*

In 2014, The Billings Public School trustees unanimously approved a set of criteria/guidelines to follow when redistricting. These are rules to follow when considering any redistricting (i.e. boundary change) adjustment.

These criteria have been adhered to as best as possible as redistricting options were considered.

Redistricting criteria are:

- Minimize impact on students:  
Move as few students as possible during the process.
- Balance building utilization.
- Contiguous boundaries: Avoid creating additional 'satellite' zones in the district and create zones that are contiguous around the schools (1 zone per school) whenever possible.
- Make all efforts to not split identifiable community components: Do not split apartments and/or subdivisions if possible.
- Maximize transportation efficiency and walkability whenever possible.



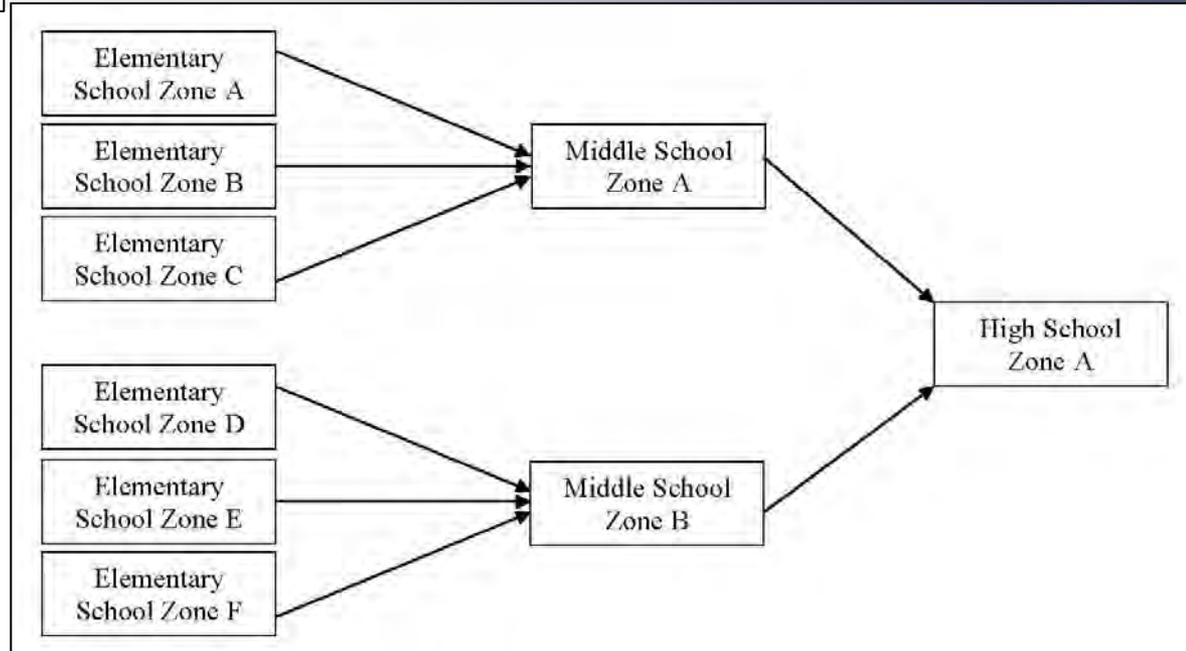
# Redistricting Guiding Principles / Criteria

- Maximize safety of students by defining boundaries along major geographic features such as roads, rivers, and railroads. Try to minimize students crossing over major roads if possible.
- Maximize the socio-economic diversity of schools with any redistricting change whenever possible

*Rules to Follow*

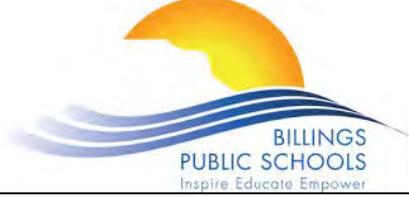


# Redistricting Guiding Principles / Criteria



*Rules to Follow*

- Try to have 100% feeder pattern continuity if possible: Try to feed entire elementary zones into a single middle school i.e. Minimize the number of times elementary school zones are split when continuing to middle school.
- Be pro-active for future potential growth if possible.



# *Why We're Here*

Over the course of the last 4-5 months, Cropper GIS worked with BPS central office administrators to review school utilization and develop a series of redistricting options.

There have been several iterations of the maps, and they have been shared and discussed with those in the district who manage transportation, planning, and educational programming.

Information regarding the location and size of future residential developments have also been considered with a focus on having the attendance boundary solution last as long as possible.



# *Why We're Here*

Tonight, the recommended plan is being presented as a result of this work.

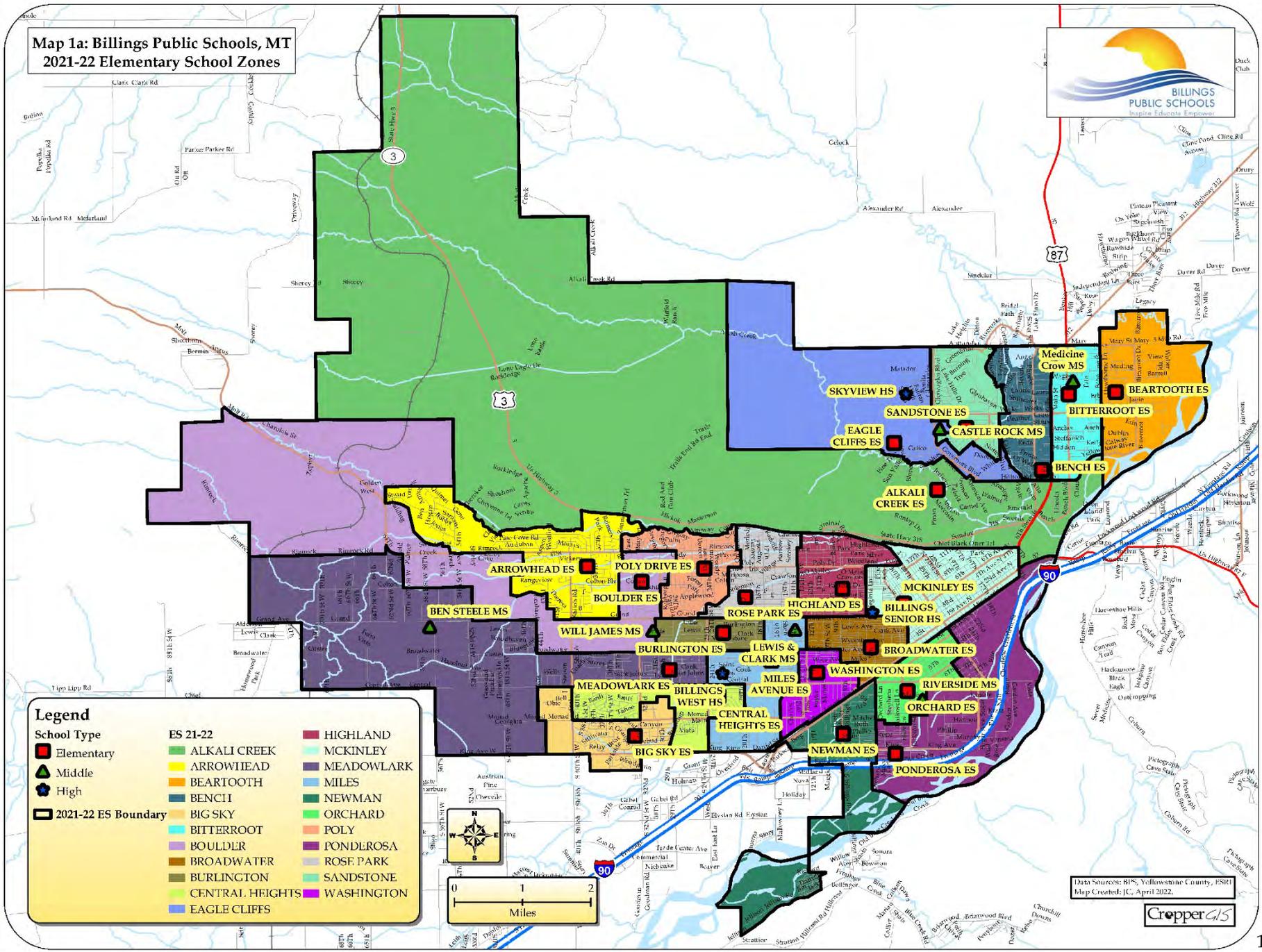
It is important that this recommendation is still considered DRAFT, and the board and public are expected to provide feedback regarding the recommendation.

BPS is requesting that the board approve a plan no later than February 2023, with an implementation date of the changes being effective Fall 2023.

The district is recommending that the board consider grandfathering any student who is impacted to remain at their current school if they choose.

This only applies to the current school level they are at, and does not carry to their next level (i.e. if impacted during elementary, grandfathering only applies at the ES level but not for MS or HS changes. Transportation will not be provided for students who participate in the grandfathering provision.

**Map 1a: Billings Public Schools, MT  
2021-22 Elementary School Zones**



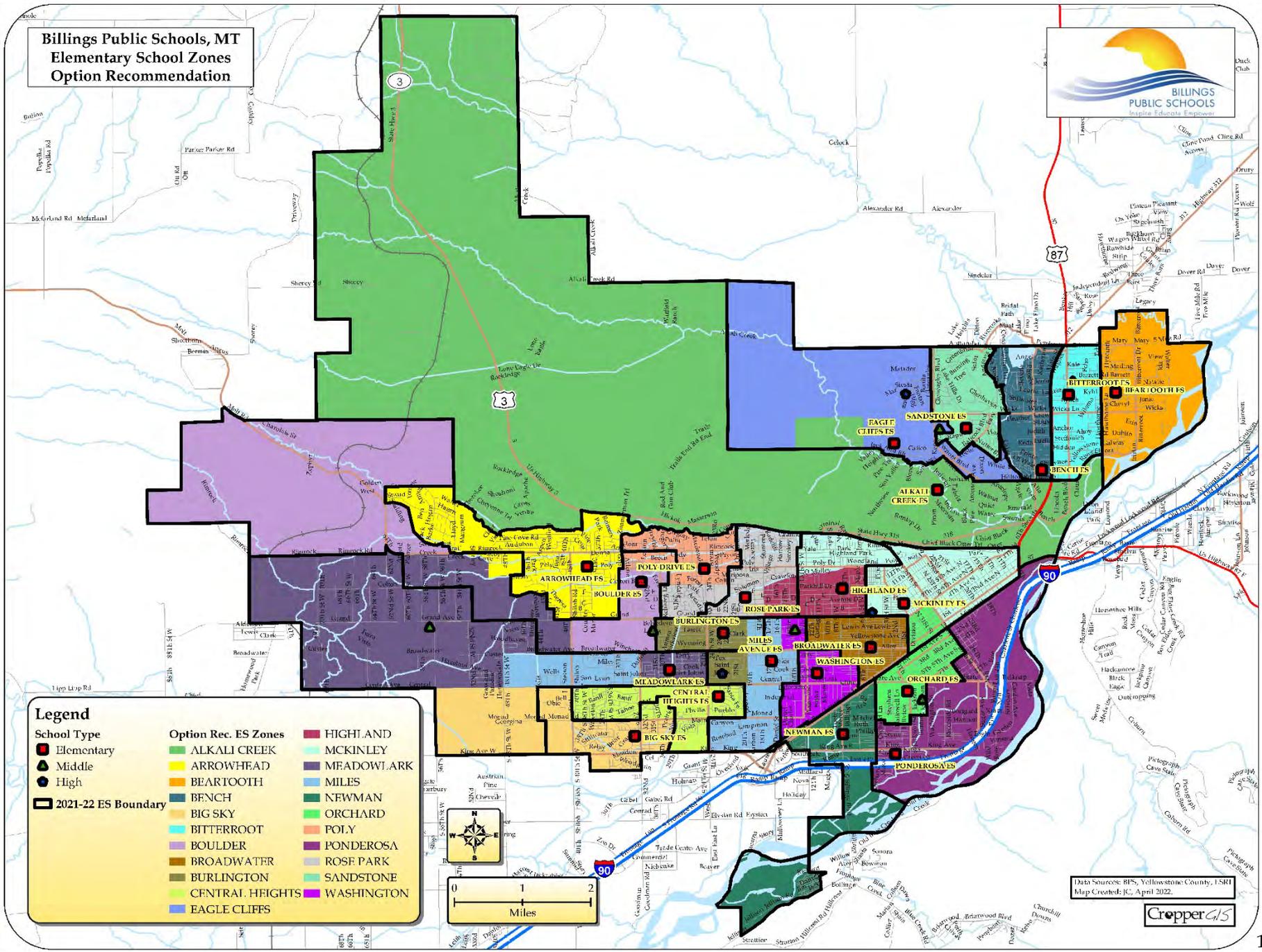
**Legend**

Elementary	ES 21-22	HIGHLAND
Middle	ARROWHEAD	MCKINLEY
High	BEARTOOTH	MEADOWLARK
2021-22 ES Boundary	BENCH	MILES
	BITTERROOT	NEWMAN
	BOULDER	ORCHARD
	BROADWATER	PONDEROSA
	BURLINGTON	ROSE PARK
	CENTRAL HEIGHTS	SANDSTONE
	EAGLE CLIFFS	WASHINGTON

Data Sources: BPS, Yellowstone County, ISIRI  
Map Created: JC, April 2022.



# Billings Public Schools, MT Elementary School Zones Option Recommendation



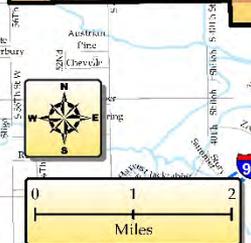
**Legend**

**School Type**

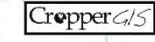
- Elementary (Red square)
- Middle (Green triangle)
- High (Blue circle)
- 2021-22 ES Boundary (Black outline)

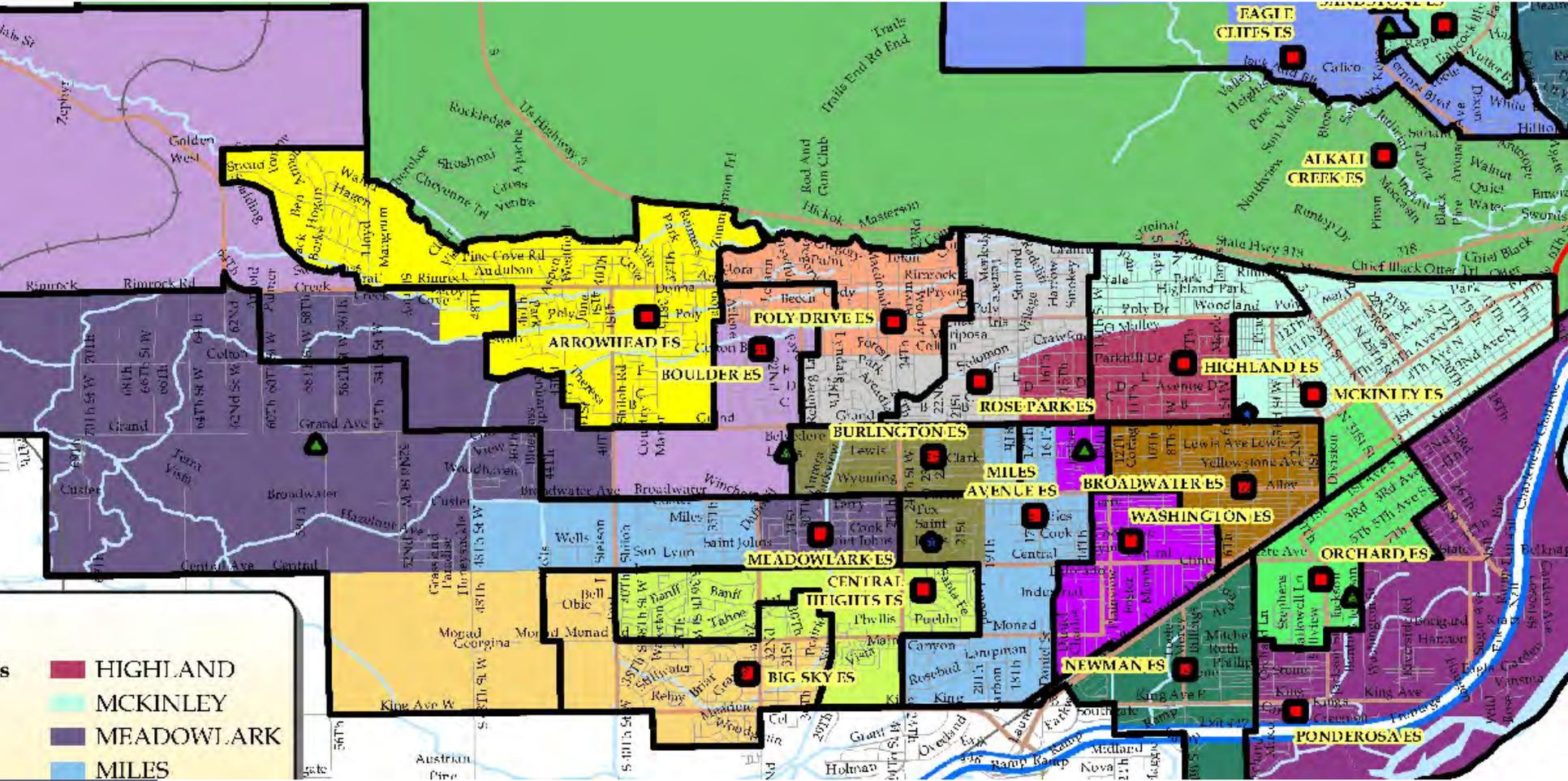
**Option Rec. ES Zones**

- ALKALI CREEK (Light Green)
- ARROWHEAD (Yellow)
- BEAR TOOTH (Orange)
- BENCH (Light Blue)
- BIG SKY (Light Green)
- BITTERROOT (Light Blue)
- BOULDER (Purple)
- BROADWATER (Brown)
- BURLINGTON (Light Blue)
- CENTRAL HIGHTS (Light Green)
- EAGLE CLIFFS (Light Blue)
- HIGHLAND (Pink)
- MCKINLEY (Light Green)
- MEADOWLARK (Purple)
- MILES (Light Blue)
- NEWMAN (Light Green)
- ORCHARD (Light Green)
- POLY (Light Green)
- PONDEROSA (Purple)
- ROSE PARK (Light Green)
- SANDSTONE (Light Green)
- WASHINGTON (Light Green)

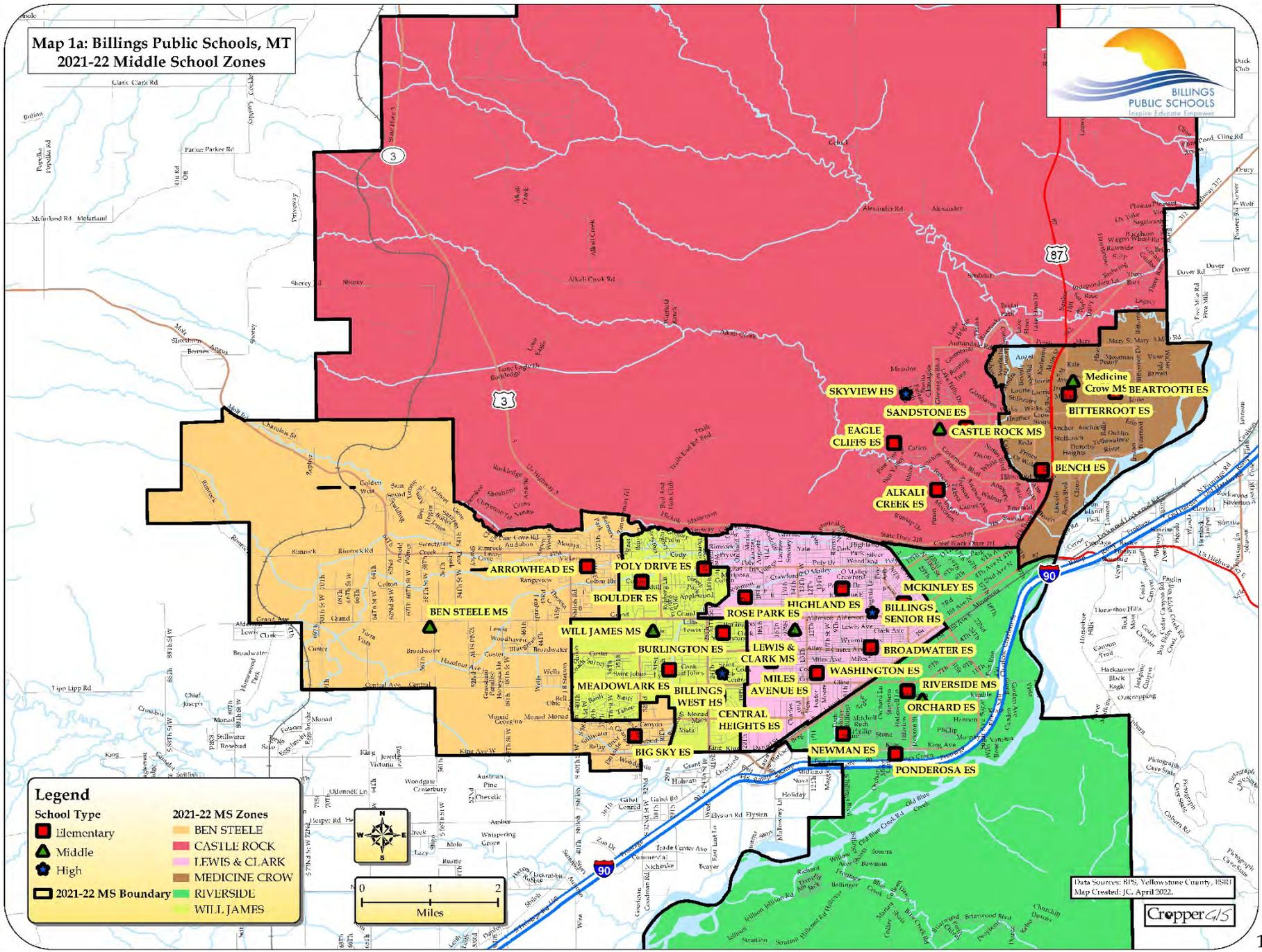


Data Sources: BPS, Yellowstone County, USRI  
Map Created: JC, April 2022.





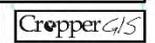
**Map 1a: Billings Public Schools, MT  
2021-22 Middle School Zones**



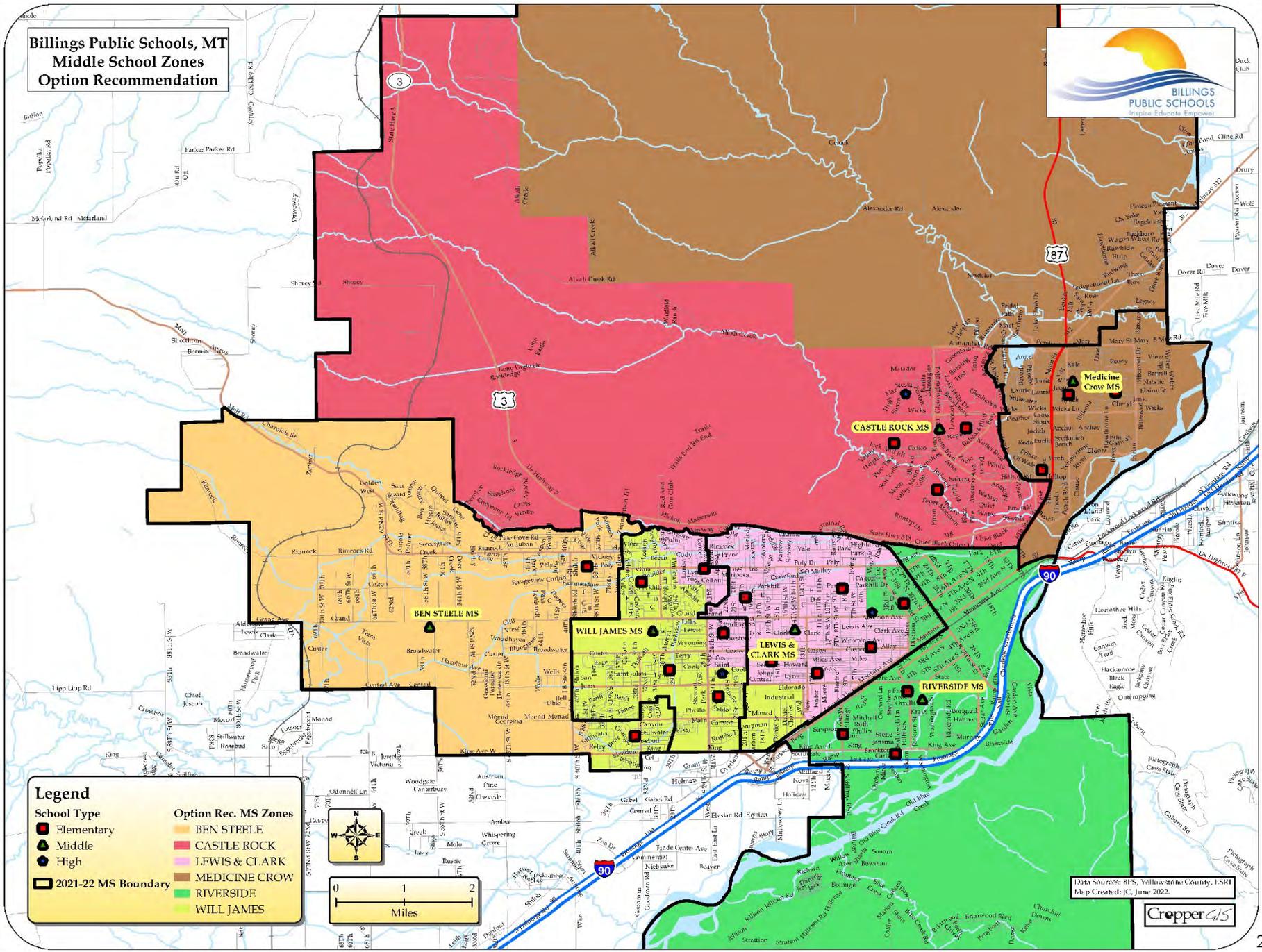
**Legend**

Elementary	2021-22 MS Zones BEN STEELe
Middle	CASILe ROCK
High	LEWIS & CLARK
2021-22 MS Boundary	MEDICINE CROW
	RIVERSIDE
	WILL JAMES

Data Sources: BPS; Yellowstone County; ISIRI  
Map Created: 1C, April 2022.



**Billings Public Schools, MT  
Middle School Zones  
Option Recommendation**



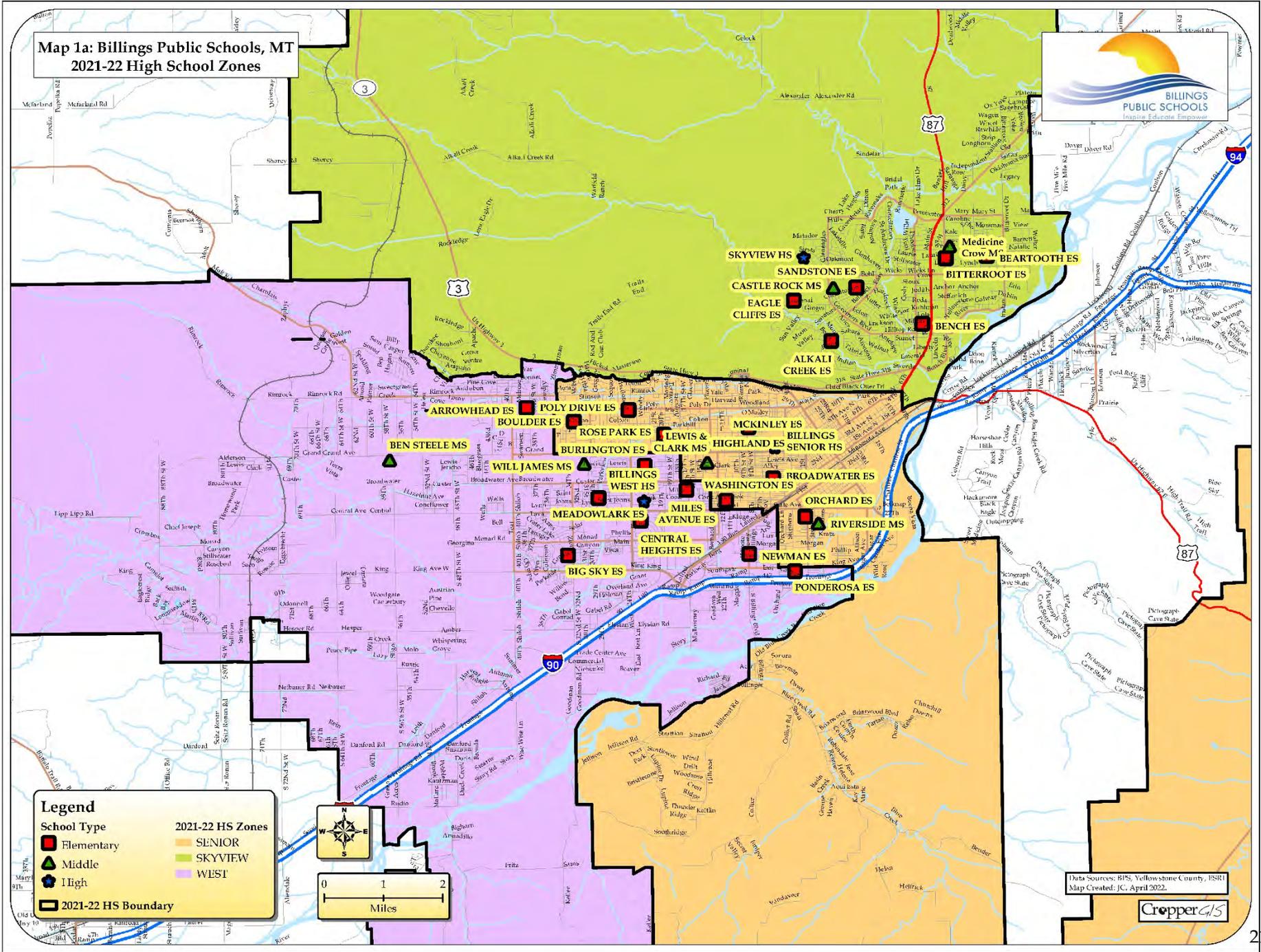
**Legend**

School Type	Option Rec. MS Zones
Elementary	BEN STEELE
Middle	CASTLE ROCK
High	LEWIS & CLARK
2021-22 MS Boundary	MEDICINE CROW
	RIVERSIDE
	WILL JAMES

Data Sources: BPS, Yellowstone County, USRI  
Map Created: JC, June 2022.



**Map 1a: Billings Public Schools, MT  
2021-22 High School Zones**



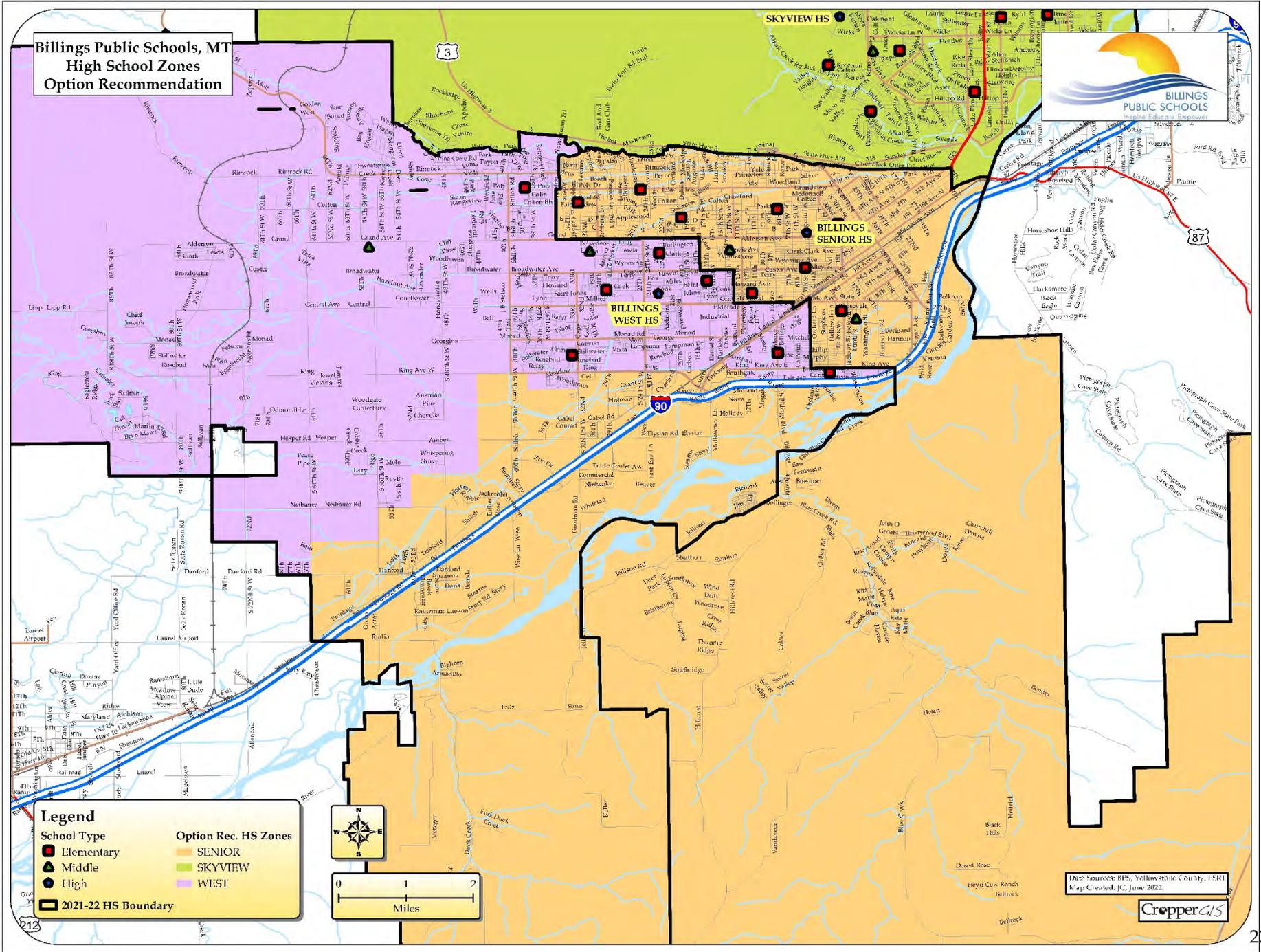
**Legend**

School Type	2021-22 HS Zones
Elementary	SENIOR
Middle	SKYVIEW
High	WEST
2021-22 HS Boundary	

Data Sources: BPS, Yellowstone County, BSR  
Map Created: JC, April 2022.



**Billings Public Schools, MT  
High School Zones  
Option Recommendation**



**Legend**

Elementary	Option Rec. HS Zones SENIOR
Middle	Option Rec. HS Zones SKYVIEW
High	Option Rec. HS Zones WEST
2021-22 HS Boundary	

Data Sources: BPS, Yellowstone County, USRI  
Map Created: JC, June 2022.

CropperGIS



# Interpreting The Tables: Current, Option Recommendation

Capacity of each school

Current Enrollment & Utilization at each school

Trend column highlights if the enrollment for a school is increasing, decreasing, or stable based solely on the enrollment total for current and upcoming grade enrollments at each school.

School	Current Grade	Functional Capacity	2021-22 Enrolled Utilization									ES Option Recommendation Estimated Enrollment & Utilization <sup>2</sup>								
			0	1	2	3	4	5	Total Enrolled	Utilization	Trend	0	1	2	3	4	5	Total Enrolled	Utilization	Trend
Alkali Creek Elementary School	K-5	394	63	48	53	52	60	59	335	85%	▬	65	48	55	53	57	69	347	88%	▾
Arrowhead Elementary School	K-5	460	66	67	74	73	66	80	426	93%	▾	67	64	75	68	67	82	423	92%	▾
Beartooth Elementary School	K-5	416	54	62	63	57	53	71	360	87%	▾	46	62	61	54	50	66	339	81%	▾
Bench Elementary School	K-5	394	69	51	51	57	44	51	323	82%	▴	75	56	55	62	51	56	355	90%	▴
Big Sky Elementary School	K-5	394	56	56	63	66	57	70	368	93%	▾	60	53	66	69	54	79	381	97%	▾
Bitterroot Elementary School	K-5	350	42	45	53	49	50	50	289	83%	▾	44	43	55	49	47	52	290	83%	▾
Boulder Elementary School	K-5	416	71	103	85	80	77	85	501	120%	▬	50	84	70	66	61	70	401	96%	▬
Broadwater Elementary School	K-5	400	55	56	52	63	51	49	326	82%	▬	55	55	56	67	61	58	352	88%	▾
Burlington Elementary School	K-5	263	40	33	41	33	39	39	225	86%	▬	44	35	39	57	40	46	261	99%	▾
Central Heights Elementary School	K-5	329	83	49	40	47	39	38	296	90%	▴	52	61	54	56	54	52	329	100%	▬
Eagle Cliffs Elementary School	K-5	460	66	59	71	66	73	68	403	88%	▾	64	54	68	66	74	61	387	84%	▾
Highland Elementary School	K-5	285	44	41	38	38	51	38	250	88%	▬	45	37	36	36	40	45	239	84%	▬
McKinley Elementary School	K-5	400	51	66	51	41	45	43	297	74%	▴	65	73	63	56	50	51	358	90%	▴
Meadowlark Elementary School	K-5	460	60	76	82	109	87	99	513	112%	▾	80	65	67	79	73	73	437	95%	▬
Miles Ave Elementary School	K-5	329	53	47	43	41	37	46	267	81%	▴	64	51	43	39	46	44	287	87%	▴
Newman Elementary School	K-5	263	41	31	37	44	34	40	227	86%	▬	33	26	30	38	34	34	195	74%	▾
Orchard Elementary School	K-5	438	51	55	49	43	39	47	284	65%	▴	58	62	55	56	47	57	335	76%	▴
Poly Drive Elementary School	K-5	329	46	49	47	60	50	56	308	94%	▾	45	39	48	53	46	50	281	85%	▾
Ponderosa Elementary School	K-5	394	53	44	59	50	40	39	285	72%	▴	56	47	56	44	40	41	284	72%	▴
Rose Park Elementary School	K-5	307	42	39	39	40	39	46	245	80%	▬	43	49	44	43	38	41	258	84%	▴
Sandstone Elementary School	K-5	460	67	62	72	65	76	76	418	91%	▾	63	71	71	62	82	69	418	91%	▾
Washington Elementary School	K-5	263	52	41	31	44	46	41	255	97%	▬	51	45	27	45	41	35	244	93%	▴
<b>Total ES</b>		<b>8204</b>	<b>1225</b>	<b>1180</b>	<b>1194</b>	<b>1218</b>	<b>1153</b>	<b>1231</b>	<b>7201</b>	<b>88%</b>	▬	<b>1225</b>	<b>1180</b>	<b>1194</b>	<b>1218</b>	<b>1153</b>	<b>1231</b>	<b>7201</b>	<b>88%</b>	▬

Note: Estimated enrollment is calculated by adding the 2021-22 Out of District/Unmatched students to their currently enrolled school, plus the total attending grade-configuration students that Live-in the school's attendance zone per DRAFT Option.

Recommended Option Estimated Enrollment & Utilization at each school



# Interpreting The Tables: Current, Option Recommendation

School	Current Grade	Functional Capacity	2021-22 Enrolled Utilization						MS Option Recommendation Estimated Enrollment & Utilization <sup>2</sup>					
			6	7	8	Total Enrolled	Utilization	Trend	6	7	8	Total Enrolled	Utilization	Trend
			Castle Rock Middle School	6-8	715	213	246	252	711	99%	▼	199	206	203
Lewis and Clark Middle School	6-8	743	222	237	226	685	92%	▼	240	248	258	746	100%	▼
Medicine Crow Middle School	6-8	715	144	179	198	521	73%	▼	152	219	246	617	86%	▼
Riverside Middle School	6-8	604	173	173	191	537	89%	▼	200	189	210	599	99%	▼
Will James Middle School	6-8	664	198	197	223	618	93%	▼	200	223	230	653	98%	▼
Ben Steele Middle School	6-8	715	242	252	301	795	111%	▼	201	199	244	644	90%	▼
<b>Total MS</b>		<b>4156</b>	<b>1192</b>	<b>1284</b>	<b>1391</b>	<b>3867</b>	<b>93%</b>	▼	<b>1192</b>	<b>1284</b>	<b>1391</b>	<b>3867</b>	<b>93%</b>	▼

Counts based on Preliminary 2021-22 Student Enrollment data.

<sup>2</sup> The estimated enrollment is calculated by adding the total grade configuration "Live-In" students within each new DRAFT option zone, plus the students that were "Out of District" and/or "Unmatched" at a school for the 2021-22 school year.

School	Current Grade	Functional Capacity	2021-22 Enrolled Utilization							HS Option Recommendation Estimated Enrollment & Utilization <sup>2</sup>						
			9	10	11	12	Total Enrolled	Utilization	Trend	9	10	11	12	Total Enrolled	Utilization	Trend
			Billings Senior High School	9-12	1445	483	449	433	463	1828	127%	▲	506	444	433	465
Billings West High School	9-12	1731	597	570	522	491	2180	126%	▲	559	557	508	491	2115	122%	▲
Skyview High School	9-12	1684	443	424	371	423	1661	99%	▲	458	442	385	421	1706	101%	▲
<b>Total HS</b>		<b>4860</b>	<b>1523</b>	<b>1443</b>	<b>1326</b>	<b>1377</b>	<b>5669</b>	<b>117%</b>	▲	<b>1523</b>	<b>1443</b>	<b>1326</b>	<b>1377</b>	<b>5669</b>	<b>117%</b>	▲

Counts based on Preliminary 2021-22 Student Enrollment data.

<sup>2</sup> The estimated enrollment is calculated by adding the total grade configuration "Live-In" students within each new DRAFT option zone, plus the students that were "Out of District" and/or "Unmatched" at a school for the 2021-22 school year.



# Option Recommendation: Student Impacts

Option	Total Impacts per level
ES Option Rec.	679
MS Option Rec.	467
HS Option Rec.	184

2021-22 ES Zones	ES Option Recommendation	K-5 Live In Students
ALKALI CREEK	ALKALI CREEK	347
ARROWHEAD	ARROWHEAD	410
BEARTOOTH	BEARTOOTH	337
BENCH	BENCH	355
BIG SKY	BIG SKY	308
BIG SKY	CENTRAL HEIGHTS	39
BITTERROOT	BITTERROOT	290
BOULDER	ARROWHEAD	12
BOULDER	BOULDER	401
BOULDER	MEADOWLARK	35
BOULDER	POLY	56
BROADWATER	BROADWATER	350
BURLINGTON	BURLINGTON	188
BURLINGTON	MILES	30
CENTRAL HEIGHTS	CENTRAL HEIGHTS	289
EAGLE CLIFFS	EAGLE CLIFFS	386
HIGHLAND	HIGHLAND	166
HIGHLAND	MCKINLEY	83
MCKINLEY	MCKINLEY	275
MCKINLEY	ORCHARD	20
MEADOWLARK	BIG SKY	72
MEADOWLARK	MEADOWLARK	398
MEADOWLARK	MILES	78
MILES	BURLINGTON	73
MILES	MILES	173
MILES	WASHINGTON	20
NEWMAN	NEWMAN	189
ORCHARD	ORCHARD	313
POLY	POLY	224
POLY	ROSE PARK	89
PONDEROSA	PONDEROSA	283
ROSE PARK	HIGHLAND	72
ROSE PARK	ROSE PARK	169
SANDSTONE	SANDSTONE	415
WASHINGTON	WASHINGTON	224

2021-22 MS Zones	MS Option Recommendation	6-8 Live In Students
BEN STEELE	BEN STEELE	641
BEN STEELE	WILL JAMES	155
CASTLE ROCK	CASTLE ROCK	606
CASTLE ROCK	MEDICINE CROW	91
LEWIS & CLARK	LEWIS & CLARK	596
LEWIS & CLARK	RIVERSIDE	45
LEWIS & CLARK	WILL JAMES	26
MEDICINE CROW	MEDICINE CROW	525
RIVERSIDE	RIVERSIDE	552
WILL JAMES	LEWIS & CLARK	150
WILL JAMES	WILL JAMES	471

2021-22 HS Zones	HS Option Recommendation	9-12 Live In Students
SENIOR	SENIOR	1601
SKYVIEW	SKYVIEW	1660
WEST	SENIOR	184
WEST	WEST	2102



# Option Recommendation: Feeder Patterns

2021-22 ES Zones	2021-22 MS Zones	ES Attendance
ALKALI CREEK	CASTLE ROCK	88%
ALKALI CREEK	MEDICINE CROW	12%
ARROWHEAD	BEN STEELE	100%
BEARTOOTH	MEDICINE CROW	100%
BENCH	MEDICINE CROW	100%
BIG SKY	BEN STEELE	100%
BITTERROOT	MEDICINE CROW	100%
BOULDER	BEN STEELE	68%
BOULDER	WILL JAMES	32%
BROADWATER	LEWIS & CLARK	100%
BURLINGTON	LEWIS & CLARK	14%
BURLINGTON	WILL JAMES	86%
CENTRAL HEIGHTS	WILL JAMES	100%
EAGLE CLIFFS	CASTLE ROCK	100%
HIGHLAND	LEWIS & CLARK	100%
MCKINLEY	LEWIS & CLARK	33%
MCKINLEY	RIVERSIDE	67%
MEADOWLARK	BEN STEELE	59%
MEADOWLARK	WILL JAMES	41%
MILES	LEWIS & CLARK	56%
MILES	WILL JAMES	44%
NEWMAN	RIVERSIDE	100%
ORCHARD	RIVERSIDE	100%
POLY	LEWIS & CLARK	15%
POLY	WILL JAMES	85%
PONDEROSA	RIVERSIDE	100%
ROSE PARK	LEWIS & CLARK	100%
SANDSTONE	CASTLE ROCK	100%
WASHINGTON	LEWIS & CLARK	100%

ES Option Recommendation	MS Option Recommendation	ES Attendance
ALKALI CREEK	CASTLE ROCK	88%
ALKALI CREEK	MEDICINE CROW	12%
ARROWHEAD	BEN STEELE	100%
BEARTOOTH	MEDICINE CROW	100%
BENCH	MEDICINE CROW	100%
BIG SKY	BEN STEELE	36%
BIG SKY	WILL JAMES	64%
BITTERROOT	MEDICINE CROW	100%
BOULDER	BEN STEELE	74%
BOULDER	WILL JAMES	26%
BROADWATER	LEWIS & CLARK	100%
BURLINGTON	LEWIS & CLARK	52%
BURLINGTON	WILL JAMES	48%
CENTRAL HEIGHTS	WILL JAMES	100%
EAGLE CLIFFS	CASTLE ROCK	100%
HIGHLAND	LEWIS & CLARK	100%
MCKINLEY	LEWIS & CLARK	23%
MCKINLEY	RIVERSIDE	77%
MEADOWLARK	BEN STEELE	64%
MEADOWLARK	WILL JAMES	36%
MILES	BEN STEELE	2%
MILES	LEWIS & CLARK	56%
MILES	WILL JAMES	41%
NEWMAN	RIVERSIDE	100%
ORCHARD	RIVERSIDE	100%
POLY	LEWIS & CLARK	61%
POLY	WILL JAMES	39%
PONDEROSA	RIVERSIDE	100%
ROSE PARK	LEWIS & CLARK	77%
ROSE PARK	WILL JAMES	23%
SANDSTONE	CASTLE ROCK	100%
WASHINGTON	LEWIS & CLARK	80%
WASHINGTON	WILL JAMES	20%

2021-22 MS Zones	2021-22 HS Zones	MS Attendance
BEN STEELE	WEST	100%
CASTLE ROCK	SKYVIEW	100%
LEWIS & CLARK	SENIOR	85%
LEWIS & CLARK	WEST	15%
MEDICINE CROW	SKYVIEW	100%
RIVERSIDE	SENIOR	75%
RIVERSIDE	WEST	25%
WILL JAMES	SENIOR	36%
WILL JAMES	WEST	64%

MS Option Recommendation	HS Option Recommendation	MS Attendance
BEN STEELE	WEST	100%
CASTLE ROCK	SKYVIEW	100%
LEWIS & CLARK	SENIOR	84%
LEWIS & CLARK	WEST	16%
MEDICINE CROW	SKYVIEW	100%
RIVERSIDE	SENIOR	82%
RIVERSIDE	WEST	18%
WILL JAMES	SENIOR	19%
WILL JAMES	WEST	81%



# The Public

Members of the public will have the opportunity to participate in the process moving forward in many ways:

- All materials shared tonight will be made available on the district website, which includes:
  - A link to an online interactive map ([www.croppermap.com/billingsredistricting](http://www.croppermap.com/billingsredistricting)) that shows the current and recommended zones along with notifications if they are/aren't impacted.
  - A handout with the detailed statistics and maps will also be made available on the district webpage.
  - The District's web-page will host an **online feedback form** section that allows the public to provide any feedback regarding the process at any time. This information will be shared with all stakeholders.
  - This presentation tonight will also be posted on YouTube for members of the public to be able to access at any time. Once the presentation is recorded, a copy will be made available.
- Attend scheduled school board meetings and provide input.

# Questions?