State Highway 97
Corridor Study / Route Development Plan

Kootenai Metropolitan Planning Organization

February 2009



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STATE HIGHWAY 97
CORRIDOR STUDY / ROUTE DEVELOPMENT PLAN

FEBRUARY 2009

KOOTENAI METROPOLITAN PLANNING ORGANIZATION

RUEN-YEAGER & ASSOCIATES, INC.

Development of the Plan was a collaborative effort with the Kootenai Metropolitan Planning Organization, the Project Strategic Advisory Committee, project Focus Groups, the Project Team, and the public. Sincere thanks to all involved in the Plan development.

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EXECUTIVE SUMMARY

Development pressures on the east side of Coeur d'Alene Lake and the associated traffic increases have caused concern about how much growth could occur in the area and how the roadways could be improved to handle the existing and future needs of the corridor. This study is in response to these concerns and identifies the existing capacity of the current system, proposes improvements on the State Highway 97 Corridor, as well as alternate routes to SH 97 (Burma Road, Gozzer Road, Gotham Bay Road, Carlin Bay Road, Asbury Road, and East Thompson Lake Road).

As part of the improvement strategies, a vehicle ferry was reviewed for the southern segment of the corridor connecting the State Highway 97 in the Harrison area with US Highway 95 via the local road network in either the 16:1 Bay area or the Sun Up Bay area. Either option on the west side of the lake will require roadway improvements. Operation of a ferry system could be designated as an alternate route to SH 97, thereby increasing the opportunity for funding alternatives.

Throughout the study process, ongoing engagement with the public was conducted through the use of a public survey, several public open houses, KMPO website data, a Project Strategic Advisory Committee consisting of area agencies and residents (Kootenai County, City of Harrison, the Idaho Transportation Department, East Side Highway District, Coeur d'Alene Tribe, area developers, and Emergency Services), and ongoing dialogue with the agencies.

A study purpose was developed and refined based on the corridor study issues in conjunction with the Project Strategic Advisory Committee. Discussions regarding the scope of the study with the Committee helped refine the study purpose leading to a prescribed study process and ultimately recommendations concerning potential improvements and funding options. The study purpose was:

> *The overall purpose of the State Highway 97 Corridor Study / Route Development Plan is to look at potential improvements and/or new roadways to address existing and future mobility needs along SH 97 and potential funding alternatives.*

The need for the study was a direct response to:

- Increased development pressure on the east side of Coeur d'Alene Lake and in unincorporated Kootenai County and in the City of Harrison
- Concerns regarding capacity and safety issues on State Highway 97
- Future funding of improvements on State Highway 97

In response to the study purpose and need, a list of potential roadway improvements were developed for the entire SH 97 Corridor, as well as the alternate routes. These improvements were based on an iterative process with the project consultant team, the Project Strategic Advisory Committee, the general public, the agencies, and a public opinion survey. Improvement options were recommended that would:

- Utilize existing right of way

- Enhance multi-modal opportunities
- Limit environmental impact
- Be cost effective given limited funding availability
- Could be implemented on a project level basis as compared to a wholesale corridor improvement
- Provide opportunities for private development to mitigate impacts associated with corridor level improvements

Certain low impact improvements were recommended that would not change the character of the Coeur d'Alene Lake Scenic Byway; yet provide some capacity and safety improvements. Ultimately, improvements selected will not materially increase the highway or alternate route roadway capacities, but will improve localized traffic operations.

Highway safety was critical in addressing roadway improvements. SH 97 does have a higher overall collision rate than other non-interstate highways in Idaho. Two-thirds of the SH 97 milepost segments collision rates exceed that of the 179.42 state average per hundred million vehicle miles traveled. The roadway improvements identified provide for safety improvements such as roadway widening, improved intersection angles, widened shoulders, improved horizontal and vertical curves, and safety related roadway improvements.

Given the limited nature of the recommended roadway improvements for increasing roadway capacities, the corridor should be able to acceptably serve approximately 2,250 new single-family homes or equivalents. This equates to approximately 956 new homes or equivalents constructed within the northern two-thirds of the highway (approximately north of Powderhorn Bay Road to the Interstate 90 junction), and 1,294 new homes constructed in the southern one-third of the highway (approximately from the area of Powderhorn Bay Road to the south). Traffic operations within the corridor should be acceptable through the year 2030, although traffic delays and volumes will be greater than what is experienced today.

Implementation of the State Highway 97 Corridor Study/Route Development Plan will be on a long-term basis, as either new development constructs traffic mitigation projects, or as public funds become available. Due to increasing and competing needs for project funding and diminishing public funds, this plan offers another approach for construction of roadway improvements that would supplement traditional funding sources. The plan provides a list of projects, which can be implemented regardless of how large a private development is, improvements can be tied to project phasing, or can be assessed to individual homes and businesses as they develop within the study area. Improvement projects were broken down into small projects over each milepost of State Highway 97 and the Corridor Alternate Routes.

The funding of transportation improvements will be through a combination of local agency funding, ITD funding in conjunction with State facility improvements, and by the private sector providing infrastructure improvements as a direct result of development or project related impacts. For new trips in the transportation system, the proportionate cost share of the improvements within reasonable proximity of the development (as determined by the agencies and project trip distribution) should be assessed back to the development as traffic impact mitigation in addition to frontage improvements.

I. INTRODUCTION

State Highway 97 is designated as a State Scenic Byway located generally on the east side of Lake Coeur d'Alene. The Idaho Transportation Department (ITD) controlled and maintained highway connects Interstate 90 to the City of Harrison and ultimately ends at the junction of State Highway 97 and State Highway 3, approximately eight miles southeast of Harrison in Kootenai County, Idaho. As with most Scenic Byways, SH 97 offers residents, recreational users, and occasional commercial and construction delivery drivers beautiful views of Lake Coeur d'Alene and the surrounding area.

SH 97 is a two lane, curvy 35.8 mile highway that provides access to the east side of Coeur d'Alene Lake and to public and private properties (Figure 1). In places, the road is narrow, hilly, tight cornered, and sub-standard in sight distance. Increasing population, employment, and development within Kootenai County has increased traffic demands on SH 97. Continued growth and demand is anticipated. *Collectively, these conditions and recent development growth have raised various safety, operational, maintenance, and enhancements concerns.* Despite these conditions and concerns, long-time users of the road have generally adapted to the roadway's condition and adjusted their driving accordingly.

Recently, improvements for SH 97 have been limited due to lack of funding and competing priorities. Some improvements have been constructed/implemented, some are privately planned, and some have been planned but have been removed from current planning efforts. Beauty Bay Hill was recently widened through limited ITD maintenance activities and significant portions of SH 97 have been overlaid with a new roadway surface. The widening on portions of the Beauty Bay Hill has only increased safety for a very short segment of the northern portion of SH 97.

The Burma Road Improvement Project sponsored by the East Side Highway District (ESHD), is currently in design and will correct most of the SH 97/Burma Road intersection deficiencies depending on the extent of the project that funding can construct. A planned improvement that has been stalled is the major widening improvements for Beauty Bay Hill initiated by ITD. ITD started design work, but has recently ceased work on the project due to funding issues. Some minor improvements were made to the roadway in the Beauty Bay area due to flooding in early 2008, but were limited to road restoration. At this time, the Beauty Bay Hill project has been removed from the State Transportation Improvement Program, pending future funding availability.

The SH 97 Corridor Study/Route Development Plan is sponsored by the Kootenai Metropolitan Planning Organization (KMPO). The plan includes a comprehensive evaluation of the ability for SH 97 to carry additional traffic brought about by the current and anticipated growth over the next 20 years. The plan evaluates existing and future traffic conditions, identifies potential improvements, examines alternate routes and modes of transportation, and includes a section on potential funding sources for identified SH 97 and alternate route improvements. Ultimately, the Plan details recommendations for reasonable improvements that have been grounded in a significant public involvement process including a public survey of property owners within the

State Highway 97 Corridor Study

Corridor Route

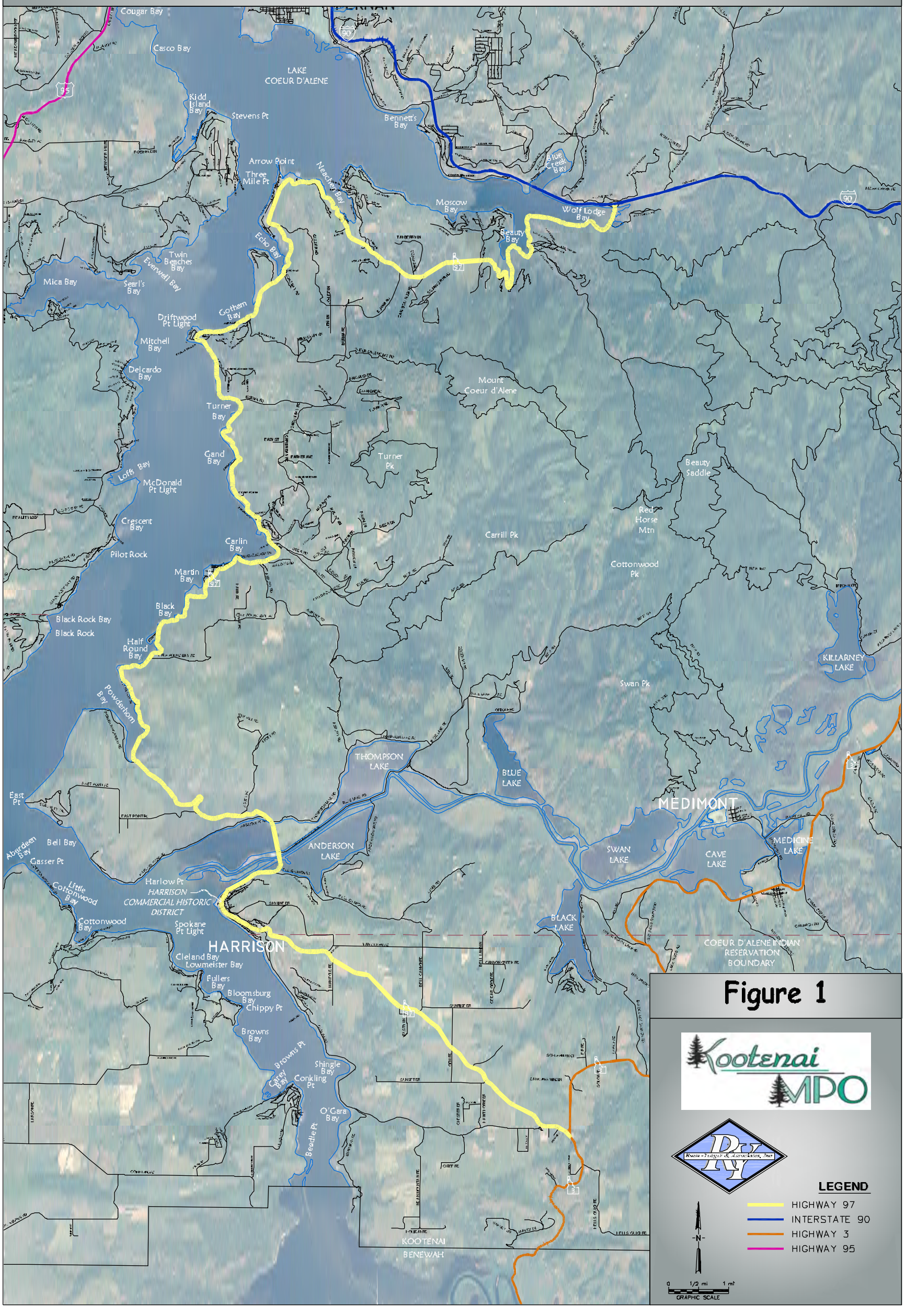

Figure 1

Kootenai MPO

Rasmussen-Dayton & Associates, Inc.

LEGEND

- HIGHWAY 97
- INTERSTATE 90
- HIGHWAY 3
- HIGHWAY 95

-N-

0 1/2 mi 1 mi

GRAPHIC SCALE

study area, two Focus Groups, several public open houses, and a Project Strategic Advisory Committee.

Due to its increased use, SH 97 has and will continue to be of great interest to its users. Stakeholders are predominantly the agencies and groups who currently use the roadways within the study area and increasing development pressures on the east side of Coeur d'Alene Lake have caused the study to be undertaken to identify potential improvements and funding sources. A Strategic Advisory Committee for the project included Kootenai County, the City of Harrison, the Idaho Transportation Department, East Side Highway District, the Coeur d'Alene Tribe of Indians, Citilink (local public transit provider), citizen groups/individuals in the corridor, and known private developers with developments pending review.

CORRIDOR STUDY AREA

The study area for the project includes the private lands generally west of publicly owned lands on the east side of Coeur d'Alene Lake in mostly the unincorporated area of Kootenai County. A portion of the study is in the City of Harrison. Most of the land uses in the area are characterized as seasonal homes on Coeur d'Alene Lake, farming uses, scattered single-family sites, and recreational uses associated with the lake or other public lands. Recent single-family subdivisions and private resort development in both the unincorporated area of Kootenai County and the City of Harrison have increased interest in the area and led to these study efforts.

Since it is unlikely that public lands would be intensely developed within the study area, only privately owned properties were included in the study and are described as the *Travel Shed* (Figure 2) consisting of approximately 25,337 acres of land or 39.6 square miles. Due to the limited roadway options, all of the private properties that either directly access SH 97 or access SH 97 via local roadways were included in the study as potentially developable lands. Topography in the area is steep to rolling terrain with many areas having steep slopes in excess of 30 percent. Most existing developments are clustered along the lakeshore, SH 97, or are adjacent to East Side Highway District roads off SH 97.

CORRIDOR STUDY ISSUES

A list of traffic and related development study issues was generated and served as the basis of the study process. These issues were developed in conjunction with the agencies, the Project Strategic Advisory Committee, a public survey of property owners conducted early in the study process, and known concerns regarding development on the east side of Coeur d'Alene Lake. The non-prioritized issues are as follows:

- Continued growth within the SH 97 Corridor and alternate routes
- Capacity of current roadways
- Potential funding sources for improvements
- Poor visibility on the roadways due to sight distances or vegetation
- Accidents within the study corridor
- No current public roadway improvement projects for SH 97 on the horizon

State Highway 97 Corridor Study
Travel Shed

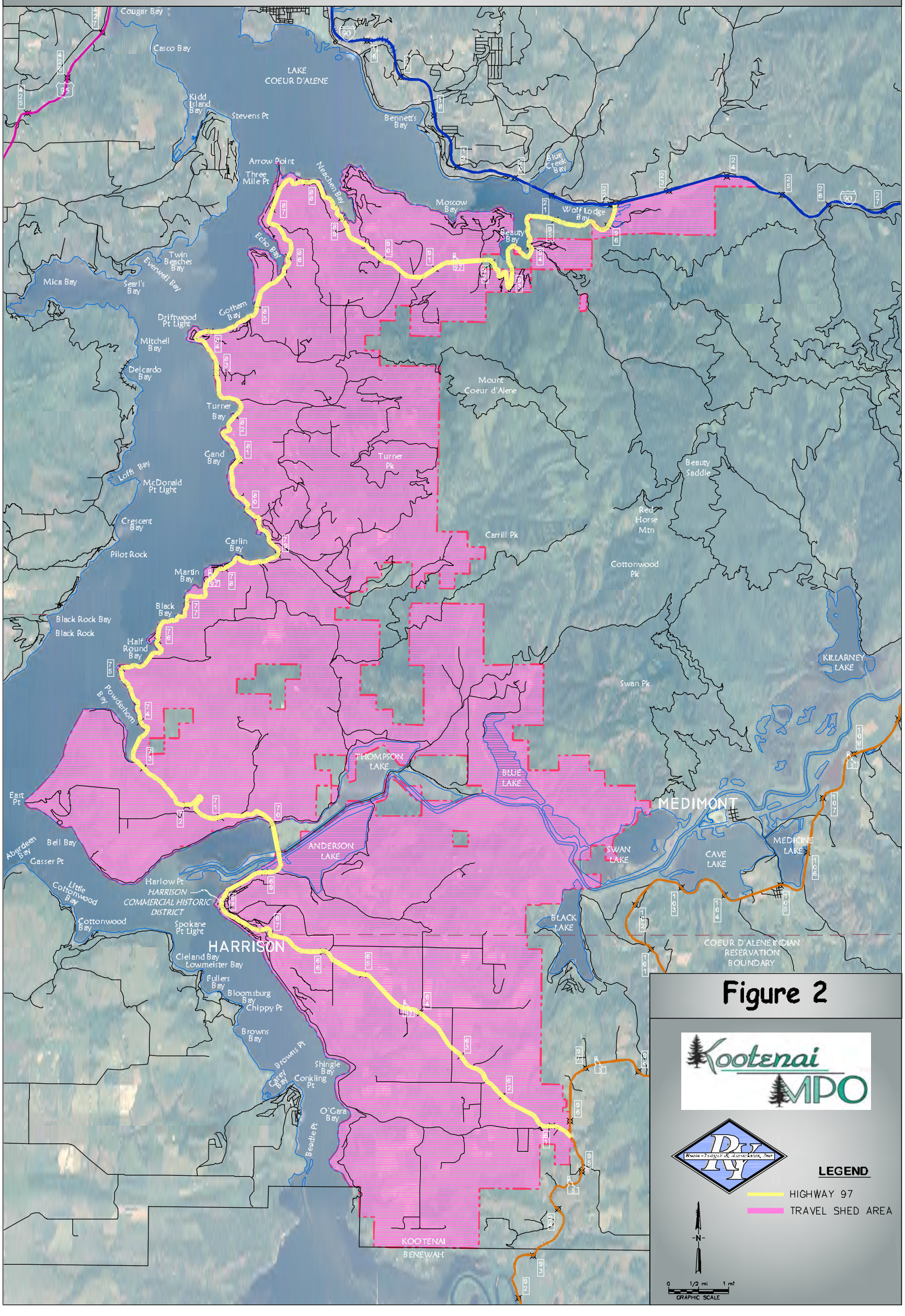

Figure 2

Kootenai MPO

PBA

LEGEND

HIGHWAY 97

TRAVEL SHED AREA

-N-

0 1/2 mi 1 mi

GRAPHIC SCALE

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- Comprehensive Plan update underway by Kootenai County
- Narrow roadways with no shoulders in most areas
- Environmental challenges regarding roadway improvements
- Drainage issues along SH 97 and alternate routes
- Current levels of truck traffic on SH 97
- Safety of the roadway
- Traffic loading may degrade the Scenic Byway
- Construction related traffic and lack of control/enforcement and its impact to current and future users of the roadway and the roadway itself
- As a designated Scenic Byway, Highway 97 may be ill-suited for improvements, especially in the Beauty Bay area
- Summer traffic volumes versus winter traffic volumes
- Interest in preserving rural lifestyles and natural resources
- Concern over vehicle size limits
- Potential impacts on water resources
- Impacts on wildlife/endangered species - Winter time bald eagle population
- Increased travel time as a result of more traffic
- Need for passing lanes/zones
- Pullouts for slow vehicles and scenic overlooks
- Concern over road rage from perceived traffic congestion
- Response times for EMS, police, and fire due to traffic and roadway geometries

These issues served as a foundational base to review improvement alternatives and provide context to the study.

STUDY PURPOSE AND NEED

A draft study purpose was developed and refined based on the corridor study issues in conjunction with the Project Strategic Advisory Committee. Discussions regarding the scope of the study with the Committee helped refine the study purpose leading to a prescribed study process and ultimately recommendations concerning potential improvements and funding options. The final study purpose was:

> *The overall purpose of the State Highway 97 Corridor Study / Route Development Plan is to look at potential improvements and/or new roadways to address existing and future mobility needs along SH 97 and potential funding alternatives.*

The need for the study was a direct response to:

- Increased development pressure on the east side of Coeur d'Alene Lake and in unincorporated Kootenai County and in the City of Harrison
- Concerns regarding capacity and safety issues on State Highway 97
- Future funding of improvements on State Highway 97

Based on this, the study developed preliminary improvement options and through a series of field visits, discussions with the agencies, work sessions with the Project Strategic Advisory Committee, a public survey, Focus Groups, and public open houses, refined the improvements and cost estimates as well as explored funding options for State Highway 97 and the Alternate Routes to SH 97. This report summarizes the study and improvement recommendations for implementation.

II. SH 97 AND ALTERNATE ROUTES STUDY PROCESS

As part of the study process, initial improvement options were developed based on input and direction from the agencies (Kootenai County, the Idaho Transportation Department, East Side Highway District, and Kootenai Metropolitan Planning Organization), the general public via a survey, the Project Strategic Advisory Committee, and previously produced public project concept reports for Beauty Bay Hill and Burma Road. The segments (Figure 3) included four sections of State Highway 97:

- Segment 1 – MP 88.0 to 96.4 from Arrow Point area to the Wolf Lodge interchange area of SH 97 with Interstate 90
- Segment 2 – MP 79.0 to 88.0 from the Carlin Bay area to the Arrow Point area
- Segment 3 – MP 70.0 to 79.0 from the north side of the Harrison Slough (Coeur d'Alene River basin) to the Carlin Bay area
- Segment 4 – MP 60.60 to 70.0 from the junction of State Highway 97 and State Highway 3 (southeast of the City of Harrison) to the north side of the Coeur d'Alene River slough

The study also included alternate routes (Burma, Gozzer, Gotham Bay, Carlin Bay, Asbury, East Thompson Lake Roads) for travel on SH 97 (Figure 4).

Through an iterative process with the project consultant team, the Strategic Advisory Committee, and a public survey, improvement options were explored that would:

- Utilize existing right of way
- Enhance multi-modal opportunities
- Limit environmental impact
- Be cost effective given limited funding availability
- Could be implemented on a project level basis as compared to a wholesale corridor improvement
- Provide opportunities for private development to mitigate impacts associated with corridor level improvements

Certain low impact improvements were suggested that would not change the character of the Coeur d'Alene Lake Scenic Byway, yet provide capacity and safety improvements. Ultimately, improvements selected would not materially increase the highway or alternate route roadway capacities, but would improve localized traffic operations.

Study participants suggested specific potential improvements to be evaluated for the SH 97 Corridor and alternate routes such as:

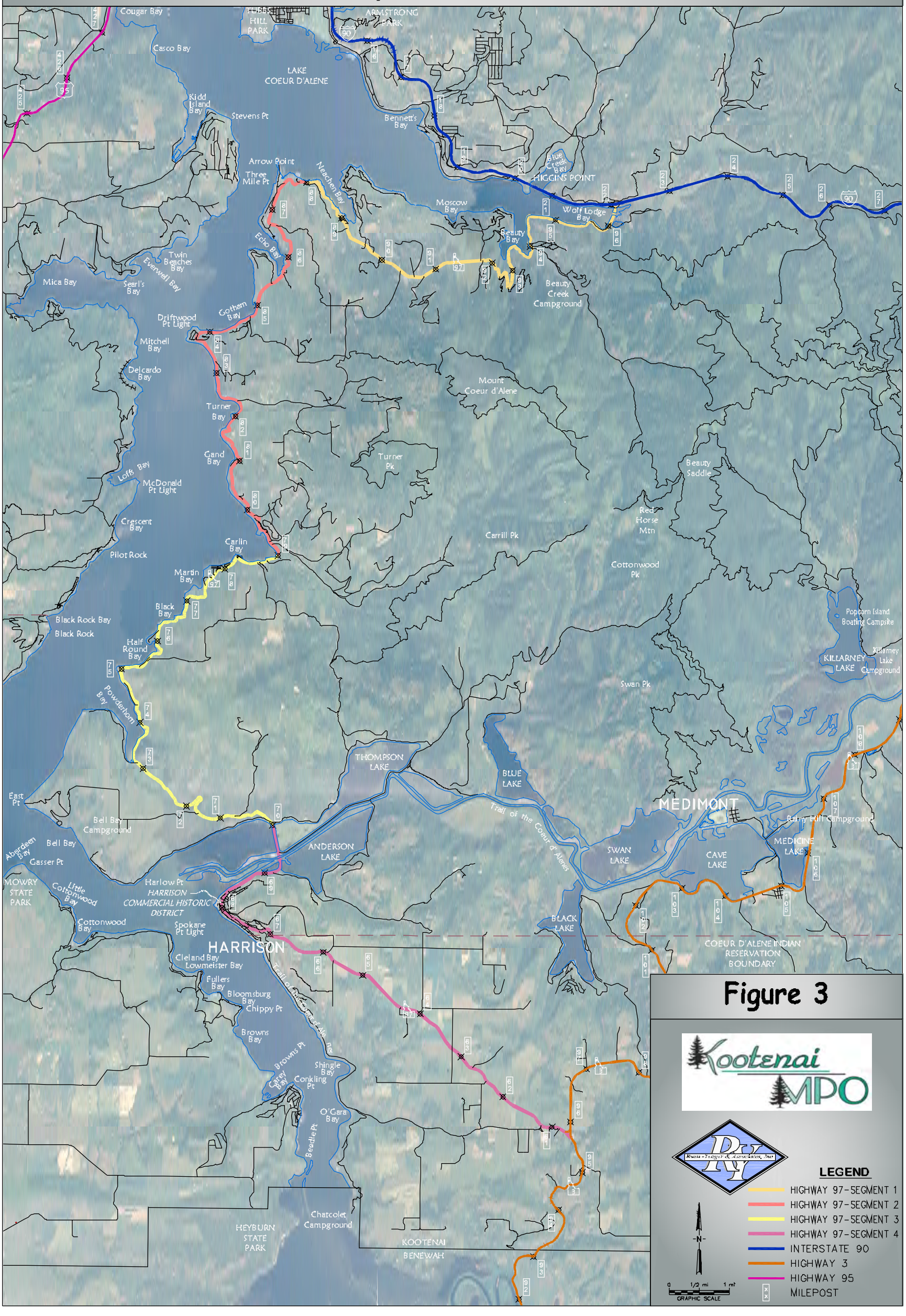
- Passing opportunities (passing lanes and passing zones)
- Slow vehicle and scenic pullouts
- Intersection realignments
- Guardrails or other roadway edge protection

- Wider roadway sections with shoulders
- Roadway approach improvements
- Access management
- Parking policies for State Highway 97
- Improved pedestrian crossings
- Bicycle and pedestrian paths through shared use or separate pathways
- Ferry system on Coeur d'Alene Lake
- Roadway and parking improvements in Harrison
- Roadway illumination
- Improved signage
- Improved roadway drainage
- Improvements to alternate routes: Burma, Gozzer, Gotham Bay, Carlin Bay, Asbury, and Thompson Lake Roads (Figure 7)
- Improved sight distances
- Increased/decreased speed limits
- Roadway brushing

Subsequent field study provided further refinement of the improvements as well as discussions with the agencies (Idaho Transportation Department, East Side Highway District, and Kootenai Metropolitan Planning Organization), and the Project Strategic Advisory Committee prior to review with the study Focus Groups and ultimately the public at open houses.

The refinement process yielded a milepost list of improvements for State Highway 97 as well as improvements for the alternate routes to Highway 97. The following chapters detail the improvements, potential environmental issues, and funding sources.

State Highway 97 Corridor Study
Project Segments



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State Highway 97 Corridor Study
Alternate Routes

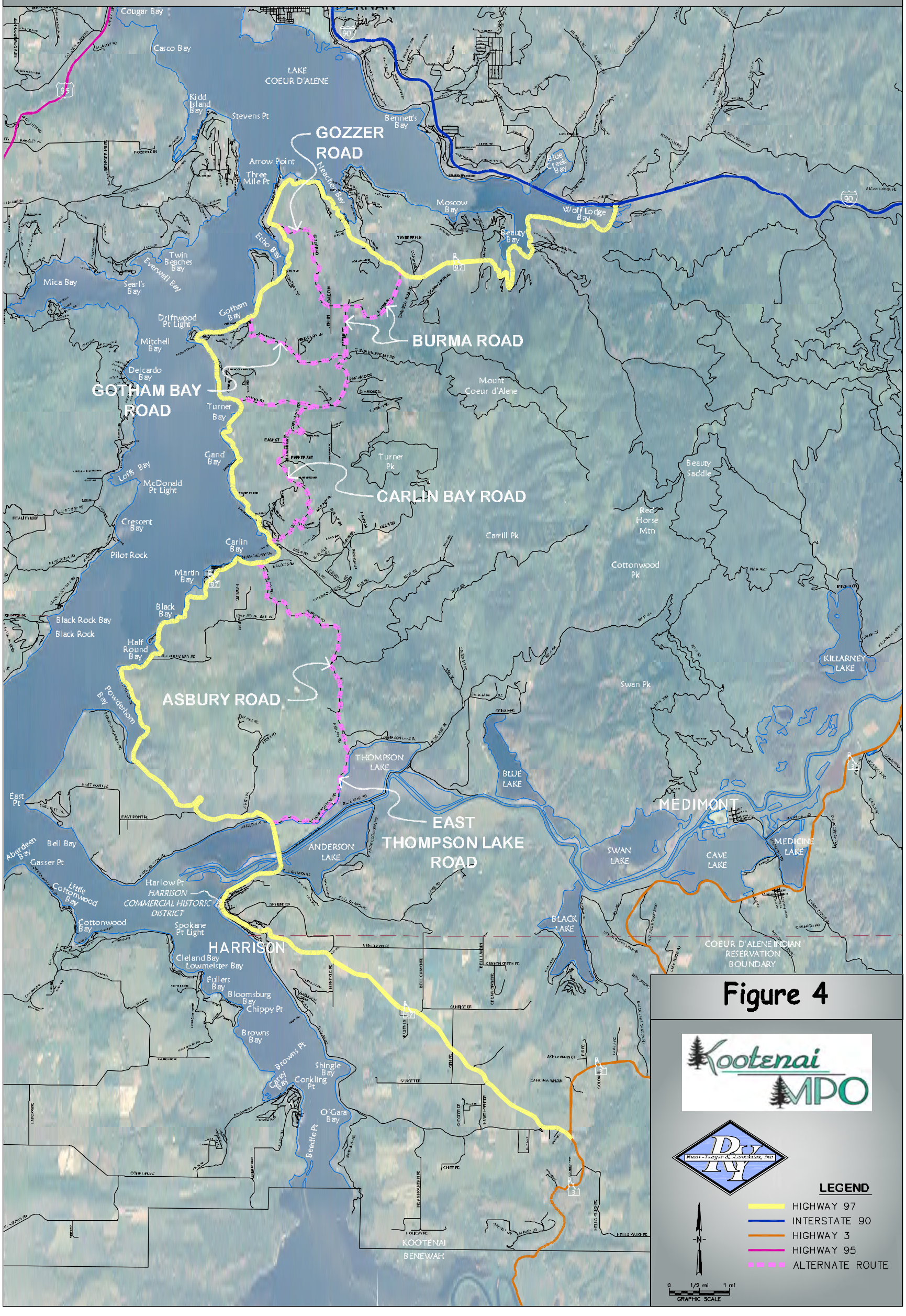


Figure 4

Kootenai MPO

PBX Rush-Project & Associates, Inc.

LEGEND

- HIGHWAY 97
- INTERSTATE 90
- HIGHWAY 3
- HIGHWAY 95
- ALTERNATE ROUTE

-N-

0 1/2 mi 1 mi
GRAPHIC SCALE

III. PUBLIC INVOLVEMENT

As with any planning process, the key is to provide a variety of formats**,** which can convey the study information in a clear and understandable format for a continuous flow of information. Often, a single approach fails to reach key segments of the population. The project included a substantial public involvement process, to address not only recent traffic growth on the east side of Coeur d'Alene Lake, but the limited roadway improvement opportunities given the area's topographic and natural constraints. The challenge was to bring together interested stakeholders to discuss practical improvements that would enhance the existing routes since circulation options were limited. The overall goals/themes for the public involvement process were:

- Develop community understanding of regional growth and its impact to the transportation system.
- Identify potential roadway improvements.
- Evaluate project costs and methods of implementation.
- Explore the potential of a ferry system in the Harrison area to connect to the west side of Coeur d'Alene Lake in the 16:1 or Sun Up Bay areas.
- Provide clear, easily understood information to the public, to assure a broad level of public understanding.

The methods of public engagement were selected based on the need to reach users of the transportation system. Community outreach efforts helped define what level of improvements would be acceptable. The following methods were used:

- Project Strategic Advisory Committee – consisting of area agencies and residents (Kootenai County, City of Harrison, the Idaho Transportation Department, East Side Highway District, Coeur d'Alene Tribe, area developers, and Emergency Services) served to advise the project team and provide input.
- Project updates and project information on the KMPO website.
- Public survey sent to property owners within the study area - the purpose of the survey was to gain insights from and to establish a general understanding of the opinions of the people who use SH 97.
- Public Open Houses – held within the study area.
- Focus Groups – consisting of area property owners to provide input to the study as well as discussion of project issues, potential improvements, and recommended funding alternatives.

Information regarding the public survey and focus groups are included in the appendices of this report.

Overall, the public input indicated that people who used State Highway 97 did not desire to have an improved route of a four-lane highway given the scenic byway designation, environmental constraints, impacts on existing land uses, and perceived development opportunities that increased highway capacity could bring. Many respondents felt that the route should include a pedestrian/bicycle path, but due to limited right of way, favored roadway improvements instead.

A public parking policy for SH 97 was mentioned; however, it did not receive support and was not explored further in this study. Access management for State Highway 97 was also mentioned, but since the highway is already under the current access management policy of the Idaho Transportation Department, this was not explored further in the study. The current ITD access management policy is contained in the appendices of this report.

A public opinion survey was sent to property owners within the study area early in the study. The purpose of the survey was to gain insights from, and to establish a general understanding of the opinions of, the people who use SH 97. Of the 2,331 surveys sent out, 456 were returned resulting in a return rate of approximately 20 percent. Of the respondents, approximately 45 percent used their residence as a permanent home versus a vacation or second home. The average household density for the survey respondents was 2.5 persons, which directly compares with the average of 2.52 persons per household size for Kootenai County according to the latest US Census data. The respondents were requested to comment on two key issues: 1) their opinion of the adequacy of the existing transportation system (Table 1), and 2) their opinion on improvement needs to the current roadway (Table 2). A map was also provided so respondents could graphically indicate the areas they would like to see improved, however, it was not widely used by the respondents.

As shown in the data, respondents were split on wholesale major roadway improvements and overwhelmingly supported safety and traffic flow improvements. The majority of the

Table 1. Opinion of Adequacy of SH 97

Stated Opinion of Roadway Conditions	Strongly Agree	Agree	Disagree	Strongly Disagree	No Response
Adequate Now if People Drive Safely	91	132	123	80	29
Already Too Crowded and Can Not Handle Additional Traffic	156	125	106	40	28
Rural Scenic Route - No Improvements Needed	77	79	141	127	32
Minor Improvements Needed for Safety	240	133	31	21	30
Improvements Needed for Traffic Flow	190	115	65	55	30
Major Roadway Improvements Needed	100	92	102	124	37

respondents to the survey had lived in Kootenai County for less than ten years and believed that the roadway is too crowded now and could not handle additional traffic without improvements.

In Table 2, the respondents were asked to review a list of potential improvements and provide their opinion as to what improvements were the most important to be made within the study area.

Table 2. Opinion on Improvement Needs for SH 97

Potential Improvements	Critical	Very Important	Important	Not a Priority	Not Needed	No Response
Additional Guardrails on Curves and Slopes	113	82	109	50	29	72
Additional Passing Lanes	47	77	91	82	69	89
Widen Travel Lanes on Curves	73	78	102	67	47	87
Additional Pullouts for Slow Vehicles and Service	62	69	114	66	44	100
School Bus Pullouts	38	62	102	77	50	126
Pedestrian Crossings	24	32	64	116	94	125
Limit Location and Number of Driveways on SH 97	61	60	88	72	51	123
Increased Road Maintenance	87	76	119	25	17	131
Bicycle and/or Pedestrian Lanes	33	44	71	88	115	104
Additional Street Lighting	13	28	63	103	111	137

The respondent's opinions on improvements were also mixed. Most supported roadway edge protection such as guardrails or barriers, but were less in favor of adding passing lanes. Vehicle pullouts were important with many respondents feeling that the pullouts were for vehicles that did not travel the roadway often. Roadway maintenance, in particular roadway striping and rockfall cleanup was cited as needed more often. Pedestrian and bicycle facilities as well as illumination were not viewed as being the major need for the SH 97 corridor. Many comments from the respondents indicated that pedestrians and bicyclists on SH 97 may be more of a hazard due to the roadway geometries and narrow lane widths.

The survey also included open-ended questions for the public to write their concerns. The following are the most common issues and concerns raised regarding SH 97.

- Bicycle and pedestrian facilities needed.
- Restrict the use of bicycle and pedestrians on SH 97.
- Keep the corridor rural and scenic.
- Restrict further large developments on SH 97.
- Provide for controlled growth/development.
- Inattentive driving on SH 97 from sightseeing or driver carelessness.
- Deterioration of the roadway from increased residential and construction traffic.
- Enforcement of speed limits, slow vehicle pullouts, and commercial truck requirements and limitations.
- Provide roadways/improvements for alternate routes: Burma Road, Carlin Bay Road, and O'Gara Road, add a new "Cutoff Road" between Rose Lake and Harrison, and add a new "Mountain Pass Road" over public lands.
- Improve roadway striping, signage, and lane markers.
- The existing roadway cannot handle any more traffic or developments.
- The SH 97 roadway is great as it is (do not make any roadway improvements).
- Development on the east side of Coeur d'Alene Lake should stop until adequate roadway improvements are made by developers.
- Consider a ferry system on the lake.
- Any roadway improvements should not compromise the Scenic Byway designation.
- Provide rockslide maintenance and prevention.
- Provide passing lanes and pullouts every three to five miles.
- Guardrails or barriers needed in areas of steep slopes.
- Provide pedestrian crossing improvements: striping, signage, lights, or grade separation in areas of resorts, camps, major road intersections, and for parking areas not located on the lakeside.
- Roadway maintenance needed after construction traffic is finished for large developments.

As a part of the SH 97 Corridor Study and to assure a broad base of public input, two Focus Groups were included in the study outreach to gather public opinions regarding issues related to SH 97 and to assess potential improvements and funding options. The Focus Groups were randomly selected people who live within the travel shed of SH 97 and use SH 97 for either recreational or commuting purposes. The groups provided additional input outside of the Strategic Advisory Committee and the public open houses. Two Focus Group sessions were held with area property owners for the study, one in August 2007, and another in May 2008. The participants were randomly selected and geographically dispersed throughout the study area. The Focus Groups provided another avenue for public input and discussion. Many of the

participants had been to public open houses for the study, however, some participants had not heard of the study (summer residents only).

The Focus Group sessions were facilitated by Robinson Research and used an ORTEK dialer system to assess the group's responses and opinions regarding the study issues, concerns, potential improvements, and funding sources. The comments below reflect the findings of the first session with the Focus Group.

Focus Group Session at Camp Easton

- In the open discussions held prior to the ORTEK dialer session; concerns and suggestions often clustered around problems associated with dramatically different speeds of travel and the need to accommodate the variations of speed.
- Opinions regarding whether SH 97 was adequate to handle current traffic volumes were mixed.
- The stretch of road near Beauty Bay Hill was discussed far more often than any other portion of SH 97.
- In the ORTEK session, the citizens were generally in favor of a variety of measures to increase passing ability and safety, but were not seeking dramatic upgrades, such as overall widening.
- Improving alternate routes was particularly popular.
- When tested alone, the ferry was favored by nearly half, but in the importance series, it was nowhere near the top of the list. The majority would use it less than once a month, if at all. Over half suggested a one-way fare no higher than $2.00.
- In a series of seven, agree/disagree statements, minor improvements for safety was most popular, while the assertion that SH 97 needs no improvement was least popular.
- In a forced choice question, a slight majority preferred additional improvements, while one fourth preferred minor improvements (paving, guardrails) and one fifth preferred overall widening.
- Provisions for pedestrians were more popular than provisions for bicyclists, even though about half of participants reported riding bicycles on SH 97 themselves. There were more than twice as many respondents who favored unrestricted travel by pedestrians, as there was who favored unrestricted travel by bicyclists. There was no majority opinion about how to handle pedestrian and bicycle traffic.

- In a series testing the importance of each of thirteen possible improvements: additional pullouts for slow vehicles, widening travel lanes in sharp curves, additional passing lanes, and designated school bus stops were perceived as most important, while scenic pullouts, a passenger ferry, consolidating existing driveway entrances, and street lighting at key intersections were deemed least important.
- Eighty-four percent favored the concept of one or more paved alternative routes.
- One third of the group preferred the Carlin Bay/Burma Roads option or the Asbury/Burma Roads option, while one in eight preferred the Burma Road only option and one in five wanted none of the alternative route options.
- When offered only the Asbury Road option, those who opposed it slightly outnumbered those who favored it.
- Citizens greatly preferred that developers pay a proportionate share, rather than just pay for improvements where the development fronts SH 97.
- Citizens greatly preferred that all development and individual projects pay impact fees.
- Overall property owners agreed to have SH 97 improvements made and funded through property taxes or a local improvement district.
- Half preferred the Idaho Transportation Department for managing SH 97 improvements, compared to one third who preferred East Side Highway District, and one in eight preferred Kootenai County.
- For managing and collecting impact fees, nearly half-preferred Kootenai County, one third preferred East Side Highway District, and one fourth preferred the Idaho Transportation Department.

In the 2008 focus group, the session began with an overview of the findings of the 2007 group, an unstructured walk-around period in which participants could examine all recommended improvements and write down comments, and a presentation of safety data. The findings are presented below.

- Two-thirds (68 percent) believed the overall SH 97 Plan should proceed.
- Of the three tested overall categories of improvements, safety was rated most favorably, followed by slow vehicle pullouts, and passing lanes.
- The three tested categories of improvements (noted in the prior point) all tested more favorably than did the overall SH 97 Plan.
- Seven in ten (71 percent) opposed having an on-road parking policy.
- The majority (55 percent) opposed having an access (driveway/approaches) policy.
- Nine in ten (90 percent) favored keeping with the rules for Scenic Byways.
- Two-thirds (65 percent) believed the Plan for improvements to alternate routes should proceed.
- Seven in ten (71 percent) viewed the overall Plan for improvements to alternate routes at least somewhat favorably.

- Seven in ten (71 percent) opposed having a ferry run from Harrison to an unspecified point on the west side of Lake Coeur d'Alene.
- If there were to be ferry service from Harrison, one-third (35 percent) would prefer a landing in Coeur d'Alene, followed by Sun Up Bay (26 percent) and 16:1 Bay (16 percent). One-fourth (23 percent) were uncertain.
- A slight majority (52 percent) preferred that the East Side Highway District be in charge of maintenance, compared to slightly less than half (45 percent) who believed maintenance should be provided by the Idaho Transportation Department.
- Three-fourths (77 percent) believed that maintenance of the alternate routes should be provided by the East Side Highway District.
- Three-fifths (58 percent) believed that improvements to SH 97 should be paid for by developers. No other source was the favorite of more than one in eight (13 percent).
- For the improvements to alternate routes, nearly half (45 percent) believed developers should pay, followed by state or federal funds (23 percent).

The Focus Groups results closely mirrored the information/input received from the public open houses and the survey results. Overall, people living in proximity to SH 97 prefer that minor safety improvements be made to the corridor with development paying for their impacts on the transportation facilities. The groups were not in support of paying for improvements through local improvement districts or taxes, but did want improved maintenance of the roadways.

The adoption of the Plan by the agencies begins the implementation phase of the Plan. As development occurs or funds are available for roadway projects, the agency of jurisdiction can select Plan improvement recommendations to advance for public funding consideration or can require roadway improvements be constructed to mitigate traffic impacts within the study area.

IV. EXISTING ROADWAY CONDITIONS

This section summarizes the existing roadway conditions of both the State Highway 97 and the alternate routes to SH 97.

STATE HIGHWAY 97

SH 97 is a two lane rural *major collector* and is designated as the Lake Coeur d'Alene Scenic Byway that runs north to south along the eastern side of Coeur d'Alene Lake in Kootenai County. The highway extends about 35.8 miles from ITD milepost (MP) 60.63 to 96.43, providing a connection between Interstate 90 to the north and State Highway 3 to the south. The SH 97 route serves the City of Harrison, Idaho (population 1,480, as of 2007) and is widely used to access recreational areas and public lands.

The highway generally has a two lane cross section, with one lane provided in each direction of travel. The travel lanes on SH 97 generally range from eleven to twelve feet in width with up to two feet of unpaved shoulders. Many of the curves have tight radii. The foreslopes are typically either very steep or non-existent and the backslopes are either too steep and/or heavily vegetated.

In many places, the western lakeside edge (or edge closest to Coeur d'Alene Lake) slopes steeply, directly from the edge of asphalt to the lake or residences located well below the roadway. In other locations, the backslope consists of rock and rockfall from overly steep slopes, which is a constant traffic hazard and maintenance issue. Very limited guardrail installation was noted. In many places where guardrail is present, it is failing or has serious maintenance concerns. Drainage ditches and culverts are typically sub-standard in size and condition. There are very limited passing lanes or passing zones. Pullouts (slow vehicle or scenic) are limited in number and are typically substandard in length, taper, and width. Several very tight radii curves have serious erosion and culvert instability issues. Pedestrian crossings are typically poorly located, inadequately marked, and/or have multiple crossings within a short distance of each other, providing a confusion element, especially for the visiting motorist. The roadway right of way is generally 50 feet, but appears to vary from 40 feet to around 60 feet in general.

The geography along the SH 97 corridor is predominantly classified as "rolling terrain" with forested areas located to the east, and water and steep grades located to the west and on the northern end of the highway. These geographic conditions may limit the ability of agencies to provide cost effective capacity improvements on the highway. Even further, the terrain imposes abrupt horizontal changes that result in reduced travel speeds along the majority of the highway. The northern and mid segments of SH 97 contain the greatest number of curves and "switchbacks", which results in average travel speeds that are frequently less than 35 mph. The general lack of passing opportunities results in traffic delays, as a high percentage of vehicles spend time following other, slower moving vehicles.

Numerous driveways exist on the SH 97. In particular, accesses to single-family residential homes occur frequently on the route. Many of these driveways or private roads have limited sight distance due to roadway curvatures and steep slopes. While the SH 97 does fall under the Idaho Transportation Department Access Management Guidelines for Access Type 1 Major

Collector Rural roadways, it does not conform to the approach spacing requirements of 300 feet (see ITD Access Management Guidelines in the appendices of this report).

ITD has reviewed pavement conditions on SH 97 (June 2007). The analysis was performed in sections. According to the ITD *Pavement Management Report* for District 1, the average cracking index, upon which pavement conditions are graded, ranges from 4.20 to 5.00. This categorizes pavement conditions as "good" to "very good" on the highway.

The secondary roads intersecting SH 97 are either private roads maintained by private parties/entities, public roads providing access to public lands maintained by the agency (such as the Bureau of Land Management), or public roads maintained by the East Side Highway District (ESHD).

ALTERNATE ROUTES

Most roadways have other routes that can be used for area travel. The nature of SH 97 Corridor is such that much of the land to the east is public land that is impassable in winter months due to terrain and Coeur d'Alene Lake waters border the corridor to the west and north. The *Alternate Routes* that have been suggested (Burma Road, Gozzer Road, Gotham Bay Road, Carlin Bay Road, and South Asbury/East Thompson Lake Roads) all ultimately depart from and return to SH 97. These routes can best be described as "short cuts". These routes provide a network of "alternate roadways" to travel on portions of SH 97, but ultimately the through traveler is returned to SH 97. Use of these routes could reduce some travel on SH 97; however, most are mainly unimproved or are partially improved. All of these routes are existing East Side Highway District (ESHD) roads and are mostly used by the local residents. These roads do not meet the new Associated Highway District (2008) standards for construction, alignments, drainage, pavement design, and materials.

The northern five miles of SH 97 from the interchange at Interstate 90 to the intersection with Burma Road to the south, provides no practical alternate route possibilities. SH 97 within this section is characterized by steep to severe mountainous terrain features, with numerous stream courses, and the adjacent surface of Lake Coeur d'Alene. Additionally, the same characteristics that provide for the SH 97 Scenic Byway designation, restrict and preclude viable alternate route development along the entire SH 97 Corridor.

The five identified alternate routes are all existing East Side Highway District roads and all begin and end at intersections with SH 97 or another alternate route. These routes include:

- **Burma Road** from the intersection with SH 97 on the north at MP 90.35, intersects with Gozzer Road, Gotham Bay Road, and Carlin Bay Road, to the southern intersection with SH 97 at MP 82.3.

- **Gozzer Road** from the intersection on the northeast with Burma Road to the intersection to the west with SH 97 at MP 86.62.

- **Gotham Bay Road** from the intersection on the east end with Burma Road to the intersection with SH 97 on the west end at MP 84.75.

- **Carlin Bay Road** from the intersection on the north with Burma Road to the intersection on the west with SH 97 at MP 79.46.

- **Asbury Road / East Thompson Lake Road** from the intersection on the north end with SH 97 at MP 78.64 to the end of Asbury Road at the intersection with the western portion of East Thompson Lake Road, then westerly along East Thompson Lake Road to the intersection with SH 97 at MP 70.05.

The roads consist of a mix of improved gravel and asphalt surfaces over a variety of base, ballast, and subgrade conditions. The existing road widths are typically less than 24 feet. These roads have historically been improved in a piecemeal fashion as maintenance, development, and funding has allowed. Several segments including portions of Gozzer Road from SH 97 to the Burma Road intersection have been recently improved to Associated Highway District standards. Other portions including Burma Road from the intersection with SH 97 at MP 90.35 to the intersection of Gozzer Road have been improved with an asphalt surface and some drainage upgrades, but still requires additional improvements to be classified as meeting AHD road standards. Other short segments have asphalt surfaces over varying subgrade conditions.

One of the most challenging and expensive existing characteristics is the noted "S" curve portions of Burma Road, Carlin Bay Road, Asbury Road and the lower portion of Gotham Bay Road. These segments are characterized as steep, narrow, tight, and constrained by geography, typically follow a drainage course with live streams, and likely are limited by narrow prescriptive rights of way. Improvements of these segments to bring the roadways up to the current AHD standards would be generally expensive and may require numerous permitting and right of way acquisitions.

V. CORRIDOR AND ALTERNATE ROUTES SAFETY ANALYSES

This section summarizes the safety analyses performed for State Highway 97 (SH 97) Corridor Study located in unincorporated Kootenai County and within the City of Harrison, Idaho. Collision histories were reviewed to determine where improvements may be warranted. Further analyses were performed to assist in determining and prioritizing the potential roadway improvements within the study area according to the collision rates and number of accidents that occurred within the milepost for the study period. These analyses provide an understanding to East Side Highway District, the Idaho Transportation Department, and Kootenai County of the impact of land use (residential or other development) within the study area.

SAFETY ANALYSIS

The ITD Office of Highway Operations and Safety maintains accident histories for SH 97. Collision histories were obtained for a timeframe extending between 2001 and 2006 between mileposts 60.63 and 96.43. Data such as accident severity (property damage only, injury accidents, fatality accidents, and accident type (rear-end, head-on, overturn, etc.)) were available and is summarized per milepost of the highway, and are presented in the following sections. In addition, the rate of accidents was related in terms of the number of accidents occurring per hundred million of vehicle miles traveled. These rates were compared with Idaho state averages for similar highways to determine whether an unusual collision/safety issue exists.

On State Highway 97 for the study timeframe, there were a total of 160 reported accidents between 2001 and 2006 according to ITD safety data. The data shows the number of accidents per milepost by type within the study area. For each accident, numerous injuries or fatalities can occur even though it is counted as one accident.

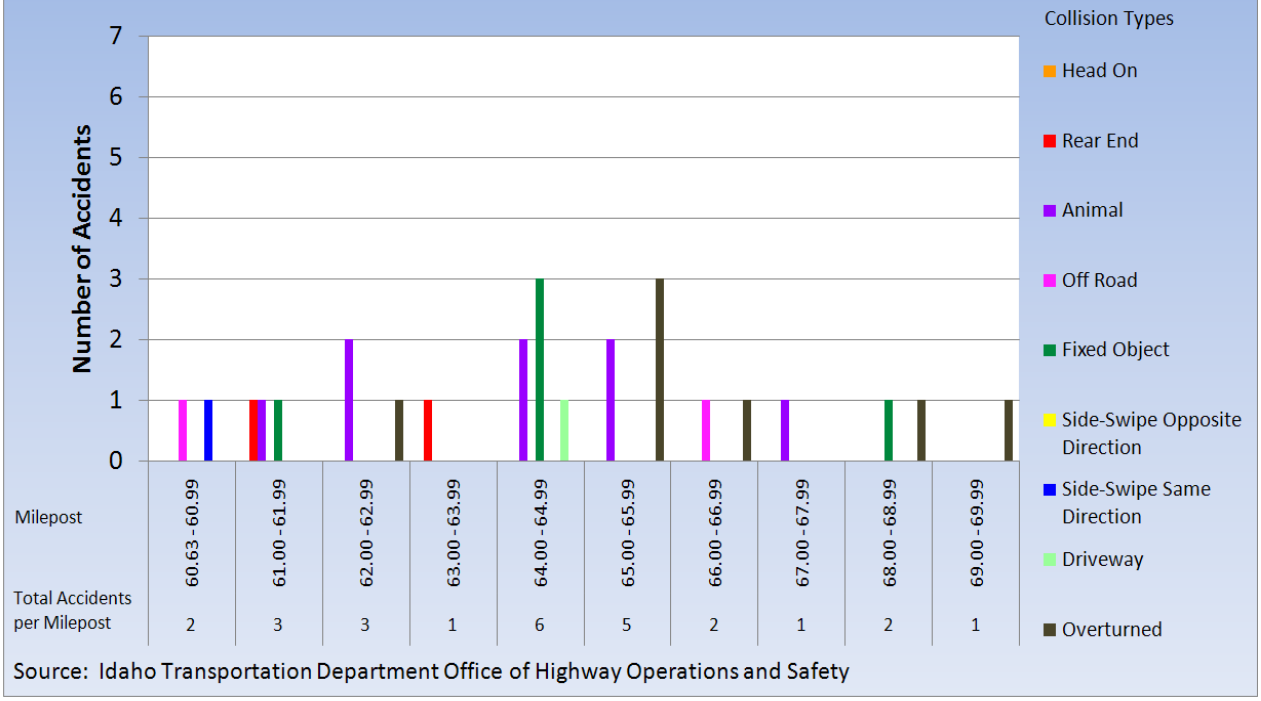
For the same time-period, accident data for the alternate routes were summarized. For the six alternate routes (Burma, Carlin Bay, Asbury, East Thompson Lake, Gozzer, and Gotham Bay Roads) and the two other locations (SH 3/SH 97 junction only and Half Round Bay Road) 29 accidents were reported.

Unfortunately, a number of accidents occur on any roadway that are not reported. This accident data is not available and is not included in this data summary. For this time-period, there was one fatality on SH 97 and none on the alternate routes. Accident data summaries are contained in the appendices of this report.

Milepost 60.63 to 69.99

A total of 26 accidents occurred within this segment (Table 3) for the study period. The majority of the accidents that occurred were animal related accidents, with overturned vehicles the second most common accident. This segment of the highway corridor is characterized as rolling terrain with farming being the predominant land use. This segment also includes the city of Harrison.

Table 3. 2001 – 2006 State Highway 97 Traffic Accidents Milepost 60.63 to 69.99

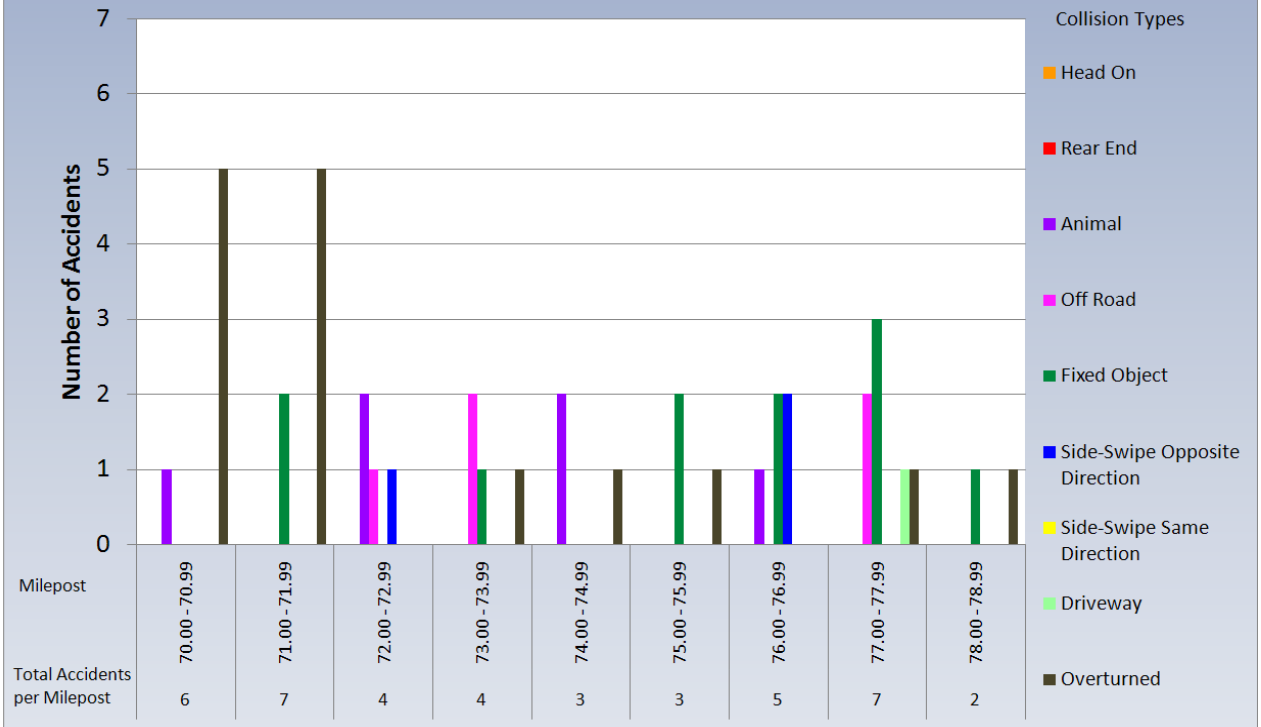


Source: Idaho Transportation Department Office of Highway Operations and Safety

Milepost 70.0 to 78.99

Between milepost 70.0 and 78.99 (Table 4), a total of 41 accidents occurred within the study period. The majority of the accidents (15) resulted in overturned vehicles for this segment. Mileposts 70, 71, 72, and 77 have extreme horizontal curves, which may be a contributing factor to a higher number of incidents occurring within these mileposts. The second most common accident (11) were fixed object related. This segment begins at the Coeur d'Alene River and ends at Carlin Bay. The terrain within this segment includes several tight radii curves as well as the grade changes associated with the Powderhorn Bay Hill grades.

Table 4. 2001 – 2006 State Highway 97 Traffic Accidents Milepost 70 to 78.99

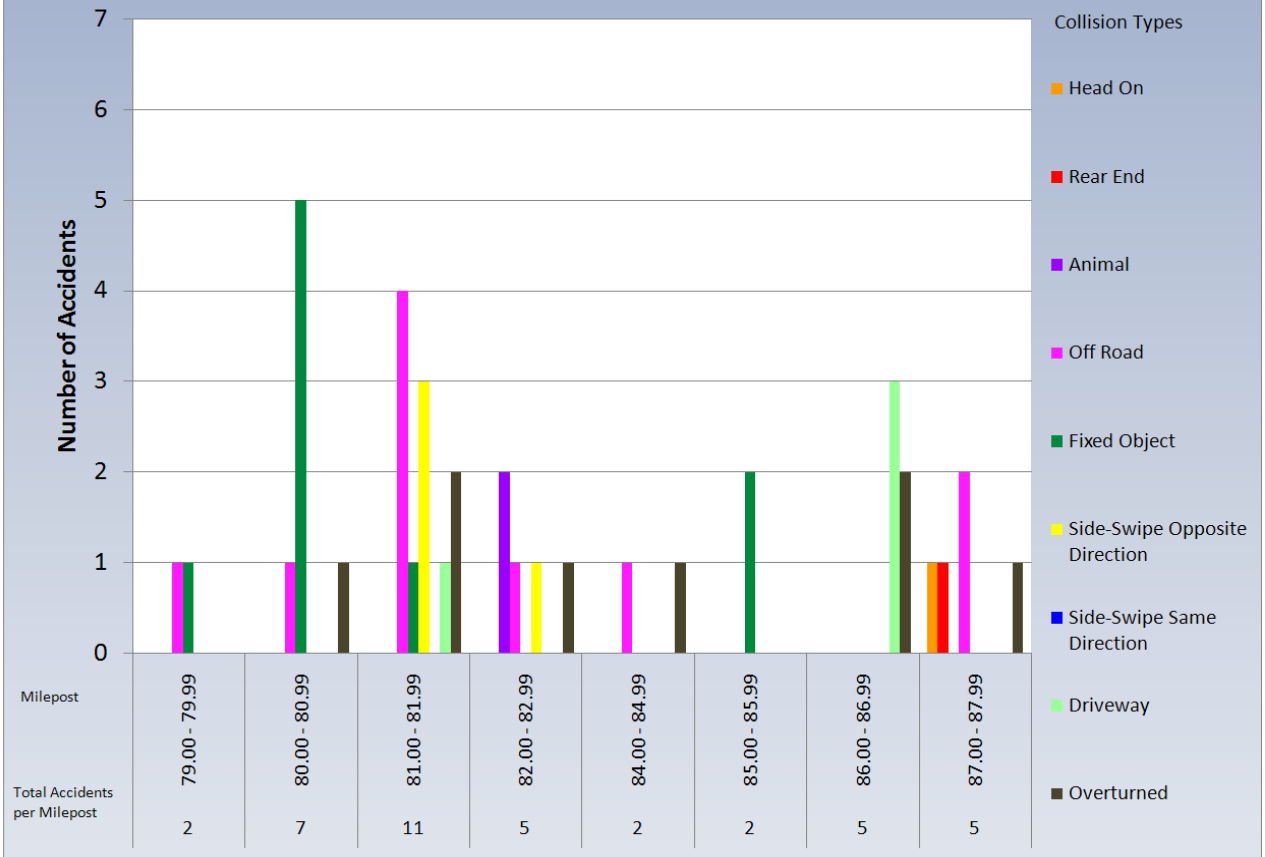


Source: Idaho Transportation Department Office of Highway Operations and Safety

Milepost 79.0 to 87.99

Between milepost 79.0 and 87.99 (Table 5), most of the accidents occurred at milepost 81 with eleven accidents. Within this milepost, there are several significant horizontal curves, which may contribute to the higher accident occurrence. The majority of the accidents that occurred were fixed object related and off-road accidents, with overturned vehicle accidents the third most common accident type. Within this segment, there was one fatality located in milepost 81. This segment includes the area north of Carlin Bay to the Arrow Point area. The terrain has several tight curve radii and some intersections have sight distance issues.

Table 5. 2001 – 2006 State Highway 97 Traffic Accidents Milepost 79 to 87.99

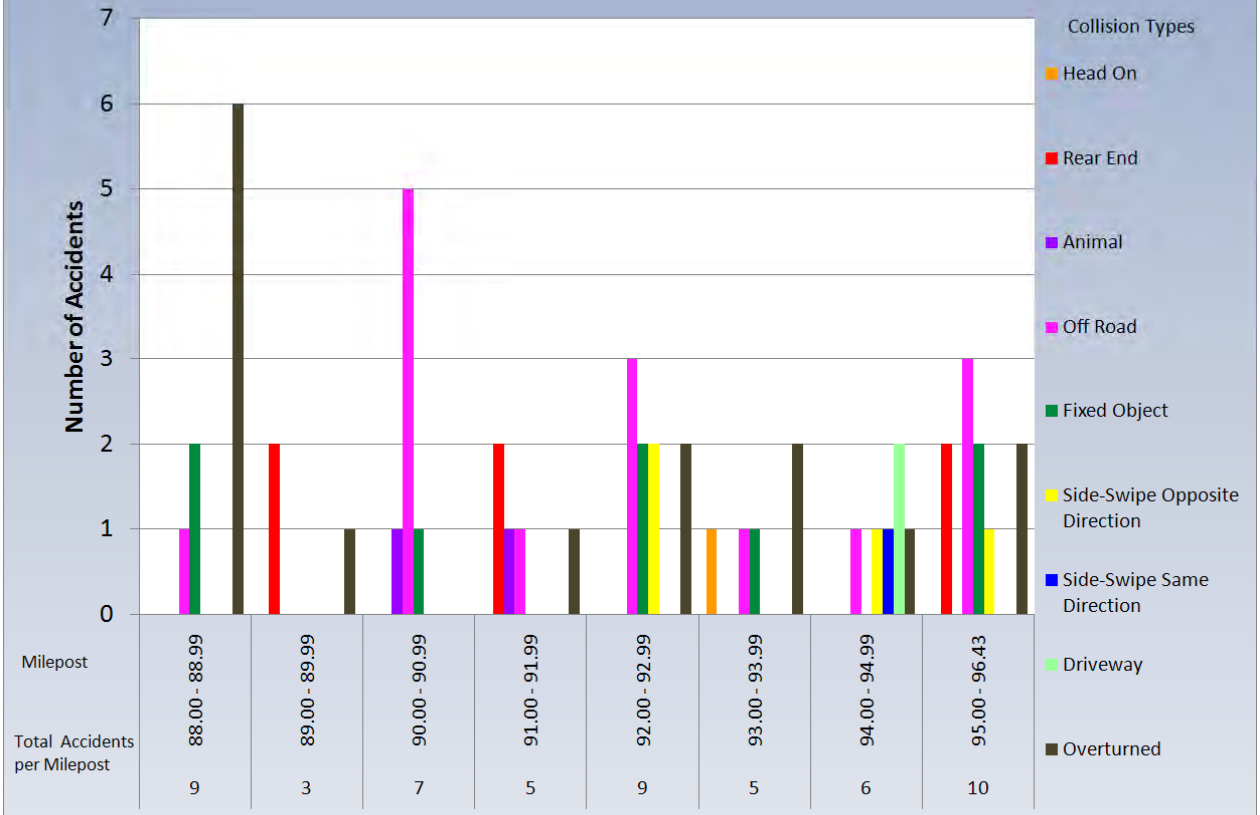


Source: Idaho Transportation Department Office of Highway Operations and Safety

Milepost 88.0 to 96.43

Within this segment (Table 6), 65 percent of the accidents occur at mileposts 88, 90, 92, and 95 through 96.43. The majority of the accidents were overturned vehicle accidents, with vehicles off the road as the second most common accident. Milepost 88 is located between Arrow Point and Neachen Bay and has several tight curve radii and sight distance issues. Milepost 90 includes the Burma Road intersection. Milepost 92 is at the top of the Beauty Bay hill and has several intersections in close proximity. Mileposts 95 and 96 include a boat ramp area and the Interstate 90 junction. The terrain within this segment includes significant horizontal and vertical grade changes as well as tight curve radii.

Table 6. 2001 – 2006 State Highway 97 Traffic Accidents Milepost 88 to 96.43

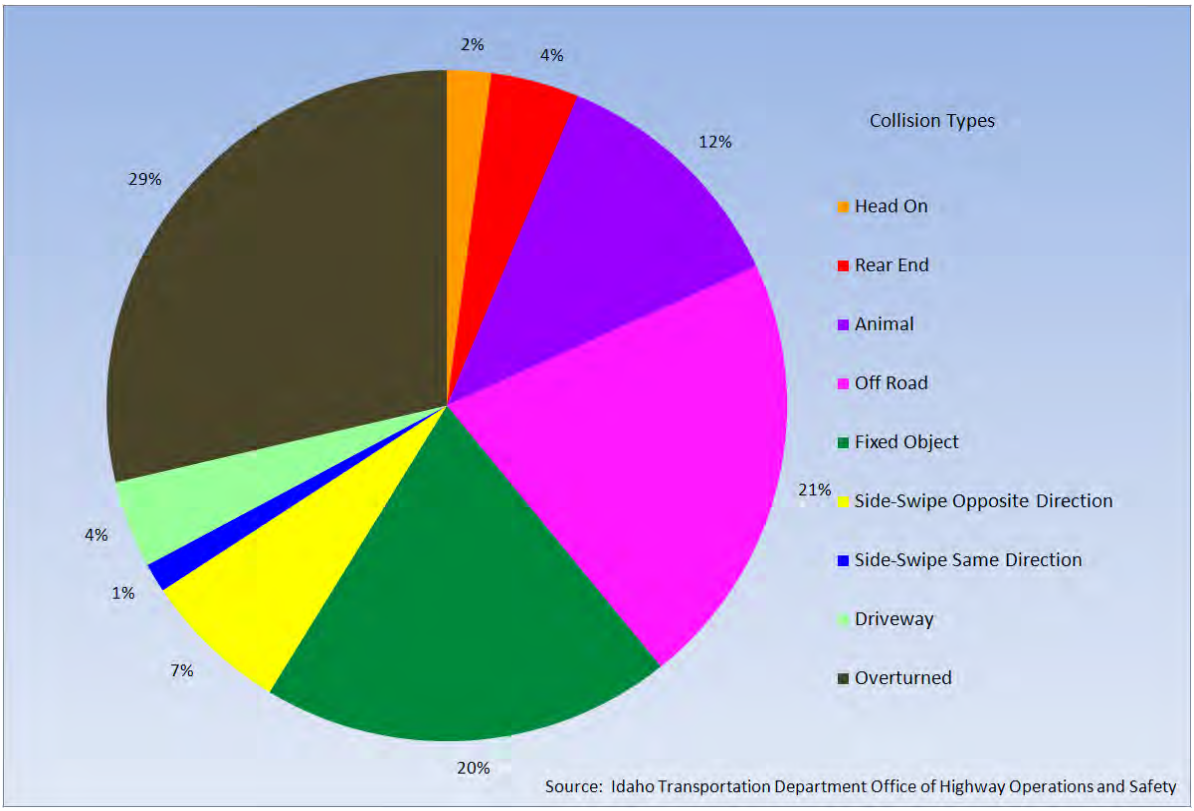


Source: Idaho Transportation Department Office of Highway Operations and Safety

Summary

Overall, for the years 2001 through 2006 over the entire study section of SH 97 (Table 7), 29 percent of the total number crashes occurred with overturned vehicles, 21 percent were vehicles resulting off the roadway, and 20 percent occurred with crashes with fixed objects. According to the Institute of Transportation Engineers, Transportation Engineering Handbook (5th Edition, 1999) common reasons for these accident types are inadequate shoulders, narrow lanes, inadequate lighting, slippery surfaces, and abrupt horizontal and vertical alignment changes. These reasons are borne out by the majority of accidents indicating that vehicles are leaving the road. There was one fatality for the time-period.

Table 7. 2001 – 2006 State Highway 97 Total Accidents



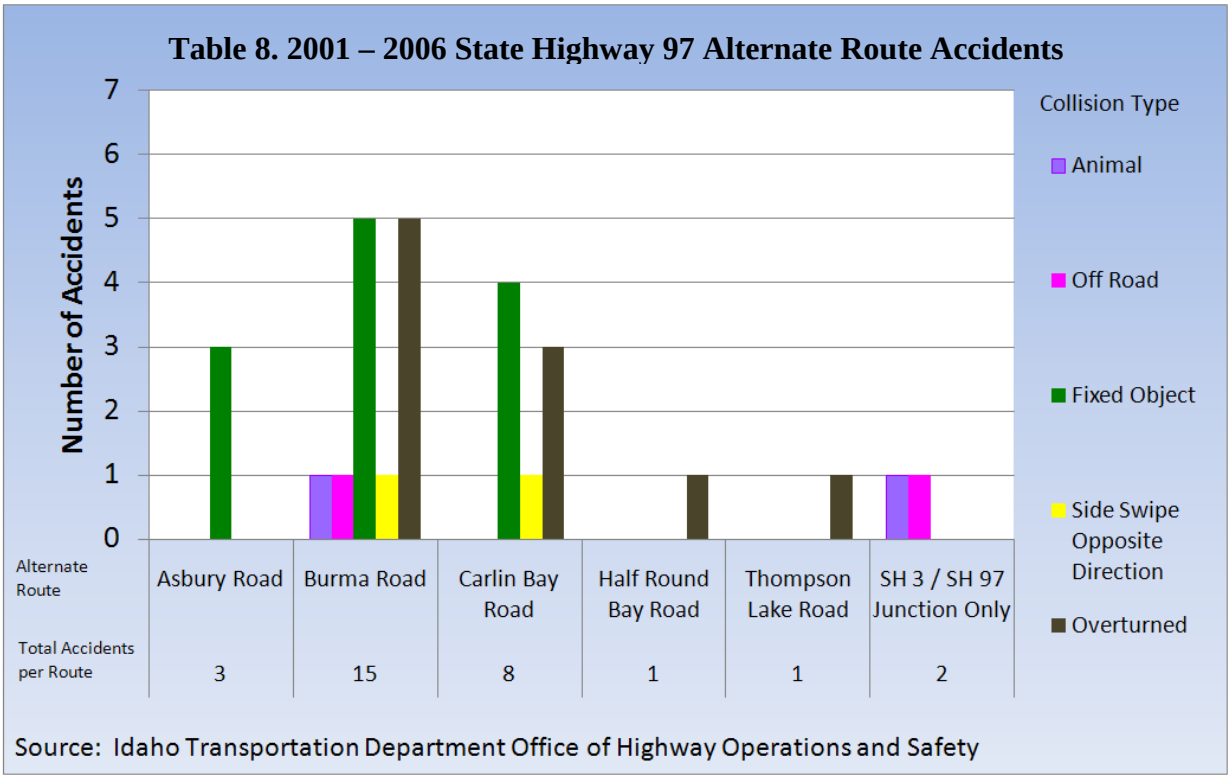
Alternate Roads

Other roadways connecting to State Highway 97 were analyzed and evaluated for safety for the 2001 through 2006 time-period as alternate routes (Table 8): Burma Road, Carlin Bay Road, Asbury Road, Half Round Bay Road, Gozzer Road, Gotham Bay Road, and East Thompson Lake Road. Half Round Bay Road was not considered as an alternate route for the study, but was included in the accident data review. Accident data for the State Highway 3/State Highway 97 junction only was also reviewed. The alternate routes are listed in order of most to least reported accidents.

- **Burma Road** had fifteen accidents between milepost 100.3 to 104.25. Most accidents were due to drivers trying to negotiate curves with speeds too fast for conditions. These vehicles either hit a tree or overturned. There were no fatalities and six injuries.
- The second highest accident incidence was on **Carlin Bay Road** with eight accidents. Most of these accidents were caused by vehicles trying to negotiate a curve and were left of the centerline with speeds too fast for the conditions, or inattention. Most of the vehicles either hit a tree or overturned and there were no fatalities and one injury.
- The next highest accident location was **Asbury Road** with three accidents. These vehicles were also trying to negotiate a curve and all three vehicles hit a tree. Their speed was generally too fast for the conditions. There were no fatalities or injuries.
- There was one accident on **Half Round Bay Road and Thompson Lake Road. I**n the Half Round Bay Road accident, the vehicle overturned trying to negotiate a curve due to inattention. In the Thompson Lake Road accident, the vehicle overturned due to improper backing. There were no injuries or fatalities with these two accidents.
- There were no accidents reported on **Gozzer Road**, or **Gotham Bay Road**.

There were two accidents at the **State Highway 3/State Highway 97 junction** between mileposts 95.428 and 96.628. Both accidents were trying to negotiate curves and one accident was caused by their speed being too fast for the conditions, and the other accident was caused by an animal. There were no fatalities or injuries. The junction has skewed intersection angles and includes historic signage and a Kootenai County solid waste site, which contributes to turning vehicle movements.

Table 8. 2001 – 2006 State Highway 97 Alternate Route Accidents



Source: Idaho Transportation Department Office of Highway Operations and Safety

COLLISION RATES

A collision rate is a means for gauging the safety of a highway or highway segment based on a computation of the number of accidents per 100 million vehicle miles traveled. The equation for this calculation/evaluation is provided as follows:

$$\textit{Collision Rate} = \frac{\textit{Number of Accidents} * 100{,}000{,}000 \textit{ miles}}{\textit{Average Daily Traffic} * 365 \textit{ Days/Year} * \textit{Length of Segment}}$$

Collisions were reviewed on a per milepost basis for SH 97. Accident rates can be compared with two different thresholds (intersection and corridor level – accidents per million vehicle miles traveled and accidents per 100 million vehicle miles traveled, respectively) to identify where potential high accident areas of the highway may exist. The ITD Office of Highway Operations and Safety provide annual collision statistics for state highways. For the years between 2001 through 2006, "Non-interstate highways" (for all speed zones) have an average overall corridor accident rate of 179.42 collisions per million vehicle miles traveled. For non-interstate roadways, generally the lower the speed limit the higher the collision rate is for those roadways. For the years between 2001 through 2006, the State Highway 97 corridor experienced 248.38 accidents per 100 million vehicle miles traveled. Thus, (in general comparisons) if milepost collision rates for segments of SH 97, or the entire analysis extents of the highway (corridor), exceed this threshold, then a potential safety issue may exist for the highway.

However, it may be more appropriate to study the SH 97 corridor, as it does have a unique distinction of scenic byway. The accident rate for the entire SH 97 corridor was determined, representing a statistical base or average of conditions on the highway. If certain segments of the highway are noted to experience collision rates that exceed the overall threshold, then this segment could be categorized as having a potential safety issue based on more relevant data. Table 9 provides a summary of accident severity (property damage only, injury, or fatality) and calculated accident rates for SH 97 milepost segments.

Table 9. Severity and Collision Rate Summaries for SH 97 - 2001 through 2006

Milepost Range		Accident Severity			Total Accidents	ADT	Average Accidents per Year	Segment Collision Rate
Start	End	PDO	Injury	Fatality				
60.63	60.99	0	2	0	2	1,000	0.3	228.31
61.00	61.99	3	0	0	3	670	0.5	206.52
62.00	62.99	2	1	0	3	670	0.5	206.52
63.00	63.99	0	1	0	1	670	0.2	82.61
64.00	64.99	4	2	0	6	670	1.0	413.04
65.00	65.99	4	1	0	5	670	0.8	330.44
66.00	66.99	1	1	0	2	670	0.3	123.91
67.00	67.99	1	0	0	1	610	0.2	90.73
68.00	68.99	2	0	0	2	460	0.3	180.48
69.00	69.99	0	1	0	1	460	0.2	120.32

Table 9. (continued) Severity and Collision Rate Summaries for SH 97

Milepost Range		Accident Severity			Total Accidents	ADT	Average Accidents per Year	Segment Collision Rate
Start	End	PDO	Injury	Fatality				
70.00	70.99	3	3	0	6	400	1.0	691.85
71.00	71.99	2	5	0	7	460	1.2	721.93
72.00	72.99	3	1	0	4	460	0.7	421.13
73.00	73.99	2	2	0	4	460	0.7	421.13
74.00	74.99	3	0	0	3	460	0.5	300.80
75.00	75.99	2	1	0	3	460	0.5	300.80
76.00	76.99	0	5	0	5	460	0.8	481.29
77.00	77.99	5	2	0	7	460	1.2	721.93
78.00	78.99	2	0	0	2	600	0.3	138.37
79.00	79.99	1	1	0	2	600	0.3	138.37
80.00	80.99	5	2	0	7	600	1.2	553.48
81.00	81.99	4	6	1	11	600	1.8	830.22
82.00	82.99	4	1	0	5	600	0.8	368.99
83.00	83.99	0	0	0	0	600	0.0	0.00
84.00	84.99	1	1	0	2	1,000	0.3	83.02
85.00	85.99	1	1	0	2	1,000	0.3	83.02
86.00	86.99	3	2	0	5	1,000	0.8	221.39
87.00	87.99	1	4	0	5	1,000	0.8	221.39
88.00	88.99	3	6	0	9	1,000	1.5	415.11
89.00	89.99	1	2	0	3	1,000	0.5	138.37
90.00	90.99	6	1	0	7	1,300	1.2	255.45
91.00	91.99	4	1	0	5	1,300	0.8	170.30
92.00	92.99	5	4	0	9	1,300	1.5	319.32
93.00	93.99	1	4	0	5	1,300	0.8	170.30
94.00	94.99	4	2	0	6	1,300	1.0	212.88
95.00	95.99	4	6	0	10	2,000	1.7	235.23
96.00	96.43	0	0	0	0	1,400	0.0	0.00
Corridor Average Total		**87**	**72**	**1**	**160**	**802**	**26.7**	**254.78**

Source: Idaho Transportation Department - Office of Highway Operations and Safety

As shown, the SH 97 collision rate for the milepost segments averaged 254.78 accidents per 100 million vehicle miles traveled (2001 – 2006) exceeds that of the 179.42 accidents per 100 million vehicle miles traveled noted for non-interstate highways throughout Idaho between 2001 - 2006 (based on the data from the ITD Office of Highway Safety). Thus, a higher than average collision rate does exist for the highway.

For the study time-period, 24 out of 37 highway segments examined do have remarkably higher collision rates that exceed the SH 97 average. The highest and most significant with two to four

times the average exceptions occur at mileposts 81, 71, 77, 70, and 80. These should be considered higher accident areas of the highway.

MILEPOST IMPROVEMENT RANKINGS

Based on field observation, accidents, and public and agency input; a list of improvements were developed for each milepost. The improvements were ranked for high and medium priority for implementation based on the existence of a higher than average collision rate per hundred million vehicle miles traveled for other non-interstate roadways in Idaho. Table 10 lists the collision rate, number of accidents, and the improvements associated with each milepost. This table identifies the highest ranking of potential roadway improvements.

Table 10. SH 97 High Ranking Potential Roadway Improvements

Milepost	Segment Collision Rate	Accidents	Improvements
81.00 – 81.99	830.22	11	Road Widening Guardrail Driveway Approach Improvements Pullout Intersection Improvements Develop On-Road Parking Policy
71.00 – 71.99	721.93	7	Road Widening Guardrails East Point Road Improvement Powderhorn Ranch Entry Road / Intersection Improvement Curve Widening Culvert Extension
77.00 – 77.99	721.93	7	Road Widening Guardrail Brushing Signage Driveway Approach Improvement Pedestrian Crossing
70.00 – 70.99	691.85	6	Road Widening Guardrail Intersection Realignments Begin Alternate Route Thompson Lake Road to Asbury Road
80.00 – 80.99	553.48	7	Road Widening Guardrail Brushing
76.00 – 76.99	481.29	5	Brushing Road Widening Guardrails Culvert Improvements

Table 10. (continued) SH 97 High Ranking Potential Roadway Improvements			
Milepost	**Segement Collision Rate**	**Accidents**	**Improvements**
72.00 – 72.99	421.13	4	Pullout Improvement Guardrail Roadway Widening
73.00 – 73.99	421.13	4	Road Widening Guardrail Brushing Pullout Improvement
88.00 – 88.99	415.11	9	Curve and Roadway Realignment Guardrail Roadway Widening Pedestrian Crossing
64.00 – 64.99	413.04	6	Approach Improvements Intersection Improvements
82.00 – 82.99	368.99	5	Brushing Pullout Improvements Intersection Improvements Road Widening Guardrail Walking Path
65.00 – 65.99	330.44	5	Signage Passing Lanes Intersection Improvements
92.00 – 92.99	319.32	9	Roadway and Curve Realignment Curve Widening Scenic Pullout Signage Guardrail Road Widening
74.00 – 74.99	300.80	3	Road Intersection Improvement Road Widening Guardrail
75.00 – 75.99	300.80	3	Approach Improvement Road Widening Guardrail Pullout Improvements Half Round Bay Road Intersection Improvements
90.00 – 90.99	255.45	7	Signage Intersection Improvements with Turn Lanes at Burma Road Intersection Improvements at Caribou Ridge Road

Table 11 identifies the medium ranking of potential roadway improvements by collision rates and number of accidents.

Table 11. SH 97 Medium Ranking Potential Roadway Improvements

Milepost	Segment Collision Rate	Accidents	Improvements
95.00 – 95.99	235.23	10	Road Realignment / Widening Slope Excavation Curve Radius Enlargement
60.63 – 60.99	228.31	2	Approach Improvement Reconstruct Intersection
86.00 – 86.99	221.39	5	Roadway Widening Guardrail Gozzer Road / SH 97 Intersection Improvements Turn Lane Improvements
87.00 – 87.99	221.39	5	Intersection and Turn Lane Improvements at Arrow Point Arrow Point Intersection Lighting Guardrail Roadway Widening Secondary Access and Mailbox Pullout Improvements Arrow Road / Yacht Club Access Road Intersection Improvements
94.00 – 94.99	212.88	6	Signage Curve Widening with Rockfall Ditch
61.00 – 61.99	206.52	3	Approach Improvement East O'Gara Road Intersection Improvement Turn Lanes Brushing
62.00 – 62.99	206.52	3	Approach Improvements Intersection Improvements
68.00 – 68.99	180.48	2	Access Road Improvements Auxiliary Parking Area at Old School Urban Streetscape Improvements Signage
91.00 – 91.99	170.30	5	Signage Intersection Realignment Albion Road / Canadian Way Eastbound Passing Lane Roadway and Curve Realignment

Table 11. (continued) SH 97 Medium Ranking Potential Roadway Improvements

Milepost	Segment Collision Rate	Accidents	Improvements
93.00 – 93.99	170.30	5	Curve and Road Widening Guardrail Slope Excavation Rockfall Protection Bridge Replacement Curve Realignment Pullout Reconstruction Intersection Realignment
78.00 – 78.99	138.37	2	Road Widening Guardrail Intersection Improvement for Asbury Road Approach Pedestrian Crossing Signage
79.00 – 79.99	138.37	2	Improve Driveway Approach Roadway Widening Guardrail Improve Sight Distance Improve Driveway Approach Road Widening Guardrail Pedestrian Crossing Intersection Improvements Pullout Reconstruction
89.00 – 89.99	138.37	3	Signage Road Realignment Pullout Intersection Improvements Passing Lane
66.00 – 66.99	123.91	2	Pullout Road Widening Guardrail Intersection Improvements
69.00 – 69.99	120.32	1	Signage
67.00 – 67.99	90.73	1	Pullout Intersection Improvement Road Widening Guardrail

Table 11. (continued) SH 97 Medium Ranking Potential Roadway Improvements

Milepost	Segment Collision Rate	Accidents	Improvements
84.00 – 84.99	83.02	2	Roadway Widening Guardrail Intersection Reconstruction
85.00 – 85.99	83.02	2	Roadway Widening Guardrail Approach Improvement Lighting and Pedestrian Crossing Improvement Pullout and Intersection Improvement
63.00 – 63.99	82.61	1	Approach Improvements Intersection Widening Improvements Right of Way Issues
83.00 – 83.99	0.00	0	Widen Roadway and Curves Guardrail Intersection Improvements Roadway Parking Signage Brushing
96.00 – 96.43	0.00	0	Signage Guardrail Pullout Illumination

Table 12 identifies the alternate routes and the SH 3/SH 97 junction (only) by the ranking of the number of accidents and potential roadway improvements.

Table 12. Alternate Route Ranking Potential Roadway Improvements

Location	Improvements
15 Accidents – High Priority	
Burma Road	Intersection Improvements Grade Reduction Roadway Reconstruction Road Widening Partial Guardrail Straighten “S” Curves Resurface Roadway Major Earthwork / Drainage / Slope Consideration

Table 12. (continued) Alternate Route Ranking Potential Roadway Improvements

Location	Improvements
8 Accidents – High Priority	
Carlin Bay Road	Intersection Improvements Road Reconstruction Curve Realignment
3 Accidents – Medium Priority	
Asbury Road	Road Realignment Reconstruct Roadway Intersection Realignment Intersection Improvement
2 Accidents – Medium Priority	
SH 3/SH 97 Junction	Junction Intersections Realignment Acceleration and Deceleration Lanes Illumination
1 Accident – Medium Priority	
Half Round Bay Road	Widen Roadway and Curves Intersection Improvements Pullout Reconstruction Brushing
East Thompson Lake Road	Intersection Improvements Commercial Approach Rock Excavation Guardrail Approach Improvements Curve Widening Intersection Improvements Roadway Reconstruction
0 Accidents – Medium Priority	
Gozzer Road	Roadway Reconstruction Resurface Roadway
Gotham Bay Road	Intersection Improvements Roadway Improvements Reconstruct Roadway

CONCLUSION

As shown, two-thirds of the SH 97 milepost segments collision rates exceed that of the 179.42 state average per hundred million vehicle miles traveled for other non-interstate highways in Idaho. Thus, a higher than average collision rate does exist for the highway. The roadway improvements identified in this report provide for safety improvements such as roadway widening, improving intersection angles and shoulders, addressing horizontal and vertical curve issues, and safety improvements.

RECOMMENDATIONS

Overall, for the entire study section of SH 97, 29 percent of the total number crashes occurred with overturned vehicles, 21 percent occurred with crashes with fixed objects, and 20 percent were vehicles resulting off the roadway between the years 2001 and 2006. The common reasons for these accident types are inadequate shoulders, narrow lanes, inadequate lighting, slippery surfaces, and abrupt horizontal and vertical alignment changes.

According to the Institute of Transportation Engineers, Transportation Engineering Handbook (5th Edition, 1999) improvements for these accident types include, but are not necessarily limited to: additional or improved warning signs (larger and more reflective); grooved shoulder pavement; wider shoulders; provision of guardrail; reduced speed limits; the construction of wider travel or passing lanes; installation of reflector markers; improved clear zones; and flatten slopes and ditches (including super elevation).

Projects reflecting these types of improvements have been identified for both the State Highway 97 corridor as well as the Alternates Routes. In seeking funding for these improvements, the higher than average collision rates indicates that improvements are needed.

Implementation of projects should be evaluated based on the priority ranking for collision rates, number of accidents, and location of the development project.

VI. CORRIDOR PRACTICAL CAPACITY ANALYSES

This section summarizes the practical highway capacity performed for State Highway 97 Corridor Study. The analysis was performed to determine the planning level vehicle capacity availability (from here on referred to as practical capacity or capacity only) of SH 97 based on existing geometric (i.e. highway design) and operational (i.e. traffic flow) conditions. The analysis also helps the East Side Highway District, the Idaho Transportation Department, and Kootenai County understand the impact of land use (residential development) decisions on the highway.

TRAFFIC VOLUMES

Average daily traffic (ADT) counts and peak/design hour factor data was obtained from the ITD 2006 traffic volume reports. ITD collects and maintains volume data for twelve segments on SH 97. These segments are:

- 60.63 to 61.19 – State Highway 3 Junction to O'Gara Road
- 61.19 to 67.23 – O'Gara Road to Locust Drive (approximately Woodlawn Drive)
- 67.23 to 68.03 – Locust Drive to Harrison Street
- 68.03 to 68.14 – Harrison Street to Pine Street
- 68.14 to 70.06 – Pine Street to Harlow Point Road
- 70.06 to 70.75 – Harlow Point Road to Stott Road
- 70.75 to 79.47 – Stott Road to Carlin Bay Road
- 79.47 to 83.20 – Carlin Bay Road to Driftwood Drive
- 83.20 to 90.34 – Driftwood Drive to Burma Road
- 90.34 to 95.42 – Burma Road to Mineral Ridge Boat Launch at Wolf Lodge Bay
- 95.42 to 96.33 – Mineral Ridge Boat Launch at Wolf Lodge Bay to Interstate 90 Eastbound Ramp
- 96.33 to 96.43 – Interstate 90 EB Ramp to Interstate 90 Westbound Ramp

In addition, ITD volume reports define the peak hour volume (PHV) as a percentage of average daily trips (ADT) within each segment. The PHV is the highest traffic volume within a timeframe of one hour. Design hour volume (DHV) is usually the 30th highest hour traffic volume, which may not necessarily be equivalent to the peak hour traffic volume. DHV may be different (than the 30th highest hour) on a Scenic Byway with inordinately heavier seasonal traffic. A summary of ADT volumes and the calculated DHV is provided in Table X. This data is used to support the existing capacity analyses in this report. Independent counts performed at select locations have supported the accuracy of ITD's counts.

Forecast traffic volumes were developed for the purpose of reviewing future capacity conditions. Forecasts were developed using growth rates identified from the *2007-2030 Kootenai County Metropolitan Transportation Plan* (KMPO, 2007). Existing 2006 and future year 2030 traffic volumes were compared. The comparison indicates that traffic is expected to increase by

between 0.5 to 3.6 percent annually, depending on the location. A summary of growth rates expected for various locations on the highway is shown on Table 13. This growth primarily reflects the growth of traffic associated with new residential development in the study area.

Growth rates were used to generate forecast ADT and design hour volumes (DHV). The DHV represents forecast PHV, which is used for the purpose of future operational/capacity analyses and roadway design. A summary of SH 97 growth rates (which correspond to ITD's milepost segments) and the resulting ADT and DHV forecasts are also provided on Table 13.

Table 13. Year 2006 and Forecast Year 2030 SH 97 ADT and PHV/ DHV

Milepost Range		Year 2006[1] ADT	Year 2006 PHV[2]		Growth Rate/Year[3]	Year 2030 Volumes	
Start	End		%	Calc.		ADT	DHV[4]
60.63	61.19	1,000	14.15	140	0.5%	1,100	160
61.19	67.23	670	15.75	105	0.5%	800	120
67.23	68.03	610	16.22	100	0.5%	700	115
68.03	68.14	650	15.90	105	0.5%	700	120
68.14	70.06	470	17.81	85	0.5%	500	95
70.06	70.75	450	18.11	80	0.5%	500	90
70.75	79.47	530	17.03	90	0.5%	600	100
79.47	83.20	700	15.54	110	2.1%	1,200	180
83.20	90.34	1,300	13.41	175	2.1%	2,100	290
90.34	95.42	1,600	12.94	205	3.6%	3,700	480
95.42	96.33	2,200	12.39	275	3.6%	5,100	645
96.33	96.43	1,400	12.23	185	3.6%	3,300	430

1. Count Source: Idaho Transportation Department 2006 Volume Report.
2. PHV = Peak Hour Volume.
3. Growth Rate Source: *2007-2030 Kootenai County Metropolitan Transportation Plan* (KMPO, 2007).
4. DHV = Design Hour Volume (Future PHV).

Limited alternate routes for SH 97 are available between Interstate 90 and the SH 97 and SH 3 junction. Other than two connections to SH 97, one at Interstate 90 and the other at the SH 97/SH 3 junction, no other year round routes provide a full routing alternate to SH 97. Local roads off SH 97 do offer some alternate routing; however, these routes all begin or end back on SH 97.

CAPACITY ANALYSES

The *Highway Capacity Manual* (HCM) (Transportation Research Board, 2000) defines vehicle capacity as *"the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic, and control conditions"*. The HCM continues to describe that vehicle capacity can be reviewed for two lane highways in segments, given the characteristics of these segments are similar in cross sectional (i.e. lane and shoulder widths, etc.) and volume conditions.

Thus, this *highway capacity analyses* reviews the sections of SH 97 with similar design and volume characteristics so the planning level capacity of the highway can be estimated. This capacity threshold will help staff from the KMPO, Idaho Transportation Department (ITD), East Side Highway District, and Kootenai County make traffic and land use planning and design decisions prior to the future development of properties, which would rely on SH 97.

Level of Service Concept

This study reviewed capacity based on the level of service (LOS) methodologies outlined within the HCM. The HCM provides nationally recognized and locally accepted analysis procedures for evaluating and quantifying the function, capacity, and operation of highways, arterials, and intersections. According to the KMPO *2007-2030 Metropolitan Transportation Plan*, LOS is defined as:

> *"A measure of the performance of an element of a transportation infrastructure. An intersection, a rural roadway, a freeway ramp, an arterial, or a freeway segment can all be graded on the adequacy of their performance under given traffic conditions.*
>
> *Level of Service is a description of different operation conditions that occur on a roadway or at an intersection when accommodating various traffic volumes. It is a qualitative measure of the effect of traffic flow factors such as speed and travel time, interruptions and delays, freedom to maneuver, and driver comfort and convenience."*

Levels of service range from LOS A to LOS F. According to the KMPO, LOS grades are described as follows:

- LOS A – Free flow, low volumes, and densities with this speed. Drivers can maintain their desired speeds with little or no delays.
- LOS B – Stable flow, operating speeds are beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed. Suitable for rural design standards.
- LOS C – Stable flow, but speeds and higher volumes more closely control maneuverability. Suitable for urban design standards.
- LOS D – Approaches unstable flow, tolerable operating speeds that are, however, considerably affected by operating conditions. Drivers have little freedom to maneuver.
- LOS E – Unstable flow, with yet lower operating speeds and, perhaps, stoppages of momentary duration. Volumes at or near capacity.
- LOS F – Forecast flow, both speed and volumes can drop to zero. Stoppages may occur for short or long periods. These conditions usually result from queues of vehicles backing up from a restriction downstream.

The KMPO *2007-2030 Metropolitan Transportation Plan* generally recognizes a LOS D as the guideline for acceptable service for rural highways such as SH 97. This planning level standard is appropriate for use in estimating future available capacity, and the number of (traffic generating) residential homes or equivalents that can be developed on the highway prior to unacceptable LOS E conditions.

Note that DHV evaluations were performed for this study as they result in more conservative LOS ratings versus the evaluation of future ADT volumes and LOS.

Class II Highway Application

The Highway Capacity Manual categorizes two-lane highways into two classes. SH 97 would fall under the Class II classification of highways. HCM states that:

> *Class II – These are two lane highways on which motorists do not necessarily expect to travel at high speeds. Two lane highways that function as access routes to Class I facilities, serve as scenic or recreation routes that are not primary arterials, or pass through rugged terrain are generally assigned to Class II. Class II facilities most often serve relatively short trips, the beginning and ending portions of longer trips, or trips for which sightseeing plays a significant role. On Class II highways, LOS is defined only in terms of percent-time-following, and does not consider average travel speed. Drivers can usually be expected to tolerate higher levels of percent-time-following on Class II highways because they serve different trip purposes (HCM, 2000, Section 12-12, Page 12-16).*
>
> *On Class I highways, efficient mobility is paramount, and LOS is defined in terms of both percent-time-following and average travel speed. On a Class II highway, mobility is less critical, and LOS is defined only in terms of percent-time-following, without consideration of average travel speed. Drivers will tolerate higher levels of percent-time-following on a Class II facility than on a Class I facility, because Class II facilities usually serve shorter trips and different trip purposes (HCM 2000, Section 20-1, Page 20-3).*
>
> *For example, a Class I two lane highway with percent-time-following equal to 45 percent and an average travel speed of 40 mi/h would be classified as LOS D based on criteria/thresholds for a Class I highway. However, a Class II highway with the same conditions would be classified as LOS B based on criteria/thresholds for a Class II highway (HCM, 2000, Section 20-1, Page 20-3).*

Essentially, these statements indicate that LOS is a function of percent-time-following (Table 14) other vehicles in traffic, and that speed is neglected on a Class II highway because drivers expect to travel at reduced speeds. As opposed to Class I highways, this provides much higher LOS results on the hourly basis, as speeds are not the primary issue.

Table 14. HCS LOS Thresholds for Class II Highways

LOS	Percent-Time-Following
A	≤ 40
B	40 to 55
C	55 to 70
D	70 to 85
E	85 to 100
F	≥ 100

Source: *Highway Capacity Manual (TRB, 2000)*

LOS thresholds for a two lane Class II, scenic highway are provided in Table 15 for the year 2006 Peak Hour Volume (PHV) and year 2030 Design Hour Volume (DHV). As indicated, LOS thresholds are based on percent-time-following data, which is a function of volume, heavy vehicles in traffic (trucks, RVs, buses, construction trucks, etc.), grade of roadway (level, rolling, or mountainous), the existence of passing lanes, and the peak 15 minute traffic flows of the PHV (quantified by the peak hour factor). Given this is a planning level study, the average/common elements of highway sections were reviewed for SH 97. There are minor instances where actual attributes (such as grade) might exceed these averages, but overall the common character of the highway segment is consistent. The base assumptions are as follows:

- Based on independent traffic counts for SH 97 and correlated with ITD data, about four percent of traffic is made up of heavy freight vehicles, two percent buses, and eleven percent is typically faster moving large vehicles, such as recreational vehicles, and construction related trucks. Passenger vehicles make up 83 percent of the traffic.
- The HCM indicates that "mountainous" conditions exist when grades in excess of three percent occur for extended segments of 0.6 miles or longer. Field surveys performed of the roadway with a global positioning device indicate that, while grades in excess of three percent do exist, they do not occur with enough consistency to perform mountainous HCM analyses. As such, "rolling" terrain was assumed in the analysis.
- Field counts indicate a variable peak hour factor. However, an average of PHV factor of 0.82 was identified through a review of counts. To produce conservative results, a PHV factor of 0.80 was used for this study in reviewing both PHV and DHV service levels.
- A passing lane does exist on SH 97 along with other limited passing zones. However, passing opportunities occur infrequently, and do not provide a measurable increase in LOS for SH 97. As such, 100 percent no-passing lanes were assumed in this analysis.
- A 70/30 directional distribution of traffic was assumed for the analysis, as based on traffic count data.

Contained in the appendices of this report are the spreadsheets used to calculate LOS in the design hour for SH 97. Existing and forecast DHVs were then reviewed in accordance with the methods outlined within the HCM. The resulting LOS are provided on Table 15 for the year 2006 PHV and year 2030 DHV.

Table 15. LOS Results for SH 97

Milepost Range		Year 2006		Year 2030	
Start	End	PHV	LOS	DHV	LOS
60.63	61.19	140	B	160	B
61.19	67.02	105	A	120	B
67.02	67.23	105	A	120	B
67.23	68.03	100	A	115	B
68.03	68.13	105	A	120	B
68.13	68.77	85	A	95	A
68.77	70.06	85	A	95	A
70.06	70.75	80	A	90	A
70.75	79.47	90	A	100	A
79.47	83.20	110	B	180	B
83.20	90.34	175	B	290	C
90.34	95.42	205	B	480	D
95.42	96.33	275	C	645	C
96.33	96.43	185	B	430	C

As shown, year 2006 LOS ranges up to LOS C in a high volume area located on the north end of SH 97 by the Mineral Ridge boat launch at Wolf Lodge Bay area. By year 2030, the analysis segment in the Beauty Bay Hill area degrades to LOS D during the DHV. However, overall the analysis indicates the highway operates within the KMPO recommended planning level guidelines for rural highways.

Thus, the highway capacity analysis does conclude that there is capacity available for limited growth in the area served by SH 97. As discussed in other sections of this report, this capacity is constrained by design issues identified for the highway, which is supported by the accident analyses. The Beauty Bay Hill area is the most restrictive segment of the highway given topography and geographic water constraints.

HOUSING EQUIVALENTS

As of January 1, 2008, there were 1,744 dwelling units in areas of the County served by SH 97. The 2030 volume and LOS forecasts provided above in Table 15 are based on KMPO's regional travel demand model. When the regional model was developed in 2003, KMPO assumed that approximately 2,740 dwelling units would exist in the area served by SH 97 by 2030 (approximately 1,000 more homes than SH 97 serves today). KMPO's growth assumptions were updated based on a demographic analysis performed for the model (*Spokane and Kootenai County Regional Travel Survey, Final Report, July 2005,* NuStats) to identify current land uses and anticipated growth areas across Kootenai County. However, recent heightened interest in the area has brought development pressures to the east side of Coeur d'Alene Lake that were not

anticipated during development of the model six years ago. At the present time, KMPO is updating existing land uses in the regional model, and will be revising forecasted land uses based on Kootenai County's Comprehensive Plan update.

The primary question to be addressed with this practical capacity analysis is how many additional single-family homes (or equivalents) can be constructed in the area served by SH 97 before acceptable LOS standards are exceeded in the peak hour.

For this analysis, the KMPO standard of LOS D was used as an acceptable threshold for SH 97, as it is an appropriate gauge/measure of acceptable conditions for this rural scenic byway. Segment MP 60.63 to 61.19 (near the junction with SH 3) is the limiting segment for the south end of the highway while MP 90.34 to 95.42 (Beauty Bay Hill area) is the limiting segment for the north end of the highway. Volume and housing capacity determinations were made for both ends of the highway as travel patterns change at approximately the lower third of the SH 97 Corridor. From approximately the Powderhorn Bay area (MP 74), travel times to Interstate 90 and destinations such as Coeur d'Alene actually are shorter when traveling to/from the south on SH 97 and then using SH 3 to travel to/from the north. Thus, the travel conditions and therefore the available capacity are different for the northern two-thirds of the highway versus the southern third of the highway.

Data collected for the *Spokane and Kootenai County Regional Travel Survey, Final Report* (SRTC and KMPO, 2005) and further discussions with the KMPO staff indicates that 6.5 trips are generated per single family home in the area served by SH 97. Using comparative rates provided within the Institute of Transportation Engineers, *Trip Generation Manual* (7th Edition, 2003), this would equate to a DHV trip rate of about 0.68 trips per single family home.

AVAILABLE CAPACITY

MP 60.63 - 61.19

As indicated on Table 15, this section of the highway experiences a LOS B with a 160 DHV in the year 2030. A review of corridor LOS via HCM methods indicates this volume could elevate to a DHV of 1,020 vehicles prior to triggering a LOS E grade for this section of highway. This represents an allowable gain of 880 DHV between the year 2006 and forecast year 2030 volumes.

Thus, a comparison of this rate with the trips per home rate (880 trips ÷ 0.68 trips/home) indicates that **approximately 1,294 additional homes or equivalents could be constructed in areas served by the southern one-third of SH 97, before an unacceptable level of service (LOS E) occurs.**

MP 90.34 - 95.42

As indicated on Table 15, this section of highway experiences a LOS D grade with a 480 Year 2030 DHV. A review of corridor LOS via HCM methods indicates that this volume could elevate to a DHV of 855 trips prior to triggering a LOS E grade for this section of highway. This represents an allowable gain of 650 DHV between the existing year 2006 and forecast year 2030 volumes.

Thus, a comparison of this rate with the trips per home rate (650 trips ÷ 0.68 trips/home) indicates that **approximately 956 new homes or equivalents could be constructed in areas served by the northern two-thirds of SH 97, before an unacceptable level of service (LOS E) occurs.**

RECOMMENDATIONS

This section provides a summary of recommendations for SH 97; including some planning/policy decision recommendations.

Practical Capacity

From an operational perspective, the highway currently functions at acceptable LOS ranges during the typical weekday and design hour, with sufficient capacity and tolerable levels of percent-time-following. MP 95.42 through 96.33 currently experiences the most restrictive LOS of the highway (existing LOS C in the peak hour), as traffic volumes are highest versus any other section of the highway. Despite this, LOS is still acceptable under current standards.

If growth follows the historic rates assumed by KMPO, then by year 2030, the DHV review indicates that a LOS C/D range will be experienced between MP 83.20 through 96.43, with the remainder of the highway still functioning at LOS B or better. If growth occurs at a more rapid rate than in the past, it is possible that the highway's remaining carrying capacity could be exceeded before the end of the 20 year planning period.

The push for development and the current state of the roadway leads to the conclusion that improvements should be considered along sections of highway, to help improve safe traffic operations, enhance practical capacity, and reduce percent-time-following.

The *Highway Capacity Manual* indicates the provision of appropriately located passing zones could reduce percent-time-following by up to 35 percent; thus, improving operations back into the LOS B range for MP 83.30 through 96.43 for year 2030. However, this is "ideal" and not practical as the *Highway Capacity Manual* and ITD *Design Manual* also indicate that these passing zones should extend at least one mile to provide the optimal distance needed to improve capacity. Horizontal roadway alignment issues, topography, and fiscal constraints preclude the ability to provide "standard" additional passing lanes. An appropriate compromise might be to provide additional passing zones where it is safe to do so and also provide pullout areas for slow moving vehicles where passing zones cannot be provided safely.

A Policy on the Geometric Design of Highways and Streets (AASHTO, 2004, the "Greenbook") provides alternative passing zone suggestions for reduced speed highways. The "Greenbook" suggests that a minimum passing lane length of 1,835 feet can be used on two lane highways with an operating speed of between 45 and 50 mph. A shorter length of 1,470 feet can be used in areas with reduced 30 to 40 mph travel speeds. However, this distance is not recommended unless reduced speeds are posted and assured, as drivers on SH 97 tend to travel at higher speeds (45 mph or greater) where straight segments of the roadway occur. A passing zone of nearly 2,135 feet should be used in southern areas of the highway where speeds are posted at 55 mph (assumes design speed of up to 60 mph).

Passing lanes/zones could be considered, two way passing lanes at MP 65.1 – 65.88 (south of Harrison near South Manifold Road), an eastbound lane at MP 89.1 – 89.7 (by the Eddyville Road), and an eastbound lane at MP 91.3 – 91.7, where such zones can be provided reasonably, to improve the capacity of the highway. Even the provision of 20 percent available passing zones (roughly equivalent to one passing zone every two miles) would improve operations back into the LOS C range in highway MP 83.20 through 96.43 through year 2030. It must be noted; however, that as volumes increase on SH 97, passing zones will become inherently less safe as drivers risk passing with fewer and shorter gaps in oncoming traffic. The decision to provide additional passing lanes/zones must be based on safety considerations as well as capacity concerns.

Where passing lanes cannot be provided, a "pullout" lane can be provided to help with capacity improvements, albeit to a lesser extent. The "Greenbook" recommends a 300 feet pullout lane where speeds are up to 30 mph, a 450 feet pullout lane where speeds are up to 50 mph, and a 600 feet pullout lane where speeds are up to 60 mph. The frequency would still occur approximately every two miles.

Planning / Policy

In preparing its Comprehensive Plan update, Kootenai County should carefully consider the remaining capacity available on SH 97. The highway should be able to acceptably serve approximately 956 new homes or equivalents constructed in areas of the northern two-thirds of the highway (approximately north of Powderhorn Bay Road), and 1,294 new homes constructed in the southern one-third of the highway (approximately in the area of Powderhorn Bay Road to the south). Unless additional capacity measures are identified and implemented, development that results in higher numbers of homes or equivalents will lead to excessive traffic delays on the highway.

It should also be reiterated that this study provides planning capacity thresholds used in the guidance of land use decisions on SH 97. ITD has indicated that a traffic impact study will be requested of any future developments seeking to directly or indirectly access the highway (via East Side Highway District roads). These studies would be used to help further determine the need of traffic mitigation improvements, which would include participation in needed safety improvements located along the highway.

It is recommended that the agencies of jurisdiction: Kootenai County, Idaho Transportation Department, East Side Highway District, and the City of Harrison should adopt the SH 97 Corridor Plan or amend the Plan to their current planning documents to allow for ease of implementation.

VII. SH 97 ROUTE DEVELOPMENT IMPROVEMENTS

The recommended route development improvements for the SH 97 Corridor presented below and in the report appendices were developed from input and direction from the general public, public open house comments, Kootenai Metropolitan Planning Organization (KMPO), the Project Strategic Advisory Committee, Focus Groups, field studies, and previously produced public study background documents. A total of 72 separate improvement items were identified. Some of these items combine several improvement elements into a single listed improvement, i.e., roadway widening (excavation, embankment, grading, subgrade, ballast, base materials, asphalt, and guardrail installation). The potential roadway improvements for the study segments are summarized on Figures 5, 6, 7 and 8.

Based on public and agency input, specific improvements were suggested for the SH 97 Corridor and alternate routes in the initial scoping phase. These improvements include:

- Passing opportunities - passing lanes and passing zones
- Slow vehicle pullouts
- Scenic pullouts
- Intersection realignments
- Guardrail
- Wider roadway sections with shoulders
- Roadway approach improvements
- Improved pedestrian crossings
- Bicycle and pedestrian paths
- Traffic calming and parking for downtown Harrison

IMPROVEMENT STANDARDS

The design standards used for the recommended improvements are either Idaho Transportation Department (ITD) standard details for improvements on SH 97 or Associated Highway Districts of Kootenai County (AHD) standard (2008) details for Alternate Route improvements. Roadways accessing public lands are not recommended for improvements.

IMPROVEMENT LOCATIONS

The selection of locations for improvements was based in part on increasing roadway safety conditions and providing limited capacity improvements, while keeping the improvement impact areas within the existing right of way. A significant effort was made to tailor improvement recommendations to those locations of high needs, where the improvements could be installed without impacting private property or requiring additional right of way. Additionally, environmental concerns were addressed in attempting to limit cuts, fills, and visual scarring to an absolute minimum to maintain the scenic nature of the roadway as noted in numerous public comments.

State Highway 97 Corridor Study
Segment 1 - Potential Roadway Improvements

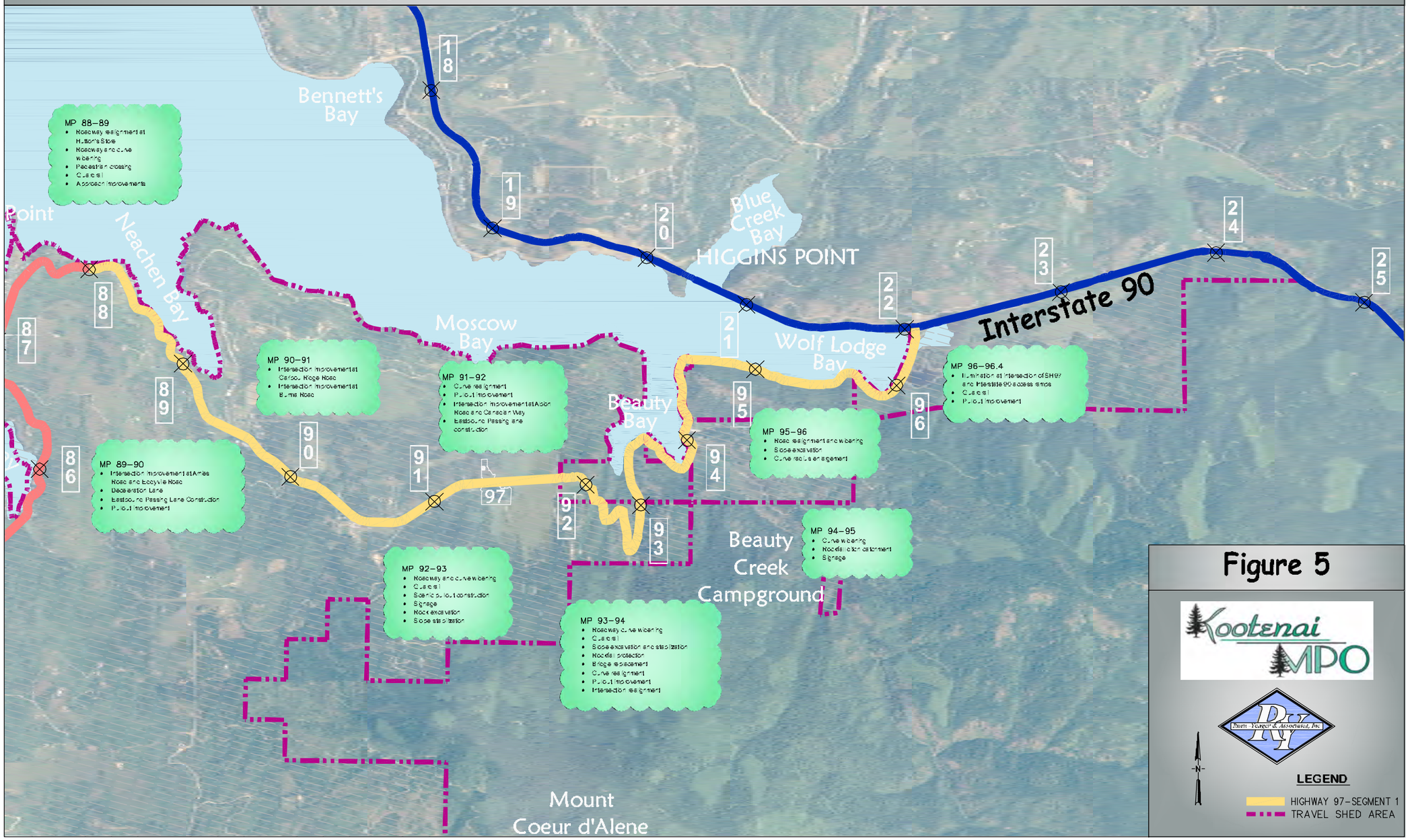


Figure 5

Kootenai MPO

Dyer, Yeager & Associates, Inc.

N

LEGEND

HIGHWAY 97–SEGMENT 1

TRAVEL SHED AREA

State Highway 97 Corridor Study

Segment 2 - Potential Roadway Improvements

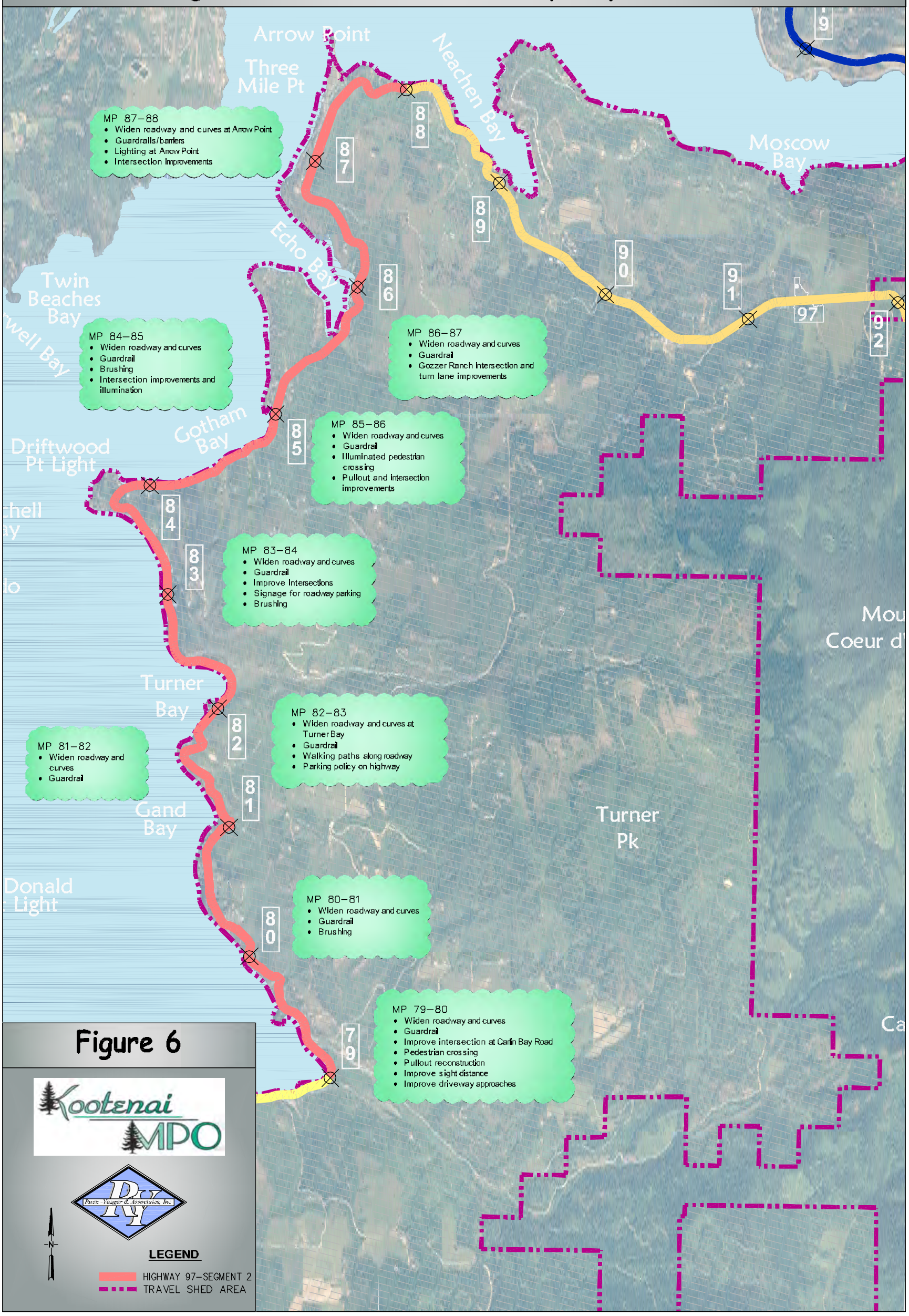


Figure 6

Kootenai MPO

Ryen Yeager & Associates, Inc.

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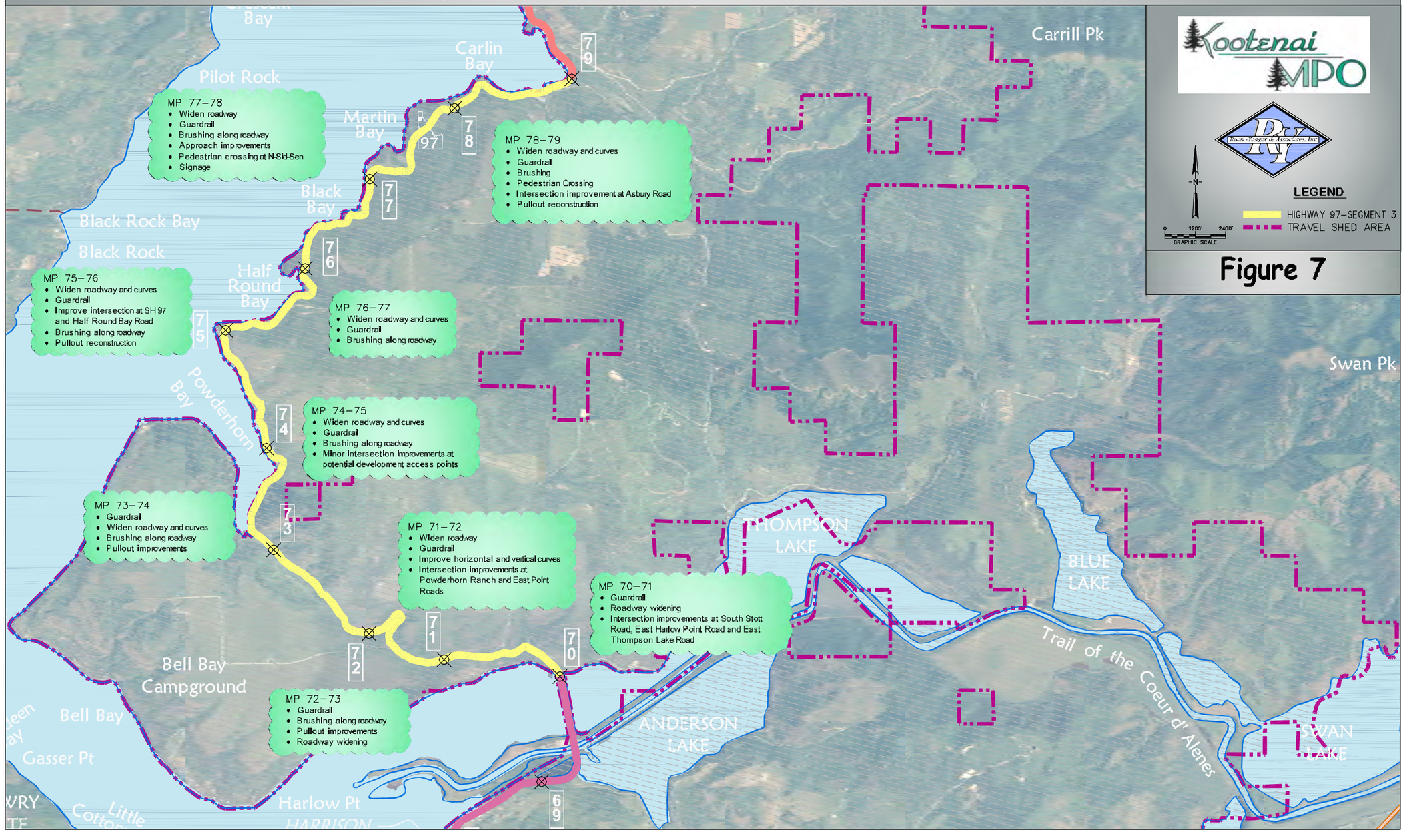
State Highway 97 Corridor Study
Segment 3 - Potential Roadway Improvements



Kootenai MPO

DKS Associates

Figure 7

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State Highway 97 Corridor Study
Segment 4 - Potential Roadway Improvements

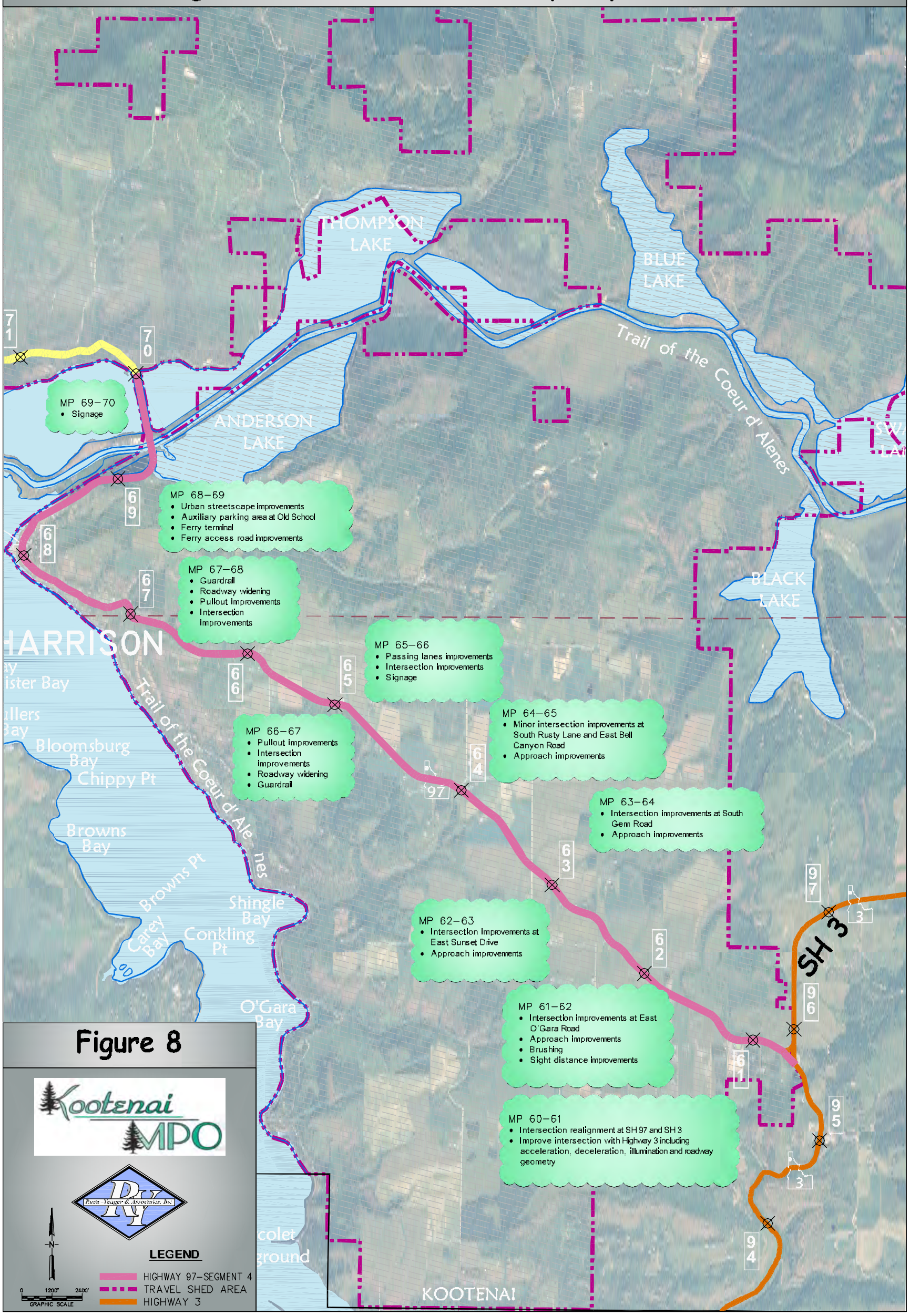

Figure 8

Kootenai MPO

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The 35.8 miles of SH 97 has been subdivided into one mile segments referred to by Milepost (MP) segments (the mileposts are further broken down into fractional portions of a mile and are presented as the milepost in whole numbers and the fractional part as a decimal percentage of a mile). The milepost numbering system begins at the southern terminus of SH 97 (the intersection of SH 97 and SH 3) and begins with Milepost (MP) 60.60. The northern terminus of SH 97 at its' junction with Interstate 90 is approximately at Milepost 96.40. This nomenclature follows the Idaho Transportation Department's (ITD) existing numbering system and can be correlated with construction drawings, previous projects, and existing roadway signage.

A discussion is provided on a mile by mile breakdown basis of the recommended improvements for SH 97. The recommended improvements are typically presented along with a brief discussion of the comments received for this particular segment. These comments originated from the KMPO, other agencies of jurisdiction, the general public via a public survey, public open house meetings, the SH 97 Project Strategic Advisory Committee, and two Focus Groups.

In addition to comments, the discussion will note existing conditions (either natural or manmade), constraining conditions, traffic issues, development pressures, and identified problems. The recommended improvements are described, their proposed installation locations noted by milepost (MP), and an estimated quantity listed, where appropriate. If special considerations were noted (i.e., environmental, geographic, private property, or other) that provided a basis for recommending one improvement over another, or if several options were evaluated, then these special considerations are also provided. Finally, the estimated construction costs are noted.

The milepost segment discussion along with the Recommended Roadway Improvement exhibits including keynotes, costs, and aerial photo base, and a complete breakdown of the unit quantities is found in the appendices of this report. The associated spreadsheets provide a unit cost and unit quantity breakdown in 1/10 and one mile increments.

PROJECT COST ESTIMATES

The conceptual cost estimates for the recommended improvements were derived from unit prices for the component parts of the improvements and the associated services related to installation of the improvements. The unit prices were extracted from the Idaho Transportation Department (ITD), Division of Highways – 2007 Bid Average Unit Price Report. The unit prices serve as the foundation of the estimates, but do not reflect any current market changes.

Unit quantities for the recommended improvements were generated from breakdowns of the ITD or Associated Highway Districts of Kootenai County (AHD) roadway design standards into a composite cost for each recommended improvement. For example, the guardrail unit cost includes a complete guardrail system with posts, blocking, rails, terminal ends, hardware, and installation. The improvement standards or standard sections were then applied along roadway segments identified during public meetings, field visits, by the Project Strategic Advisory Committee, local agencies, or the general public. A template with associated costs was used, along with a practical analysis of the existing SH 97 roadway geometrics, alignment, adjacent land uses, geography, and applied to suitable roadway segments. This produced a lineal foot cost for each of the recommended improvements. Costs were then typically generated on a per foot

of roadway improved and are specific to a type of improvement. The total cost per foot of improved roadway for all recommended improvements within a segment simply compiled all of the individual improvement costs for that one foot of a roadway segment. These costs are presented in the keynote boxes on the Milepost figures.

Some costs, like traffic control, Best Management Practices (BMPs) for erosion control, and Storm Water Pollution Prevention Plans (SWPPP) were difficult to estimate and allocate on a per foot basis. These cost estimates were based on the premise that several improvements within a roadway segment would likely be completed under one project, thereby allowing a significant cost reduction by grouping improvements into related projects on a given roadway segment. The above mentioned costs have a high initial cost and a greatly reduced cost for larger quantities, multiple tasks, or longer durations. Therefore, the cost estimate assumes that most all of the improvements noted within a given roadway segment would be accomplished under the same contract. If individual improvements are contracted separately, then the cost estimates included in this study should be increased to better represent a standalone project cost.

While cost estimates for tangible improvements were based on actual ITD unit costs from bids received on State of Idaho transportation projects in 2007, other significant factors must be taken into account to determine a true actual total cost to complete an improvement or group of improvements. These factors include:

- Inflation on materials, fuel, labor, bonds, equipment, and services.
- Right of way acquisition/relocations, where insufficient right of way exists.
- Environmental permitting and mitigation, if required, to identify, acknowledge, and preserve environmental integrity, and then mitigate or compensate for impacts, when necessary.
- Difficulty factor for completing improvements in areas where existing conditions are sub-standard, challenging, or high risk.
- Project phasing and timing of improvements.
- Size of the project in relation to quantity costs.
- Preliminary and final engineering, plans, and specifications.
- Construction staking.
- Contract administration, bonding, mobilization, and demobilization

These factors typically add 50 percent to unit cost estimates. In challenging, severe, or sensitive areas, times of high inflation, or in areas with limited right of way, these factors can add up to 75 percent in additional costs. Given the project location and constraints, the estimated overall project cost of the listed improvement can be expected to be 50 to 75 percent higher than unit costs. This adjustment factor has been included in the presented costs found within the report. The individual unit costs found within the Milepost Quantity spreadsheets do not include this adjustment factor. The Project Cost Summary sheet provides a line item adjustment for this factor within the Total Project Construction Cost Estimate with right of way and plans, specifications, and estimates (PS&E). Cost detail is provided in the appendices of this report.

Both the SH 97 Corridor and Alternate Routes exhibit difficult terrain (steep rocky embankments) with many sensitive surface waters (lake, streams, and marshland waters), substandard roadway section (narrow, limited drainage, and drainage conveyance structures, tight turn radii, non-standard approaches, and limited shoulders), a narrow right of way, and few opportunities for construction of passing zones.

In any case, these costs serve as a measure of anticipated costs for the improvements. For each improvement project or roadway segment improvement, a refined cost estimate should be prepared as part of the preliminary and final engineering for each project. Some of these improvements may be in areas where development is anticipated and can be included in project frontage improvements or mitigation of development impacts.

Improvements were further assessed as to whether it would enhance the scenic nature and traveling experience of the highway and not compromise the Scenic Byway designation.

Costs provided in the following text have been rounded to the nearest $500 for planning level purposes.

STATE HIGHWAY 97 MILEPOST SEGMENT IMPROVEMENTS

MP 60.6 - MP 61.0

Initial comments were received regarding the need to improve the existing intersection of SH 97 and SH 3 and correct the limited sight distance for southbound SH 3 travelers at the stop controlled intersection with southeast bound SH 97 travelers. The current paved roadway widths are typically 28 feet. A reconfigured intersection concept was developed that has adequate stopping sight distances along with acceleration and deceleration lanes, northbound center left turn lane on SH 3, and right turn lanes. The concept exhibit is provided in Figure 9.

Given the topography, available right of way, and the volume of traffic through the intersections, a reconfiguration of the three intersections into one intersection with Scenic Byway and historical information (both for the Lake Coeur d'Alene Scenic Byway - SH 97 and the White Pine Scenic Byway – SH 3), relocated rest area facilities (vehicle pullout), and a reconfigured rural solid waste disposal site can be readily incorporated. The existing highway alignments provided a unique opportunity to correct three high-speed non-standard intersections in close proximity to the Harrison School complex on O'Gara Road immediately to the west.

The improvements between MP 60.6 and 60.8 on SH 97 and along approximately 1,200 feet of SH 3 include:

- 1,000 feet of new 28 feet wide roadway.
- 300 feet standard vehicle pullout.
- Right and left turn lanes.
- New intersection for SH 97 and SH 3.
- Roadside drainage improvements.

State Highway 97 Corridor Study
Potential Roadway Improvements - SH 97 & SH 3 Intersection

Speed Limit		**55 MPH**
Stopping Sight Distance	=	**600'**
Average Daily Traffic	=	**SH 3 - 1500 VPD** **SH 97 - 1000 VPD**
Deceleration Lane		**615'**
Entering Taper		**100'**
Deceleration Length		**485'**
Storage Length		**30'**
Acceleration Lane		**1,280'**
Curve Radius		**200'**
Lane Length		**780'**
Taper Length		**300'**
Road Widening for Center Left Turn Lane		**1,085'**
Taper Length		**300'**
Deceleration Length		**485'**
Storage Length		**100'**
End Taper		**200'**
New SH 97 Piece 2 Lanes		**550'**

Figure 9

Kootenai MPO

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Rasor-Forgey & Associates, Inc. DRY

0 120' 240'
GRAPHIC SCALE

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Another minor improvement within this segment is the revision of approaches at the South Barten Hagan Road intersection area to improve approach angles and sight distance.

The estimated cost for the improvements is $741,500.

MP 61.0 - MP 62.0

This segment was noted in field observations to have some limited sight distance issues related to SH 97 grades. The existing intersection with O'Gara Road (location of the Kootenai Senior and Junior High Schools and Harrison Elementary School) is skewed with SH 97 and has sight distance issues with obscuring brush and vertical curves. This is a busy intersection with school traffic and St. Maries to Harrison traffic flows on SH 97 and SH 3.

Recommended improvements include:

- One half mile of brushing on SH 97.
- Addition of westbound left and eastbound right turn lanes on SH 97 at O'Gara Road.
- Complete intersection rebuild at MP 61.17 to MP 61.23.
- 300 feet of improvements on O'Gara Road.
- Intersection illumination at MP 61.19.
- Driveway approach improvement at MP 61.75.

The estimated cost for the improvements is $385,500.

MP 62.0 - MP 63.0

Limited improvements are recommended for this segment. The existing SH 97 roadway is in good condition.

The improvements in this segment include:

- East Sunset Drive/SH 97 intersection at MP 62.38 is recommended for a minor intersection upgrade to create a 90 degree intersection angle and improve 100 feet of East Sunset Drive at the intersection.
- Two driveway approach upgrades were noted at MP 62.57 and MP 62.83.

The cost for these improvements is estimated at $73,500.

MP 63.0 - MP 64.0

This segment includes a major realignment of the very skewed South Gem Road intersection north and south of SH 97 to improve sight distance and approach angle.

The recommended improvements include:

- 200 feet of SH 97 widening at MP 63.2.

- 400 feet of roadway reconstruction/realignment on South Gem Road (200 feet north and 200 feet south of SH 97).
- Culvert extensions.
- Possible right of way acquisition.
- Two driveway approaches were noted as needing approach angle improvements at MP 63.72 and MP 63.95.

The estimated cost for these improvements is $212,500.

MP 64.0 - MP 65.0

This segment was recommended for minor intersection improvements at East Bell Canyon Road and South Rusty Lane and four driveway approach improvements. All improvements would improve approach angles and sight lines.

The improvements include:

- East Bell Canyon Road intersection with SH 97 at MP 64.02 includes 100 feet of 28 feet wide roadway reconstruction on the minor legs and new culverts, sign replacement, and minor widening of SH 97 to accommodate the minor intersection realignments.
- Minor intersection improvements at South Rusty Lane at MP 64.28.
- Four driveways approach improvements at approximately MP 64.48, MP 64.56, MP 64.75, and MP 64.78.

Estimated cost for improvements in this segment is $145,000.

MP 65.0 - MP 66.0

Comments were received indicating that the intersection at South Manifold Road and SH 97 needed improvements to improve sight distance, intersection approach angles, steep approach grades on South Manifold Road, and no center turn lane on SH 97. South Manifold Road is maintained by the East Side Highway District. Additionally, this segment was found to be the best location for directional passing lanes improvement along the southern portion of SH 97.

The improvements include:

- Southeast bound passing lane for approximately 3,200 lineal feet at MP 65.88 to MP 65.11.
- Northwest bound passing lane for approximately 3,200 lineal feet at MP 65.11 to MP 65.88.
- Consideration for a northwest bound center left turn lane and a southeast bound right turn deceleration lane for safe turns off SH 97 and onto South Manifold Road at MP 65.7.
- Intersection reconstruction at South Manifold Road and SH 97 including realignment and reduction in the approach grade at MP 65.7.

- Probable right of way acquisition for passing lanes and the South Manifold Road and East Skyline Road realignments.
- Minor intersection improvements at East Skyline Road and SH 97 including realignment to a standardized intersection approach angle at MP 65.93.
- Two driveway approach improvements at MP 64.9 and MP 65.05.
- Additional signage for passing lanes at MPs 65.00, 64.60, 66.50, and 65.99.

The estimated cost for improvements in this segment is $1,234,000.

MP 66.0 - MP 67.0

Four slow vehicle pullout locations were identified within this segment, along with roadway widening with guardrail for the entire length, and minor intersection improvements at the secondary entrance to the Stone Gate (Harrison Heights) development. The actual number of pullouts to be enhanced will be based on development densities and the extent of other improvements constructed.

The recommended improvements include:

- 5,280 lineal feet of roadway widening, with drainage improvements, signage, and driveway approach work.
- Three eastbound vehicle pullouts at MPs 66.1, 66.25, 66.84 and one westbound pullout at MP 66.74.
- Minor intersection widening at the upper Stone Gate intersection with SH 97 at MP 66.35.

The estimated cost for these improvements is $1,115,000.

MP 67.0 - MP 68.0

This segment is the southeastern entry into the City of Harrison. Typical roadway widening with guardrail and drainage improvements is recommended. The intersection of SH 97 with East O'Gara Road has been identified as a minor intersection improvement project to improve the intersection angle and grades at the approach on East O'Gara Road to SH 97. The intersection of Woodlawn Drive and SH 97 was also identified as requiring approach angle modification and grade adjustments. The very acute angle of the Woodlawn Drive intersection and high density of established homes it serves will likely require a creative solution to solve the sight distance and geometric challenges with realignment and regrading.

The recommended improvements include:

- 4,200 lineal feet of roadway widening, guardrail installation, and drainage improvements between MP 67.0 and 67.7.
- One minor intersection improvement at East O'Gara Road at MP 67.25.
- One vehicle pullout improvement at MP 67.3.

- One intersection improvement at Woodlawn Drive at MP 67.7.

The estimated cost for improvements in this segment is $739,000.

MP 68.0 - MP 69.0

Comments were received requesting some traffic calming, streetscape improvements, visitor information, and urban streetscape improvements. In addition, consideration for additional parking to serve the visitors to the City, the Trail of the Coeur d'Alenes, and access to a possible passenger/vehicle ferry terminal located in Harrison were requested.

Approximately four blocks were identified for urban streetscape improvements. The intersection of SH 97 with West Harrison Street was identified for improvements as an access point to an east ferry terminal. Additionally, the ferry system would require parking, entry and exit access routes, a terminal facility, loading and off loading ramps, mooring structures, and adequate facilities for large vehicle movements.

The recommended improvements include:

- Sidewalks, curbing, traffic calming measures, urban street lights, streetscape improvements, benches, pavement replacement, signage, and reconfigured parking in the downtown core area at MP 68.0 to 68.30, a distance of approximately four to five blocks.
- Entry monument to the City with visitor information at MP 68.25.
- Trailhead information for the Trail of the Coeur d'Alenes at MP 68.05.
- Site work for a Visitor Welcome Center at MP 68.33 using an existing structure (improvements associated with the center are not included in these cost estimates).
- Auxiliary parking area for visitors off SH 97 at approximately MP 68.25.

The estimated cost for the Harrison downtown core improvements in this segment is $1,184,000.

MP 69.0 - MP 70.0

This segment has only one recommended improvement for signage upgrade at MP 69.2 with an estimated cost of $350.

MP 70.0 - 71.0

This segment includes the intersection of East Harlow Point Road and East Thompson Lake Road with SH 97. This intersection is the southern terminus of the Asbury Road/East Thompson Lake Road alternate route, identified by the public and the agencies as a possible alternate route of travel to reduce traffic on SH 97.

Roadway widening with guardrail installation is recommended for the entire SH 97 segment length. A rock excavation area within the widening was also noted. The intersection of SH 97 with South Stott Road was identified for a minor intersection improvement to address approach grades, sight distance, and the angle of the intersection.

The recommended improvements include:

- Full length widening with guardrails and drainage improvements on SH 97.
- Rock excavation for MP 70.25 to 70.33 to allow for shoulder areas.
- Intersection realignment to improve approach angles and improved sight distance for East Harlow Point and East Thompson Lake Roads with SH 97 including right turn/deceleration and left turn lanes on SH 97, drainage improvements, and approach roads widening.
- Minor intersection improvement for South Stott Road and SH 97.

The estimated cost for improvements in this Milepost segment is $1,201,000.

MP 71.0 - MP 72.0

Improvements for this segment include the continuation of the widening and guardrail installation along with a major intersection improvement at the East Point Road/SH 97 intersection, a relocated refuse site entrance from SH 97 to an approach off of East Point Road, substantial widening and guardrail installation for the curve radius at the Powderhorn Ranch Road intersection with SH 97, along with a minor intersection improvement, and excavation and embankment for culvert extensions.

The relocation of the refuse site entrance from SH 97 to East Point Road is to reduce the number of approaches (refuse site, fire station, and East Point Road) within a .05 mile segment of SH 97, improve sight distance for traffic traveling southeast on SH 97 due to a significant vertical curve, reduce potential conflicts on SH 97 for fire apparatus entering or exiting the roadway, and provide turn movement capabilities at a controlled intersection.

Further development using East Point Road for access should provide intersection improvements commensurate with the size of the development and consideration of moving the intersection further to the south to improve operating conditions.

Recommended improvements include:

- SH 97 full segment length widening and guardrail installation.
- Major intersection improvement at East Point Road and SH 97 intersection with left turn on SH 97 and a right turn/deceleration lane.
- Relocation of the solid waste disposal site approach from its present location on SH 97 to an approach on East Point Road.
- Additional widening with guardrail installation on both sides of SH 97 from MP 71.65 to MP 71.72.
- Culvert extensions, embankment, and excavation work at MP 71.7 to improve drainage and erosion control.
- Minor intersection improvements at Powderhorn Ranch Road.

The estimated cost for improvements in this segment is $1,282,000.

MP 72.0 - MP 73.0

Recommended improvements for this segment include full segment length widening of SH 97 with guardrail installation along with three vehicle pullouts.

- Roadway widening (8 - 12 feet) with guardrail.
- Vehicle pullouts with guardrail at MP 72.15 - 72.2, MP 72.38 - 72.43, and MP 72.7 - 72.76.

The estimated cost for recommended improvements in this segment is $871,000.

MP 73.0 - MP 74.0

The recommended improvements for this segment of SH 97 include guardrail and widening for 0.65 miles, brushing and clearing to improve sight distance and provide a better-defined roadway prism, some rock excavation to improve sight distance and provide for roadway and shoulder widening, and the construction of one vehicle pullout.

The recommended improvements include:

- Guardrail and roadway widening from MP 73.0 - 73.5 and MP 73.85 - 74.0.
- Vehicle pullout at MP 73.6.
- Rock excavation along MP 73.2 - 73.5 for improved sight distance and widening efforts.
- Clearing and brushing along entire segment.

Estimated cost of improvements this segment is $621,000.

MP 74.0 - MP 75.0

The recommended improvements in this segment include guardrail and widening due to steep slopes on the lakeside with little or no shoulders and minor intersection improvements at proposed intersections. Both intersections could be improved when the adjacent properties develop.

The improvements include:

- One mile of widening with guardrail installation on SH 97.
- Minor intersection realignments at two apparent points of intersection for a large undeveloped parcel (MP 74.35 and MP 74.92).

Estimated cost of recommended improvements is $970,500.

MP 75.0 - MP 76.0

This segment improvement recommendations includes two vehicle pullouts, 0.6 miles of guardrail and widening improvements due to steep lakeside slopes, and an intersection improvement for Half Round Bay Road at SH 97 with right turn and left turn lanes to improve the approach angle and line of sight.

Improvements include:

- 3,168 lineal feet of widening with type "B" guardrail installation, MP 75.0 - MP 75.6.
- Vehicle pullout at Pugh Point (MP 75.0) and a pullout at MP 75.40 - MP 75.48.
- Major intersection improvement at the Half Round Bay Road and SH 97 intersection at MP 75.48 including right and left turn lanes on SH 97, new roadway section on Half Round Bay Road for approximately 100 lineal feet, intersection realignment, and signage.

The estimated cost for these recommended improvements is $800,000.

MP 76.0 - MP 77.0

In this segment recommendations for improvements, include one mile of brushing along both sides of SH 97 to improve sight distance, approximately 0.8 miles of widening with guardrail due to steep lakeside slopes, and common driveway approach improvements to improve sight lines.

The improvements include:

- 3,500 lineal feet of widening with guardrail from MP 76.1 - 76.8 and MP 76.9 - 77.0, with drainage upgrades.
- Culvert improvements at approximately MP 76.7.
- Driveway approach improvement at approximately MP 76.7.
- Brushing along both sides of SH 97 for approximately 6,800 lineal feet.

The estimated cost for the recommended improvements is $621,000.

MP 77.0 - MP 78.0

The recommended improvements for this segment include revised, consolidated, and updated pedestrian crossing(s) for Camp N-Sed-Sen (reduce multiple crossings to one centralized crossing location), widening of approximately 875 feet of roadway with guardrail installation, brushing of the right of way, and approach improvements.

Improvements at N-Sed-Sen were noted at the public meetings. A review of the site indicated at least five separate approaches spread out along a half mile of SH 97 frontage, including two marked pedestrian crossings with one unmarked trail crossing, all with limited sight distance. Consolidation of pedestrian crossings and proper signage and brushing of the right of way along with possibly limiting some turn movements onto SH 97 could enhance safety and provide additional driver reaction time.

Specific improvements recommendations include:

- Widening and guardrail from MP 77.0 - 77.06 and MP 77.52 - 77.62, due to steep lakeside slopes.
- New consolidated pedestrian crossing at MP 77.08 with appropriate signage and striping.

- Brushing of the right of way from MP 77.1 - 77.95.
- Driveway approach improvements at MP 77.10, MP 77.15, and MP 77.80.

Estimated cost for the recommended improvements is $195,500.

MP 78.0 - MP 79.0

The segment includes a major intersection improvement at South Asbury Road and SH 97 near the Carlin Bay Marina, including right and left turn lanes on SH 97, and realignment of the intersection approach. In addition, most of the mile segment is recommended for widening, brushing of the right of way, and guardrail installation. A pedestrian crossing improvement, along with a vehicle pullout improvement, and several driveway approach improvements are recommended.

The specific recommendations and locations are:

- Brushing of 3,800 lineal feet from MP 78.0 - 78.7.
- Roadway widening with guardrail installation form MP 78.1 - 78.7 and MP 78.8 - 79.0.
- Vehicle pullout at MP 78.7 - 78.8.
- Major intersection improvement at South Asbury Road and SH 97 at MP 78.64 with an associated driveway approach improvement for the commercial site (Carlin Bay Resort).
- Four driveway approach improvements two at MP 78.3 and two at MP 78.9.
- Pedestrian crossing improvement at MP 78.65, including signage and striping.

The estimated cost for the recommended improvements is $1,002,000.

MP 79.0 - MP 80.0

This segment was noted as having serious sight and stopping distance concerns at the major intersections, a vertical curve on SH 97, which impairs driver sight, a need for a well signed pedestrian crossing for users of the new community dock adjacent to the Carlin Bay Road intersection, and widening needs near the existing substandard pullout on Carlin Bay. A very tight radius curve at approximately MP 79.75 was noted as needing improvement due to limited to no shoulders and an eroding embankment.

The recommended improvements for this segment include a vehicle pullout along the Carlin Bay Bridge (also known as the fishing bridge), widening with guardrail for 0.4 miles on SH 97, a major intersection improvement at Carlin Bay Road with left and right turn lanes on SH 97, a vertical realignment for SH 97 south of the Carlin Bay Road intersection to improve sight distance, a pedestrian crossing to the community dock, several driveway approach improvements, minor culvert extensions for improved drainage, signage, an intersection improvement at Elk Road to improve sight distance, and brushing of 0.6 miles of SH 97 right of way with associated excavation.

Specific improvement recommendations include:

- Standard pullout at MP 79.0 - 79.07.
- Roadway widening with guardrail installation at MP 79.0 - 79.1, MP 79.29 - 79.50, MP 79.55 - 79.63, and MP 79.7 - 79.8.
- Brushing on SH 97 to provide better sight distance from MP 79.30 - 79.90.
- Intersection improvement at Elk Road and SH 97, the realignment and installation of right and left turns lanes on SH 97 is dependent on development concerns along Elk Road, a traffic study is necessary to conclude actual traffic mitigations.
- Reconstruction of a short segment of SH 97 at approximately MP 79.33 - 79.4 to remove a non-standard vertical curve.
- Major intersection improvement at the Carlin Bay Road and SH 97 intersection (MP 79.46) to provide adequate sight and stopping distance, right and left turn lanes on SH 97, a standard approach grade and radius on the Carlin Bay Road portion prior to the intersection, and realignment to provide a standard angle of intersection.
- Pedestrian crossing including signage and striping at MP 79.49.
- Culvert extensions and associated drainage improvements at MP 79.75 along with widening and guardrails to provide a safer curve radius.
- Driveway approach improvements at MPs 79.4, 79.5, 79.6, 79.7, and 79.8.

The estimated cost for these recommended improvements is $862,000.

MP 80.0 - MP 81.0

The recommended improvements in this segment include approximately 0.6 miles of roadway widening with guardrail due to steep lakeside slopes, brushing of the right of way to improve sight distance, and improving four driveway approaches to SH 97 for improved sight and approach angle. Several private roads intersect with SH 97 in this segment including South Flicker Lane; no improvements were called out for these private road intersections.

Specific improvements recommendations and locations include:

- Roadway widening, drainage improvements, and guardrail installation at MP 80.0 - 80.1, MP 80.3 - 80.5, and MP 80.7 - 81.0.
- Brushing of the right of way at MP 80.0 - 80.1, MP 80.3 - 80.5, and MP 80.7 - 81.0.
- Driveway approach upgrades at approximately MPs 80.05, 80.35, 80.42, and 80.92.

The estimated cost for the recommended improvements within this segment is $511,000.

MP 81.0 - MP 82.0

The recommended improvements for this segment include two minor intersection improvement projects to improve approach angles and sight distance, roadway widening with guardrail and drainage improvements due to steep lakeside slopes, a vehicle pullout and slope work on a sharp

radius curve, brushing of the right of way to improve sight, along with minor driveway approach improvements.

The specific improvements and their locations are:

- Minor intersection improvements including realignment and approach standardization at MP 81.1.
- 3,650 lineal feet of roadway widening with guardrail installation from MP 81.1 - 81.36 and MP 81.60 - 82.0.
- Intersection improvement project for Whistle Road and SH 97 including realignment, approach grades, radius standardization, clearing, and excavation.
- Vehicle pullout construction and slope excavation work at MP 81.6 near Getaway Court.
- Brushing within the right of way from MP 81.6 - 82.0.
- Five driveway approach improvements at approximately MPs 81.1, 81.2, 81.3, 81.7, and 81.82.

The estimate cost for the recommended improvements is $823,500.

MP 82.0 - MP 83.0

This segment includes recommendations for improvements based in part on public comments and field/site evaluations. The public comments included a need for a walking path/fishing access and vehicle pullout improvement adjacent to Turner Bay, along with an intersection improvement for the public boat launch located approximately 0.35 miles north of the Burma Road intersection with SH 97 for improved approach angle and sight lines. The Burma Road intersection with SH 97 was recommended for an intersection improvement project including left and right turn lanes on SH 97 and roadway widening with guardrail and drainage improvements recommended for portions of SH 97.

Specific improvement details and locations include:

- Approximately one half mile of brushing of the right of way.
- Roadway widening with guardrail and drainage improvements for MP 82.0 - 82.6.
- Standardized vehicle pullout at MP 82.51 - 82.58.
- Intersection improvements for the Burma Road and SH 97 intersection including intersection angle realignment, approach grading and widening, right and left turn lane construction on SH 97, and related drainage improvements.
- Intersection improvement for the public boat launch at MP 82.63 including the approach grade, signage, and minor realignment work.

The estimated cost for these recommended improvements is $854,000.

MP 83.0 - MP 84.0

This segment includes improvement recommendations for widening and guardrail installation for nearly the entire segment due to steep lakeside slopes, and intersection improvements at Driftwood Heights Drive (right and left turn lanes), Bear Crossing Road (right and left turn lanes and intersection approach angle), South Driftwood Lane (intersection approach angle), and limited brushing of the right of way in these intersection areas to improve sight lines.

Specific improvements and locations include:

- Right of way brushing from MP 83.0 - 83.29.
- Roadway widening with guardrail installation and drainage improvements for MP 83.1 - 84.0.
- Minor intersection improvements for the intersection of Driftwood Heights Drive and SH 97 at MP 83.29 including realignment and approach grade work.
- Six driveway approach improvements between MP 83.10 and 83.40.
- Substantial intersection improvements for the Bear Crossing/South Driftwood Lane and SH 97 intersections including right and left turn lanes, intersection realignment, approach grade improvements, and approach widening.

The estimated cost for the improvements is $990,000.

MP 84.0 - MP 85.0

This segment includes improvement recommendations for widening the roadway and installing guardrail for the entire segment length due to steep lakeside slopes. In addition, the intersection of Gotham Bay Road and SH 97 is recommended for a major intersection improvement project with significant rock excavation and some private property acquisition. This intersection was noted in public and agency comments as the most dangerous intersection within the SH 97 Corridor with very limited sight and fundamental stopping distance concerns. Additionally, the proximity of wetlands, the lakeshore, and (Gotham Creek) stream separation issues complicate the construction and design. Gotham Bay Road south and east of SH 97 is currently receiving moderate to heavy development pressure and appears to be undergoing significant change from rural to suburban residential densities. A pedestrian crossing is recommended to address a new community boat dock and a residential association recreation parcel adjacent to the Gotham Bay Road intersection. Some right of way brushing and roadway drainage improvements are also recommended.

A traffic signal and traffic detection warning lights were evaluated in lieu of the intersection improvements. The cost of a signal is approximately the same as the intersection improvements identified and is not in keeping with the current corridor traffic controls (no existing or anticipated traffic lights). Further, any type of signalized traffic control would not provide the dedicated turn movement capabilities and would not completely address the sight and stopping distance issues at this intersection.

Specific improvements and associated locations are:

- Roadway widening with guardrail and drainage improvements for MP 84.0 - 85.0.
- Brushing of the right of way MP 84.6 - 85.0.
- Major intersection improvement for Gotham Bay Road and SH 97 at MP 84.7 - 84.8. This includes right and left turn lanes on SH 97, illumination, rock excavation, roadway widening and realignment work, culverts and drainage upgrades, slope stabilization, and signage. During construction, the project would require significant traffic control, a traffic bypass or detour route, and stormwater concerns would need to be addressed.
- Pedestrian crossing at MP 84.76.

The estimated cost for the improvements, which does not include a traffic signal, is $1,311,000.

MP 85.0 - MP 86.0

This segment includes improvement recommendations for significant right of way brushing for improved sight lines, roadway widening with guardrail installation, two intersection improvement projects, a vehicle pullout, and a pedestrian crossing upgrade for a high volume seasonally used crossing at Camp Easton Boy Scout facility. The intersection at Well Spring Road and SH 97 may require additional improvements, if more residential development were to occur.

Through public meeting comments and agency input, emphasis was placed on improving the existing pedestrian crossings at Camp Easton. The recommendation was to consolidate the crossings to one location, provide advance warning pedestrian (such as Light Guard) pedestrian crossing signals, improve the intersection/approach, and provide illumination to help improve safety and driver awareness to aid in preventing potential pedestrian/vehicle conflicts.

Specific recommendations include:

- Right of way brushing for approximately 4,000 lineal feet of roadway from MP 85.0 - 85.6 and MP 85.7 - 85.8.
- Roadway widening, guardrail installation, and improved roadway drainage from MP 85.0 to MP 85.6.
- Improve the commercial driveway approach at MP 85.13 (Camp Easton main parking lot on the east side of SH 97) including grading, signage, clearing, and possible drainage improvements.
- Illumination of the commercial approach at Camp Easton at MP 85.13.
- Provide a standard vehicle pullout at MP 85.60 - 85.68.
- Installation of advance warning pedestrian crossing lights at approximately MP 85.0 and MP 85.25, as specified by site conditions, installation standards, and manufacturer's recommendations.

The estimated cost for the recommended improvements is $990,500.

MP 86.0 - MP 87.0

This segment includes recommendations for widening and installing Type "B" guardrail with drainage improvements for the entire segment. In addition, intersection improvements at Gozzer Road and SH 97 including increased center turn lane storage and right turn deceleration lane length, increased intersection illumination, and limited brushing of the right of way.

The Gozzer Road intersection provides a primary access to the Gozzer Ranch. Gozzer Ranch is a large Planned Unit Development, presently in the early phases of development. It was noted in many public comments and verified from field observations that construction traffic, including large trucks, some with trailers, and tradesman's vehicles comprise a significant percentage of the peak morning and evening traffic counts. This traffic is in part generated from the construction activities at Gozzer Ranch and the associated Gozzer Ranch Golf Club projects on adjacent properties. As such, Gozzer Road and the intersection with SH 97 were noted as being under developed.

Specific improvement recommendations include:

- Widening the full roadway segment length and installing guardrail and roadway drainage improvements.
- Brushing those portions of the right of way not cleared by widening efforts, MP 86.2 - 86.3, and MP 86.4 - 86.5.
- Realignment of the intersection angle and approach grade for Gozzer Road at SH 97 at MP 86.63.
- Additional storage capacity for the southbound left turn lane on SH 97 at MP 86.65.
- Increasing the length of the northbound right turn lane and taper length at MP 86.58 - 86.62.
- Additional illumination of the intersection of SH 97 and Gozzer Road at MP 86.63.
- Additional advance warning signage for the Gozzer Road intersection.

The estimated cost for the improvements is $958,500.

MP 87.0 - MP 88.0

The recommended improvements for this segment include a major intersection improvement at Arrow Point Road and SH 97, intersection illumination, roadway widening, brushing, minor intersection improvement for the mailbox pullout at Arrow Point, and minor intersection improvements for the Yacht Club Access Road and Arrow Road.

Field observations indicated a very busy intersection leading to five large commercial/condominium sites with numerous residential parcels. Research indicated that additional parcels accessing SH 97 from Arrow Point Road could be developed in the near future. This intersection is the only vehicle access to these areas. New development off this road includes the beach recreation/condominium site for the Gozzer Ranch/Club. Given the intensity of development in the area, traffic counts will likely increase with full occupancy of the facilities.

Specific improvement recommendations include:

- Roadway widening with guardrail installation and drainage improvements at MP 87.0 - 87.60 and MP 87.70 - 88.0.
- Major intersection improvement at Arrow Point Road and SH 97 at MP 87.05 consisting of left and right turn lanes on SH 97, left and right turn lanes on Arrow Point Road, intersection illumination (three locations), signage, and approach road (Arrow Point Road) realignment with grading and widening.
- Minor intersection improvement (approach angle and signage) for the Arrow Point mail box clusters and parking area at MP 87.53.
- Minor intersection improvements (approach angle and brushing) for the Yacht Club Access Road (MP 87.85) and Arrow Road (MP 87.88).
- Roadway widening to address a narrow roadway with eroding shoulder section at MP 87.7 – 87.8.
- Brushing of the roadway for those areas not cleared in widening or other improvements.

The estimated cost of the improvements for this segment is $1,549,000.

MP 88.0 - MP 89.0

This segment includes improvement recommendations for roadway widening with guardrail installation (due to steep lakeside slopes) and drainage system improvements for the entire segment.

In addition, a realignment concept for the area near the Hutton's Store is proposed. This realignment addresses pedestrian crossing issues, consolidates parking on one side of the road adjacent to the commercial site, straightens out a horizontal curve for improved sight lines, and provides embankment fill for an eroding roadway shoulder. This project may require private property acquisition or right of way trades.

Specific improvement recommendations include:

- Brushing of the right of way form MP 88.0 to MP 88.9.
- Roadway widening from MP 88.0 - 88.9.
- Realignment of the roadway from MP 88.9 - 89.06, including a full reconstruction to a 28 feet wide standard roadway section.
- Embankment and slope stabilization at MP 88.9.

The estimated cost for improvements is $1,487,000.

MP 89.0 - MP 90.0

Comments were received from the public (surveys, Focus Groups, and public open houses) regarding the general need for more passing lanes, passing opportunities, slow vehicle pullouts, and scenic pullouts. Several residents also commented negatively on the selection of this

segment to incorporate these improvements during open house discussions, citing potential environmental impacts, loss of existing vegetation, possible additional roadway noise, and the lack of need for passing opportunities on SH 97. Given the nature of the existing SH 97 Corridor, few areas even have the capacity to provide a passing lane or zone. Passing lanes and zones on SH 97 were designated in areas that could host the project based on the terrain and available sight distances.

Within this segment, an existing substandard vehicle pullout is recommended for improvement. The pullout also provides a scenic view of the lake. In addition, within this segment, the roadway geometry also provides a good opportunity for an eastbound passing lane. Issues regarding possible wetlands or creek encroachments with the recommended improvements need to be thoroughly evaluated and potential mitigations explored prior to implementing the improvements. This environmental evaluation is not unique to this segment and applies to the entire SH 97 Corridor and for all the improvement recommendations.

This segment also includes improvements for completing the realignment in the previous roadway segment (MP 88 – 89) near the Hutton's Store site, providing a standard vehicle pullout, the construction of an eastbound passing lane with guardrail on the outside edge of the passing lane side, and two minor intersection improvement projects.

Specific improvement recommendations include:

- Completion of the realignment work from MP 89.0 - 89.1.
- Standard vehicle pullout at MP 89.15 - 89.21.
- Eastbound passing lane (12 feet wide) with shoulder and guardrail from MP 89.15 - 89.70.
- Minor intersection improvements for realignment, re-grading, and approach width at Eddyville Road (MP 89.55) and Arnies Road (MP 89.65).
- Culvert extension, inlet, and outlet drainage improvements at approximately MP 89.45.

The estimated cost for these recommended improvements is $893,000.

MP 90.0 - MP 91.0

This segment includes improvement recommendations for completing intersection projects at Burma Road to decrease turning conflicts and extend vehicle storage capacity in the westbound left turn lane on SH 97 and minor intersection improvements at Caribou Ridge Road to improve the approach angle.

The specific improvement and associated locations are:

- Eastbound deceleration and acceleration lanes on SH 97 at Burma Road (MP 90.36).
- Additional westbound SH 97 left turn lane storage capacity at MP 90.37 - 90.38.
- Signage for a school bus stop and speed advisory signage.

- Minor intersection improvement for the SH 97 and Caribou Ridge Road intersection (MP 90.7).

Estimated cost for the recommended improvements is $259,500.

MP 91.0 - MP 92.0

The recommended improvements for this segment include an eastbound passing lane, three intersection improvements, a realignment of SH 97 at the top of Beauty Bay Hill to eliminate a short vertical curve and provide a better transition for the Beauty Bay Hill grade, and a scenic pullout at the existing Beauty Bay Bureau of Land Management (BLM) Recreation/Campground site.

This segment provides another opportunity for an eastbound passing lane; this passing lane is immediately west of the Beauty Bay Hill down grade and is approximately two miles east of another passing lane improvement recommendation (MP 89.1 to MP 89.7). Development of lands north and south of the Flying Arrow Ranch Road intersection with SH 97 have been proposed and may impact the design and construction of the passing lane at this location.

Albion Road and Canadian Way intersections are recommended to be realigned opposite each other to provide one common and safer intersection with SH 97. The location of a newspaper box and mailboxes on Albion Road creates numerous turning movements at the top of the Beauty Bay Hill as well as the approach to the BLM site.

Specific improvement recommendations include:

- Eastbound passing lane (12 feet wide) for 2,500 lineal feet with shoulder improvements from MP 91.30 - 91.78.
- Minor intersection improvement for Flying Arrow Ranch Road to adjust grades and provide a standard intersection alignment (MP 91.45).
- Realignment of the Albion Road and Canadian Way intersections at MP 91.77 and MP 91.82, respectively, which are presently offset approximately 300 feet. The proposed improvement would move the point of intersection for Canadian Way approximately 300 feet west, to align opposite with Albion Road; additional work includes grading, and approach widening.
- Realignment of SH 97 at MP 91.8 - 92.0 to eliminate a vertical curve at the top of the Beauty Bay Hill grade and provide a better approach for a scenic pullout improvement on the east side of the existing BLM Beauty Bay Recreation and Campground site, and provide a larger radius curve for the transition to the Beauty Bay Hill Grade.
- Acquisition of public lands from BLM may be required for the realignment and scenic pullout improvements as well as environmental analyses.

The estimated cost for the recommended improvements in this segment is $937,000.

MP 92.0 - MP 93.0

This segment includes the upper portion of the Beauty Bay Hill grade and was noted extensively in comments from the public in terms of the tight radius curves, poorly maintained and deteriorating guardrails, rock and debris fall hazards, truck tracking out of lane issues, numerous accidents and near misses, lack of passing opportunities, and generally dangerous winter driving conditions. Construction and residential traffic from new developments to the south have contributed to reports of long platoons of vehicles in the peak hours.

The recommended improvements include corner widening to help in longer vehicles maintaining tracking within their lane, shoulder work to provide for rockfall collection areas, additional shy distance from the guardrail, some slope stabilization, guardrail replacement, and roadway widening. Drainage improvements and ditch work are recommended to aid in stormwater conveyances and debris capture from slope raveling.

Specific improvement recommendations for this segment include:

- Substantial excavation, including rock excavation for slope stabilization, MP 92.0 - 92.2, MP 92.3 - 92.5, and MP 92.7 - 92.8.
- Curve widening at MP 92.1 - 92.16, MP 92.28 - 92.32, MP 92.39 - 92.43, and MP 92.67 - 92.71.
- New guardrail installation over the entire roadway segment.
- Short retaining walls to support new guardrail installation and not impair views.
- Drainage improvements at MP 92.0 - 92.5 and MP 92.7 - 92.8.

The estimated cost for the recommended improvements is $1,485,000.

MP 93.0 - MP 94.0

This segment includes the lower portion of the Beauty Bay Hill grade and was noted along with MP 92.0 to 93.0 as having many needed improvement issues. Thus, the discussions and recommended improvements in a portion of this segment (MP 93.0 to MP 93.81) are the same.

This segment was noted extensively in comments from the public in terms of the tight radius curves, poorly maintained and deteriorating guardrails, rock and debris fall hazards, truck tracking out of lane issues, numerous accidents and near misses, lack of passing opportunities, and generally dangerous winter driving conditions. Construction and residential traffic from new developments to the south have contributed to reports of long platoons of vehicles in the peak hours.

The recommended improvements include corner widening to help in longer vehicles maintaining tracking within their lane, shoulder work to provide for rockfall collection areas and providing additional shy distance from guardrail, some slope stabilization, guardrail replacement, and roadway widening. Drainage improvements and ditch work are recommended to aid in stormwater conveyances and debris capture from slope raveling.

The specific improvement recommendations for this segment include:

- Substantial excavation, including rock excavation for slope stabilization, MP 93.25 - 93.46 and MP 93.76 - 93.83.
- Brushing along those areas not cleared in slope work.
- Curve widening at MP 93.75 - 93.82.
- New guardrail installation MP 93.0 - 93.42 and MP 93.60 - 93.81.
- Short retaining walls to support new guardrail installation.
- Drainage and ditch improvements at MP 92.0 - 92.5 and MP 92.7 - 92.8.
- Vehicle pullout at MP 93.82 - 93.88.
- Replacement of the bridge deck, roadway surface, and approaches to the Beauty Creek Bridge and support structures at MP 93.916 - 93.928 (this work is presently in the Idaho FY 2007-2011 Statewide Transportation Improvement Program and is programmed to be completed in 2009).
- Major intersection improvement at the Beauty Creek Road and SH 97 intersection including left and right turn lanes on SH 97.

The estimated cost for the improvements is $1,537,500. The bridge replacement cost is programmed at $1,642,000 bringing the total estimated cost for the segment including the bridge to $3,179,500

MP 94.0 - MP 95.0

This segment includes recommended improvements that include curve widening and rockfall ditch work with some additional signage. This segment was recently improved with retaining walls and shoulder work. It should be noted that numerous non-standard roadside pullouts that had been previously utilized for seasonal wildlife viewing were affected during the shoulder work and retaining wall construction. Several comments were received regarding the construction of new pullouts to replace those utilized in the past. The geography and right of way constraints present economic barriers to implementing these suggestions. The existing slopes are very steep and consist of intensely metamorphosed rock that generally creates rockfall problems. The existing right of way is narrow and therefore any new pullout construction would likely require the acquisition of additional right of way and/or slope easements from either public or private parties. A construction cost of $78,300 each was estimated for a 300 feet pullout, without right of way, or environmental mitigations in this roadway segment only.

Specific improvement recommendations and noted locations include:

- Curve widening with rockfall ditch improvements MP 94.50 to MP 94.6.
- Signage at MP 94.2, MP 94.4, and MP 94.7.

The estimated cost for the recommended improvements for this segment is $96,000.

MP 95.0 - MP 96.0

This segment includes improvement recommendations for a curve straightening realignment project to eliminate a dangerous curve noted in several comments from the public. The curve located east of the Mineral Ridge Boat Launch has limited sight distance, a moderately tight radius, and transitions into another curve, which may create lane tracking issues. The realignment would need to be outside the existing right of way and is on steep rocky terrain. Extensive excavation, including drilling and blasting, in close proximity to Coeur d'Alene Lake, with visible slope scarring from across the lake are probable. Land acquisition or right of way trades appear to be likely based on the waterfront character and advantages of creating a larger, more desirable, buildable parcel along the waterfront. Also within this segment, a vehicle pullout improvement is included.

Specific improvement recommendations include:

- Roadway realignment at MP 95.5 to MP 95.8 including a 28 feet wide standard roadway section with shoulder and drainage improvements, approximately 100,000 cubic yards of excavation of rocky material to be removed from the project site, slope stabilization, and revegetation for the disturbed 4.25 acres.
- Right of way trades or acquisition.
- Significant traffic control and bypass issues.
- Guardrail installation from MP 95.7 to MP 96.0.
- Vehicle pullout at MP 95.94 to MP 96.02.

The estimated cost for the recommended improvements is $1,588,500.

MP 96.0 - MP 97.0

This segment includes recommended improvements for guardrail installation along both sides of the causeway section of SH 97 and completing the pullout construction from MP 95.9. While not formally within the SH 97 Corridor boundary, comments were received from two parties regarding the need for illumination at the interchange of SH 97 and Interstate 90, specifically at the intersection of the eastbound and westbound ramps. Field observations indicated that this request seemed reasonable and prudent given the site conditions. The presence of a non-illuminated rural dumpster site on the north side of the Interstate 90 interchange reinforces this need.

The specific improvements include:

- Completion of a vehicle pullout.
- Guardrail installation at MP 96.0 - 96.04.
- Type "B" standard guardrail along both sides of SH 97 from MP 96.04 - 96.30.
- Consideration of illumination of the Interstate ramps (MP 96.32 and MP 96.25).

The estimated cost of the recommended improvements, not including the illumination at Interstate 90 and SH 97 is $157,500. The estimated cost for two (2) Idaho Transportation

Department standard highway luminare installations including base, wiring, poles, masts, lamps, etc., is estimated at $300,000 for a segment total of $457,500.

PROJECT IMPLEMENTATION

Funding of improvements would be from private developments or public agency funds. Private development could provide not only frontage improvements on SH 97 and alternate routes but could provide other roadway improvements necessitated by their development traffic impact. Any public funds for construction would be subject to other roadway improvement priorities or compete for funds available to agencies.

STATE ROUTE 97 IMPROVEMENTS COST SUMMARY

The cost summary in Table 16 is for full improvement of the mileposts of State Highway 97 based on the Idaho Transportation Department (ITD) – Division of Highways – 2007 Bid Average Unit Price Report and ITD standards and is listed in 2007 dollars. Costs do not include inflation, right of way acquisition, preliminary engineering and plans, construction engineering, surveying, contingencies, environmental permitting, private property impacts, and utility relocation.

Table 16. State Highway 97 Improvements Estimated Costs

Milepost Segment	Estimated Costs
60.6 - 61.0	$741,500
61.0 - 62.0	$385,500
62.0 - 63.0	$73,500
63.0 - 64.0	$212,500
64.0 - 65.0	$145,000
65.0 - 66.0	$1,234,000
66.0 - 67.0	$1,115,000
67.0 - 68.0	$739,000
68.0 - 69.0	$1,184,000
69.0 - 70.0	$350
70.0 - 71.0	$1,201,000
71.0 - 72.0	$1,282,000
72.0 - 73.0	$871,000
73.0 - 74.0	$621,000
74.0 - 75.0	$970,500
75.0 - 76.0	$800,000
76.0 - 77.0	$621,500

Table 16. (continued) State Highway 97 Improvements Estimated Costs	
Milepost Segment	Estimated Costs
77.0 - 78.0	$195,500
78.0 - 79.0	$1,002,000
79.0 - 80.0	$862,000
80.0 - 81.0	$511,000
81.0 - 82.0	$823,500
82.0 – 83.0	$854,000
83.0 - 84.0	$990,000
84.0 - 85.0	$1,311,000
85.0 - 86.0	$990,500
86.0 - 87.0	$958,500
87.0 - 88.0	$1,549,000
88.0 – 89.0	$1,487,000
89.0 – 90.0	$893,000
90.0 - 91.0	$259,500
91.0 - 92.0	$937,000
92.0 - 93.0	$1,485,000
92.0 - 93.0	$1,485,000
93.0 - 94.0	$3,179,500
94.0 - 95.0	$96,000
95.0 - 96.0	$1,588,500
96.0 - 97.0	$457,500
State Route 97 Total Estimated Cost	**$32,627,350**
Source: Idaho Transportation Department - 2007 Bid Average Unit Price Report and East Side Highway District.	

Individual Milepost maps and cost sheets for proposed State Highway 97 improvements are included in the appendices of this report.

VIII. ALTERNATE ROUTES IMPROVEMENTS TO STATE HIGHWAY 97

The recommended improvements for the five alternate routes (Burma Road – Figure 10, Gozzer Road – Figure 11, Gotham Bay Road – Figure 12, Carlin Bay Road – Figure 13, and Asbury/East Thompson Lake Road – Figures 14 and 15) within the SH 97 Corridor study area are presented below and in the appendices of the report. The improvement plans were developed from input and direction from the general public, public open house comments, Kootenai Metropolitan Planning Organization (KMPO), the Project Strategic Advisory Committee, Focus Groups, field studies, ESHD, and previously produced public study documents. The alternate routes improvements were based on the current Associated Highway Districts (AHD) of Kootenai County standards.

Specific direction was given to provide:

- Standard 24 to 28 feet asphalt roadway section with two feet gravel shoulders
- Drainage control structure improvements and replacements
- Standardized intersections with minor intersection realignments
- Standard horizontal and vertical roadway geometry
- Minimal guardrail installation

IMPROVEMENT LOCATIONS

The selection of locations for improvements was based in part on increasing roadway safety and capacity while maintaining the minimum AHD standards. It was assumed that most of the existing right of way was prescriptive and right of way acquisition may be required.

IMPROVEMENT DESIGN APPROACH

Typically, the alternate routes received a blanket template approach to bring the roadway section up to a 28 feet wide typical AHD section. The noted "S" curve portions required an alternative template approach to provide adequate cost estimates given the terrain. In both of the above cases, *templates* were developed to help estimate the cost and materials required to improve the roads. Published geotechnical and geological reports for projects within the SH 97 Corridor study area were utilized. These include the "Phase I Materials Report SH 97, Beauty Bay Hill M.P. 92.62 to 93.70, Project No. STP-5726(107), Key No. 8627, Kootenai County", dated February 3, 2005 for Toothman Orton Engineering Company by GeoEngineers and "Draft Concept Report for "Burma Road, Gotham Bay Road to JCT SH 97, Kootenai Project Number STP-5723(100), Key No. 0942" dated January 2008, prepared by J-U-B Engineers, Inc.

Alternate route intersections with SH 97 are identified in the SH 97 Recommended Improvement section of this report and are only briefly discussed here. Intersections between alternate routes and other ESHD roads, including other alternate routes, follow the AHD design criteria, and are discussed below.

A discussion of the recommended improvements is provided on an alternate route basis. The recommended improvements are typically presented along with a brief discussion of the comments received, if any, for this particular alternate route. These comments originated from the KMPO, the general public, public open houses, the SH 97 Project Strategic Advisory Committee, research and studies performed on behalf of the SH 97 study, ESHD, and the SH 97 Corridor study Focus Groups. In addition to comments, the discussion can note existing conditions (either natural or manmade), constraining conditions, traffic issues, development pressures, information gathered during the course of this study, and identified problems. The recommended improvements are described, their proposed installation location noted, and an estimated quantity and cost listed, where appropriate. If special considerations were noted (i.e., environmental, geographic, private property, or other) that provided a basis for recommending one improvement over another, or if several options were evaluated, then these special considerations are also provided. Finally, the estimated construction cost for each alternate route is noted.

The Alternate Route Exhibits, the Recommended Roadway Improvement Cost Templates, and a Summary Sheet for the Alternate Route Construction Cost Estimates are in the appendices to the report. The template spreadsheets provide a unit cost and unit quantity breakdown for a per foot increment, an estimated footage required, and the subtotal cost for that segment or specific improvement.

COST ESTIMATES

The cost estimates for the recommended Alternate Route Improvements were derived from the same sources and utilized the same methodology as the cost estimates presented in the SH 97 Route Development Improvements chapter. The reader is directed to the Project Cost Estimates section of the SH 97 Route Development Improvements chapter for a detailed explanation of how these estimates were prepared.

The alternate routes exhibit predominantly difficult terrain (steep and rocky backslopes and cut slopes along with overly steep embankments) with many sensitive surface waters (stream and marshland waters), substandard roadway sections (narrow, limited drainage, drainage conveyance structures, tight turn radii, non-standard approaches, and limited shoulders), a narrow right of way, and few opportunities for construction of bypass/detour zones or routes.

Given the project location and constraints, the estimated cost of the listed improvement costs can be expected to be 50 - 75 percent higher than unit costs. This adjustment factor has been included in the presented costs found within the report. The individual unit costs found within the Milepost Quantity Spreadsheets (located in the appendices) do not include this adjustment factor. The Project Cost Summary Sheet (found in the appendices) provides a line item adjustment for this factor within the Total Project Construction Cost Estimate with right of way and plans, specifications, and estimates.

Costs provided in the following text have been rounded to the nearest $500 for planning level purposes.

ALTERNATE ROUTE IMPROVEMENTS

Burma Road

Burma Road is a hybrid in that it has varying levels of improvements over its approximately 5.1 miles length. Currently, ESHD is developing an improvement project for Burma Road to be constructed when funding has been 100 percent secured. The improvement project includes most of the items planned in Segments 3, 4, and 5 listed below. The final construction plans, schedule for completion, and final estimated costs to complete the project were not available at the time of this report.

The Burma Road recommended improvements (Figure 10) are broken down into five segments:

1. The northern portion from the intersection with SH 97 to the intersection with Gozzer Road is approximately 8,050 feet in length and is typically an asphalt surface road with limited improved shoulders and drainage. It was noted, that some portions of this segment do not meet AHD standards. The intersection of Burma Road and SH 97 is covered in the SH 97 Improvement discussion chapter and has an estimated cost of $208,000. Other improvements for this segment are estimated at $432,000.
2. The second leg of the Burma Road Alternate Route is the Gozzer Road to Gotham Bay Road segment; this approximately 4,400 feet long segment has an asphalt surface with limited shoulder and roadside ditches. This segment includes both the Gozzer Road and Gotham Bay Road intersections with an estimated cost to improve of $50,500 each. These intersections require upgrades for realignment, sight distance, approach widths, and grades to meet AHD standards. Estimated cost for improvements along this segment is $484,500 not including the intersections noted above.
3. The third segment is the “S” curves segment and is estimated at approximately 2,830 feet in length. This is a gravel segment of varying widths from the intersection of Gotham Bay Road to the base of the steep grades (approximately 800 feet north of East Emerald Drive). The segment is characterized as having tight horizontal curves with steep grades, narrow width, substandard drainage, probable creek crossings, substantial embankments, and cut and fill slope quantities. Significant right of way acquisition is anticipated along the required realignment with some noted geotechnical requirements based on reported unsuitable fills and undesirable soil types. The estimated cost for improvements along this segment is $869,000
4. The fourth segment is approximately 4,850 feet in length and continues from the base of the “S” curves to the intersection with South Carlin Bay Road. This segment is somewhat constrained within the upper Turner Creek drainage. The intersection of South Carlin Bay Road with Burma Road is at a crossing with Turner Creek. The intersection requires moderate improvements to meet the AHD standards. The estimated cost for roadway improvements is $545,500 and the intersection with South Carlin Bay Road improvement cost is estimated at $50,500.
5. The final segment is from the South Carlin Bay Road intersection to the SH 97 intersection along Turner Creek. Steep cut and fill slopes along with a narrow improved roadway section and numerous private approaches and utilities typify this segment. Turner Creek is noted as being in close proximity for approximately 40 percent of this

State Highway 97 Corridor Study
Alternate Routes - Burma Road Potential Improvements

SUGGESTED IMPROVEMENTS COST ESTIMATE
THIS ROUTE $3,358,000
**These costs do not include Right-of-Way Acquisition, Preliminary Engineering and Plans, Construction Engineering and Surveying, Contingencies, Environmental Permitting, Private Property Impacts, or Utility Relocates, add 50% to cover these costs.

MP 0.0
IMPROVEMENT DESCRIPTION
- Burma Road Intersection Improvement

LIST OF IMPROVEMENTS
4 - Excavation
5 - Rock Excavation
9 - Road Widening 6-8 Feet
11 - Road Construction 28 Feet
15 - Right Turn Lane
16 - Left Turn Lane
30 - Signage
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
43 - Traffic Control
45 - Lighting
46 - Luminares/Mast Assembly
47 - Pole-Mount
48 - Electric Meter Drop
49 - Transformer
50 - UG Wiring/Conduit
51 - OH Wiring
56 - Pedestrian Under Crossing
61 - Right of Way Trades

ESTIMATED COST
$225,000

MP 0.0 - 1.3
IMPROVEMENT DESCRIPTION
- Road Widening With Partial Guardrail

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
8 - Slope Stabilization
10 - Revegetation
11 - Road Construction 28 Feet
17 - Driveway Approach Improvement
19 - Embankment
28 - Guard Rail Type B
30 - Signage
32 - Utility Relocates
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
67 - Environmental

ESTIMATED COST
$751,500

MP 1.3
IMPROVEMENT DESCRIPTION
- Intersection, Burma / Carlin Bay Road

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
19 - Embankment
28 - Guard Rail Type B
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
43 - Traffic Control
52 - Striping

ESTIMATED COST
$50,500

MP 1.3 - 2.7
IMPROVEMENT DESCRIPTION
- Roadway Widening
- Straightening
- Grade Reduction
- Guardrail

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
7 - Rock Removal
8 - Slope Stabilization
10 - Revegetation
11 - Road Construction 28 Feet
17 - Driveway Approach Improvement
19 - Embankment
28 - Guard Rail Type B
30 - Signage
32 - Utility Relocates
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
44 - Traffic Bypass
52 - Striping
61 - Right of Way Trades
67 - Environmental Mitigation

ESTIMATED COST
$545,500

MP 2.3 - 2.7 & 2.25 - 2.7
IMPROVEMENT DESCRIPTION
- Straighten S-Curves
- Address Grade Issues
- Major Earthwork / Drainage / Slope Consideration

LIST OF IMPROVEMENTS
–

ESTIMATED COST
$869,000

MP 2.7 - 3.5
IMPROVEMENT DESCRIPTION
- Gozzer Road To Gotham Bay Road
- Roadway Reconstruction

LIST OF IMPROVEMENTS
22 - Base TCCA
27 - Pavement 4 Inches
39 - Roadside Drainage Ditch

ESTIMATED COST
$484,500

MP 3.5 - 5.1
IMPROVEMENT DESCRIPTION
- Resurface

LIST OF IMPROVEMENTS
27 - Pavement 2 Inches New
39 - Roadside Drainage Ditch

ESTIMATED COST
$300,000

MP 5.1 / 90.3
IMPROVEMENT DESCRIPTION
- Burma / SH 97 Intersection Improvement

LIST OF IMPROVEMENTS
14 - Road Intersection Approaches
15 - Right Turn Lane
16 - Left Turn Lane (Increase Storage)
30 - Signage
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS

ESTIMATED COST
$132,000

Gotham Bay
Gotham Bay Road
SH 97
Gozzer Road
Burma Road
Carlin Bay Road
Turner Bay

Figure 10

Kootenai MPO

N

SH 97
Asbury Road
Burma Road
Carlin Bay Road
Gotham Bay Road
Gozzer Road
Thompson Lake Road

0 800' 1600'
GRAPHIC SCALE

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segment length. The intersection of Burma Road with SH 97 at MP 82.3 is described in the SH 97 Improvements chapter. The intersection is recommended for right and left turn lanes and realignment improvements. The estimated cost for the Burma Road improvements for this segment is $751,500 with the intersection improvements estimated at an additional $225,000.

The total cost estimate for the Burma Road improvements not including the intersection work is $3,358,000. The SH 97 intersections with Burma Road improvements are estimated at $208,500 for the north end at MP 90.36 and $225,000 for the south end at MP 82.3.

Gozzer Road

Gozzer Road was improved in part by the Gozzer Ranch Planned Unit Development. Some intersection improvements at SH 97 and asphalt paving, with a 24 feet wide roadway section for approximately 7,400 feet was installed from SH 97 toward the east, then a narrow section was improved through the "S" curves segment and the upper portion above the "S" curves improved to a point immediately before the intersection of Burma Road. Additional improvements at SH 97 are recommended along with completing the "S" curves roadway improvements from the east property line of Gozzer Ranch to the intersection of Burma Road to full 28 feet width. The intersection of Gozzer Road and Burma Road is also noted for improvements (see also Burma Road Alternate Route discussion).

The following Gozzer Road specific improvements (Figure 11) are recommended:

1. Intersection of Gozzer Road and Burma Road, minor improvements to address sight distance with brushing and clearing, approach grades, approach widths, and alignment. The intersection improvements cost is estimated at $50,500.
2. Gozzer Road from the Burma Road intersection to the "S" curves, this 2,200 lineal feet segment should be built to the 28 feet AHD standard. The estimated cost for this improvement is $82,500.
3. Gozzer Road through the "S" curves to the Gozzer Ranch eastern "guardhouse" is recommended to be constructed to the standard 28 feet width. Of the 2,160 lineal feet of the roadway, approximately 910 feet of the segment is characterized as a steep, narrow, and tight mountainous curve segment. Issues regarding inadequate right of way and rock excavation have hampered construction of this segment in the past. The estimated cost for this improvement is $416,500.
4. The lower (or western portion) Gozzer Road is within the Gozzer Ranch PUD and improvements recommendations have not been included in this study. Several comments were received regarding the lower Gozzer Ranch Guardhouse, located between the eastbound and westbound lanes in a center median of Gozzer Road approximately 300 feet east of the SH 97 and Gozzer Road intersection. These comments noted the lack of control, appropriateness of the guardhouse on a public road, and safety issues with a "guardhouse" on a public road as traffic stops and starts were not predictable for the general public.

State Highway 97 Corridor Study
Alternate Routes - Gozzer Road Potential Improvements

SUGGESTED IMPROVEMENTS COST ESTIMATE
THIS ROUTE $549,000
**These costs do not include Right-of-Way Acquisition, Preliminary Engineering and Plans, Construction Engineering and Surveying, Contingencies, Environmental Permitting, Private Property Impacts, or Utility Relocates, add 50% to cover these costs.

MP 0.0 - 0.5±
IMPROVEMENT DESCRIPTION
- Roadway Reconstruct to ESHD Standard East Gozzer Gate to Top of Grade

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
8 - Slope Stabilization
10 - Revegetation
11 - Road Construction 28 Feet
19 - Embankment
28 - Guard Rail Type B
30 - Signage
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
61 - Right of Way Trades

ESTIMATED COST
$416,500

MP 0.5 - 0.7
IMPROVEMENT DESCRIPTION
- Resurface

LIST OF IMPROVEMENTS
27 - Pavement 2 Inches Overlay
39 - Roadside Drainage Ditch

ESTIMATED COST
$82,500

MP 0.7
IMPROVEMENT DESCRIPTION
- Intersection Gozzer / Burma Road

LIST OF IMPROVEMENTS
1 - Brushing
4 - Excavation
16 - Left Turn Lane (Increase Storage)
28 - Guard Rail Type B
33 - Culvert Extension, 24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control

ESTIMATED COST
$50,500

Gotham Bay
Turner Bay
SH 97
Gotham Bay Road
Gozzer Road
Burma Road
Carlin Bay Road
Thompson Lake Road
Asbury Road

Figure 11

Kootenai MPO

DYK Twin Lakes & Associates, Inc.

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0 800' 1600'
GRAPHIC SCALE

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5. The intersection of Gozzer Road and SH 97 is recommended for additional improvements including added southbound left turn lane storage, roadway widening with guardrail, a longer northbound right turn deceleration lane, additional illumination, and signage. The estimated cost for these improvements is $257,500.

The total estimated cost for Gozzer Road improvements is $549,000, not including the Gozzer Road at SH 97 (MP 86.66) intersection improvement estimated at $257,500.

Gotham Bay Road

Gotham Bay Road is presently a dirt and gravel road with minimal drainage improvement structures. The roadway is very narrow with several 90 degree curves and steep grades. The right of way appears to be mostly prescriptive. The intersection of Gotham Bay Road and SH 97 at MP 84.76 was perceived as being the most dangerous intersection by the public; this was not supported by accident data. It was also noted as one of the intersections that is most in need of improvement along the SH 97 Corridor. The intersection of Gotham Bay Road and Burma Road needs standardization in approach grades, widths, roadway surfacing, sight distances, and drainage controls.

A new residential development, Gotham Bay Estates located toward the lower (western) portion of Gotham Bay Road, has included as a Condition of Approval that the developer improve some portions of Gotham Bay Road. These improvements are reported to include drainage, subgrade, ballast, and base sections with asphalt paving for approximately one half mile of Gotham Bay Road and the intersections of the new development's residential streets with Gotham Bay Road.

Below the Gotham Bay Estates project, Gotham Bay Road enters the Gotham Creek drainage. Within this section, the road is located in close proximity to Gotham Creek and is cut into the steep, heavily forested hillsides. Environmental concerns and apparently limited right of way create additional obstacles to improving this segment.

Gotham Bay Road has been broken into several segments; these are presented below with a description of the recommended improvements (Figure 12) including a discussion on the estimated costs.

1. The intersection of Gotham Bay Road and Burma Road requires a standard minor intersection improvement project. Based in part on the new construction of Gotham Bay Road, the estimated cost for this intersection work is $50,500.
2. The upper portion of Gotham Bay Road from the intersection with Burma Road to the western property line of Gotham Bay Estates is approximately 9,179 lineal feet long. The upper portion of the roadway from the eastern boundary of the development (6,450 lineal feet) requires a complete reconstruction and is analogous to constructing a new road. Consideration for matching the existing residential approaches, addressing private property issues, and incorporating existing drainage patterns into the new roadway alignment needs to be included in the design details. A 28 feet wide standard road section is proposed. The estimated cost for this segment is $713,500. A western portion of this roadway segment estimated to be 2,729 feet within the Gotham Bay Estates development was supposed to be constructed by the developer of the project as a

State Highway 97 Corridor Study
Alternate Routes - Gotham Bay Road
Potential Improvements

SUGGESTED IMPROVEMENTS COST ESTIMATE
THIS ROUTE $2,068,000
**These costs do not include Right-of-Way Acquisition, Preliminary Engineering and Plans, Construction Engineering and Surveying, Contingencies, Environmental Permitting, Private Property Impacts, or Utility Relocates, add 50% to cover these costs.

MP 0.0
IMPROVEMENT DESCRIPTION
- Intersection Improvement

LIST OF IMPROVEMENTS
2 - Clearing
4 - Excavation
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
11 - Road Construction 28 Feet
15 - Right Turn Lane
16 - Left Turn Lane
46 - Luminares/Mast Assembly

ESTIMATED COST
$252,000

MP 0.0 - 0.5
IMPROVEMENT DESCRIPTION
- Upgrade Road to Min 24 Feet Width

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
7 - Rock Removal
8 - Slope Stabilization
11 - Road Construction 24 Feet
19 - Embankment
28 - Guard Rail Type B
30 - Signage
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
43 - Traffic Control
63 - Retaining Walls > 5-Feet
67 - Environmental

ESTIMATED COST
$701,000

MP 0.0 - 0.5
IMPROVEMENT DESCRIPTION
- Minor Roadway Improvements

LIST OF IMPROVEMENTS
20 - Subgrade
39 - Roadside Drainage Ditch

ESTIMATED COST
$50,000

MP 0.5 - 2.3
IMPROVEMENT DESCRIPTION
- Reconstruct 1.8-2.0 Miles of Narrow Non-Standard Road to 28 Feet ESHD Standard. Proposed Work Bonded for 2008.

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
7 - Rock Removal
8 - Slope Stabilization
11 - Road Construction 28 Feet
19 - Embankment
23 - Geotex Fabric
24 - GeoTex Grid
30 - Signage
32 - Utility Relocates
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
44 - Traffic Bypass
61 - Right of Way Trades

ESTIMATED COST
$1,015,000

MP 2.3
IMPROVEMENT DESCRIPTION
- Gotham Bay / Burma / Coeur d'Alene Mt Road Intersection Improvements

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
23 - Geotex Fabric
24 - GeoTex Grid
30 - Signage
32 - Utility Relocates
34 - Culverts New, 18-24 Inches
61 - Right of Way Trades

ESTIMATED COST
$50,500

Gotham Bay
SH 97
Gotham Bay Road
Gozzer Road
Burma Road
Coeur d'Alene Mt Road
Carlin Bay Road
Turner Bay

Figure 12

Kootenai MPO

Welch-Comer & Associates, Inc.

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0 800' 1600'
GRAPHIC SCALE

- SH 97
- Asbury Road
- Burma Road
- Carlin Bay Road
- Gotham Bay Road
- Gozzer Road
- Thompson Lake Road

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Condition of Approval. Project improvement work for this segment was initiated in the spring of 2008, but has not been completed. This western segment is relatively steep, has several springs and seeps, several minor intersections with residential streets, and is generally north facing. The estimated cost to provide a standard 28 feet wide AHD roadway section through this lower segment is $301,500. Total estimated cost for the segment is $1,015,000.

3. The lower portion of Gotham Bay Road includes an intersection improvement, several creek crossings and/or major realignment work, substantial excavation and embankment work, considerable drainage structure installation, private property issues, and environmental permitting. It is very probable that extensive use of geotechnical materials and retaining walls will be required. The estimated cost to improve this 2,400 feet segment is $751,000.
4. The intersection of Gotham Bay Road and SH 97 at MP 84.75 requires substantial rock excavation to install right and left turn lanes on SH 97, to realign the intersection, and provide for adequate sight distance. The existing intersection has very minimal sight distance and traffic turning onto SH 97 is at serious risk of causing an accident with SH 97 traffic because of the 'blind" nature of the turning movement. A pedestrian crossing is recommended immediately to the northeast of the intersection. The project's proximity to Lake Coeur d'Alene and Gotham Creek may incur significant additional environmental costs. The estimated cost for the intersection work is $252,000.

The total estimated cost for the approximately 11,600 lineal feet of Gotham Bay Road improvements, not including intersection projects is $1,766,000. The intersection improvements at Gotham Bay Road and Burma Road estimated at $50,500 each and the intersection improvements at Gotham Bay Road and SH 97 estimated at $252,000. Total estimated cost for improvements on Gotham Bay Road is $2,068,000.

Carlin Bay Road

South Carlin Bay Road is approximately four miles in length from the intersection with Burma Road on the north to the intersection with SH 97 to the southwest. The road is predominantly gravel surfaced with shoulders. There is a steep, tight, narrow section referred to as the "S" curves, located where the road descends from the bench overlooking Lake Coeur d'Alene down to SH 97 and the lake shoreline. This roadway section is located approximately 2,000 feet north and 1,500 feet southwest of the intersection of East Badger Road and South Carlin Bay Road. To the south of the "S" curves segment extending approximately 1,700 lineal feet is a typical gravel surfaced roadway. The final approximately 2,000 lineal feet of roadway extending to the intersection with SH 97 has been improved with a gravel surface.

Presently, there are a significant number of new residential lots and several new developments along South Carlin Bay Road and it appears that numerous additional developments are in the planning stages for areas served by intersecting roads.

Specific improvement recommendations (Figure 13) and associated estimated costs are presented below:

State Highway 97 Corridor Study
Alternate Routes - Carlin Bay Road
Potential Improvements

SUGGESTED IMPROVEMENTS COST ESTIMATE
THIS ROUTE $3,601,500
**These costs do not include Right-of-Way Acquisition, Preliminary Engineering and Plans, Construction Engineering and Surveying, Contingencies, Environmental Permitting, Private Property Impacts, or Utility Relocates, add 50% to cover these costs.

Turner Bay
Burma Road
Carlin Bay Road
Carlin Bay Road
South Parker Road
Gand Bay
Carlin Bay Road
Carlin Bay
SH 97

MP 1.5
IMPROVEMENT DESCRIPTION
- Intersection Improvement South Parker Road

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
30 - Signage
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
61 - Right of Way Trades

ESTIMATED COST
$50,500

MP 0.0 - 1.5
IMPROVEMENT DESCRIPTION
- Reconstruction to 28 Feet Road ESHD

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
11 - Road Construction 28 Feet
28 - Guard Rail Type B
30 - Signage
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
61 - Right of Way Trades

ESTIMATED COST
$1,118,000

MP 2.0
IMPROVEMENT DESCRIPTION
- Intersection Improvement Ridgewater Road

LIST OF IMPROVEMENTS
14 - Road Intersection Approach

ESTIMATED COST
$50,500

MP 1.5 - 2.4
IMPROVEMENT DESCRIPTION
- Reconstruct Roadway

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
11 - Road Construction 28 Feet
17 - Driveway Approach Improvement
30 - Signage
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
61 - Right of Way Trades

ESTIMATED COST
$631,500

MP 3.1 - 3.7
IMPROVEMENT DESCRIPTION
- Road Reconstruction

LIST OF IMPROVEMENTS
11 - Road Construction 28 Feet
28 - Guard Rail Type B
34 - Culverts New, 18-24 Inches
40 - SWPPP
43 - Traffic Control
52 - Striping

ESTIMATED COST
$413,500

MP 2.4 - 3.1
IMPROVEMENT DESCRIPTION
- Curve Realignment

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
8 - Slope Stabilization
10 - Revegetation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
17 - Driveway Approach Improvement
19 - Embankment
28 - Guard Rail Type B
30 - Signage
32 - Utility Relocates
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch

ESTIMATED COST
$1,112,000

MP 3.7 / 79.4
IMPROVEMENT DESCRIPTION
- Intersection Improvement

LIST OF IMPROVEMENTS
11 - Road Construction 28 Feet
14 - Road Intersection Approach
45 - Lighting
46 - Luminares/Mast Assembly
47 - Pole/Mount
48 - Electric Meter Drop
49 - Transformer
50 - UG Wiring/Conduit
51 - OH Wiring
53 - Pedestrian Crossing

ESTIMATED COST
$225,000

Figure 13

Kootenai MPO

DY Daum-Dwyer & Associates, Inc.

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0 800' 1600'
GRAPHIC SCALE

- SH 97
- Asbury Road
- Burma Road
- Carlin Bay Road
- Gotham Bay Road
- Gozzer Road
- Thompson Lake Road

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1. Intersection of South Carlin Bay Road and Burma Road has been recommended for a minor intersection improvement. This work includes realignment, sight distance improvement, culvert extensions/replacement as necessary, approach improvements for grades, and surfacing. This work could be done in conjunction with the Burma Road improvements and is estimated at $50,500.
2. The next 1.5 miles segment is from the intersection with Burma Road to the intersection with South Parker Road and has estimated improvements of $1,118,000. There are three sub-segments of the roadway including:
    a. Segment portion starts at the intersection of Burma Road to the "switchback" at the existing gravel pit. This is approximately 3,250 lineal feet. The roadway should be brought up to AHD standard width of 28 feet with gravel shoulders and standard radius curves. The estimated cost for this sub-segment is $358,500.
    b. The next sub-segment recommended improvement is to realign and reconstruct the "switchback curve" segment to AHD standards of approximately 1,200 lineal feet in length with an estimated cost of $365,000.
    c. The final sub-segment proceeding south from the realigned "switchback" segment, a distance of approximately 3,600 lineal feet to the intersection of South Parker Road improvements includes installation of a standard AHD 28 feet wide roadway section. The estimated cost for this sub-segment is $394,500.
3. The intersection of South Carlin Bay Road and South Parker Road needs to be improved to provide a standard angle of intersection, with flattened approach grades, and improved sight distances. The estimated cost for this intersection improvement is $50,500.
4. The next segment is from South Parker Road to the beginning of the "S" curves. This segment is approximately 5,600 feet in length and includes minor intersection improvements for the North Ridgeview Drive and South Carlin Bay Road intersection. A standard 28 feet wide AHD roadway section is recommended. Estimated costs including minor intersection improvements is $631,500.
5. The "S" curves improvements include realignment, widening, standard radius curves and grades, drainage upgrades, signage, and associated intersection approach improvements. This is approximately 3,650 lineal feet of improvements, which may require additional right of way acquisition or trades and includes a minor realignment for the East Badger Road intersection with South Carlin Bay Road. The estimated cost for the recommended improvements for this section is $1,112,000.
6. The lower portion of South Carlin Bay Road to the intersection with SH 97 is approximately 3,750 lineal feet of roadway. This segment includes an upgraded portion (approximately 2,000 lineal feet) of improved gravel surface along with 1,750 lineal feet section of standard gravel improvement. A standard 28 feet wide asphalt AHD roadway section is recommended. The very western most portion of South Carlin Bay Road, immediately east of the intersection with SH 97 will require extensive realignment to provide a standard intersection with SH 97. The actual intersection work is included in the SH 97 Improvement Recommendations, but is provided again in Point 7 below. The

estimated cost for the recommended improvements for this segment, not including the intersection with SH 97 is $413,500.

7. The recommended improvements for the intersection of South Carlin Bay Road and SH 97 includes right and left turn lanes, realignment of South Carlin Bay Road to form a standard angle of intersection, widening, regrading to provide a standard approach grade, brushing, excavation to provide the appropriate stopping sight distances, signage, drainage control improvements, and a pedestrian crossing. The estimated cost for the improvements is $225,000.

The total estimated cost for the roadway improvement for the South Carlin Bay alternate route including the intersection work at each end is $3,651,500.

South Asbury Road / East Thompson Lake Road

The South Asbury Road/East Thompson Lake Road Alternate Route couples South Asbury Road with the lower (western) portion of East Thompson Lake Road to form an approximately 6.6 miles alternate to approximately 8.6 miles of travel along SH 97. This route reduces the total travel distance by approximately two miles. This alternate route does include a significant grade and would have an assumed overall design speed of between 30 - 40 miles per hour. The grade rises to cross the drainage divide between Carlin Creek and Thompson Lake drainage basin and ascends/descends approximately 600 vertical feet. The alternate route has several significant design challenges including the South Asbury Road "S" curves on the Thompson Lake side of the grade and the narrow, rocky, lakeshore portion of East Thompson Lake Road, where the existing road is located between substantial basalt outcroppings, wetlands, and the north shoreline of Thompson Lake.

Field reviews and agency interviews indicated that while the undeveloped portions along this alternate route could host potential new residential developments, no significant developments have been proposed at this time.

This alternate route is located along unnamed stream courses and is adjacent to apparent wetland areas, which may require environmental permitting. These issues should be addressed early in the preliminary design of this alternate route.

The recommended improvements for the South Asbury Road/East Thompson Lake Road alternate route (Figures 14 and 15) and the estimated costs on a segment basis are provided below:

1. The intersection of South Asbury Road with SH 97 has been identified for right and left turn lanes, widening, realignment work, regrading, a pedestrian crossing, and drainage improvements. This improvement is identified in the SH 97 Recommended Improvement chapter at MP 78.64. The estimated cost for this improvement is $225,000.
2. The roadway section from the intersection of South Asbury Road with SH 97 to the "S" curves at the top of the South Asbury Road grade, near the intersection with United States Forest Service Road Number 808 is approximately 14,460 lineal feet in length. A standard 28 feet wide AHD roadway section is recommended. This segment has some

significant excavation and embankment components. The estimated cost for this improvement is $1,599,500.

3. The next improvement recommendation is the intersection of Half Round Bay Road with South Asbury Road. This intersection improvement includes realignment, a right turn lane off South Asbury Road onto Half Round Bay Road, regrading the approach, drainage improvements, and signage. The estimated cost for this improvement is $150,000.
4. The South Asbury Road "S" curves are the next recommended improvement along this alternate route. This includes substantial realignment, regrading, excavation, embankment work, culvert replacement, drainage control, subgrade, ballast, and base work. This segment is approximately 2,960 lineal feet in length, from the top of the South Asbury Road grade to the base of the grade, and has an estimated cost for improvements of $909,000.
5. South of the "S" curves is a segment of South Asbury Road that is presently located along an unnamed tributary creek discharging into Thompson Lake. This segment extends from the base of the "S" curves grade to the intersection with East Thompson Lake Road and is approximately 5,700 lineal feet in length. It is proposed to be constructed to a standard 28 feet wide AHD roadway section. The estimated cost for this improvement is $626,500.
6. The intersection of South Asbury Road with East Thompson Lake Road is recommended for a minor intersection improvement. The estimated cost for this improvement is $60,500.
7. The alternate route now follows the alignment of the East Thompson Lake Road from the intersection with South Asbury Road to the intersection with SH 97 at MP 70.05. This alignment is located between Thompson Lake and the discontinuous vertical basalt cliff outcropping directly to the west. This location requires substantial rock excavation, and special considerations for sensitive lakeshore environments along a majority of the alignment. This segment is approximately 11,550 lineal feet in length, has several commercial approaches, and one recreational site to be included in the improvement plans. The estimated cost of improvement to construct a standard 28 feet wide AHD roadway section for this segment is $1,855,000.
8. The South Asbury Road/East Thompson Lake Road alternate route includes a major intersection improvement project at SH 97. In addition, this intersection improvement is recommended to coordinate the intersection of East Harlow Point Road located directly across (to the west) of SH 97 with the East Thompson Lake Road intersection improvement plans. This intersection improvement is included with the SH 97 Improvement chapter at MP 70.05. The estimated cost of the intersection improvement is $225,000.

The total South Asbury Road/East Thompson Lake Road alternate route improvement cost including the intersection work at two locations on SH 97 is $5,650,000.

State Highway 97 Corridor Study
Alternate Routes - Asbury Road to Bottom of S Curves
Potential Improvements

SUGGESTED IMPROVEMENTS COST ESTIMATE
THIS SHEET $2,883,500
**These costs do not include Right-of-Way Acquisition, Preliminary Engineering and Plans, Construction Engineering and Surveying, Contingencies, Environmental Permitting, Private Property Impacts, or Utility Relocates, add 50% to cover these costs.

MP 0.0
IMPROVEMENT DESCRIPTION
- Intersection Improvement
- Asbury Road / Highway 97

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
8 - Slope Stabilization
11 - Road Construction 28 Feet
15 - Right Turn Lane
16 - Left Turn Lane
34 - Culverts New, 18-24 Inches
45 - Lighting
61 - Right of Way Trades

ESTIMATED COST
$225,000

MP 0.0 - 3.0
IMPROVEMENT DESCRIPTION
- Reconstruct Roadway

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
8 - Slope Stabilization
10 - Revegetation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
17 - Driveway Approach Improvement
19 - Embankment
30 - Signage
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
61 - Right of Way Trades

ESTIMATED COST
$1,599,500

MP 3.0 - 3.6
IMPROVEMENT DESCRIPTION
- Sharp/Steep Curves
- Roadway Realignment

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
8 - Slope Stabilization
11 - Road Construction 28 Feet
28 - Guard Rail Type B
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control

ESTIMATED COST
$909,000

MP 0.8
IMPROVEMENT DESCRIPTION
- Intersection Realignment
  Half Round Bay Road and Asbury Road

LIST OF IMPROVEMENTS
–

ESTIMATED COST
$150,000

Half Round Bay Road
Asbury Road
SH 97
Carlin Bay Road
Asbury Road
Thompson Lake Road
Asbury Road
Thompson Lake Road
1
2
3
4
5

Figure 14

Kootenai MPO

RV Ruen-Yeager & Associates, Inc.

SH 97
Asbury Road
Burma Road
Carlin Bay Road
Gotham Bay Road
Gozzer Road
Thompson Lake Road

0 800' 1600'
GRAPHIC SCALE

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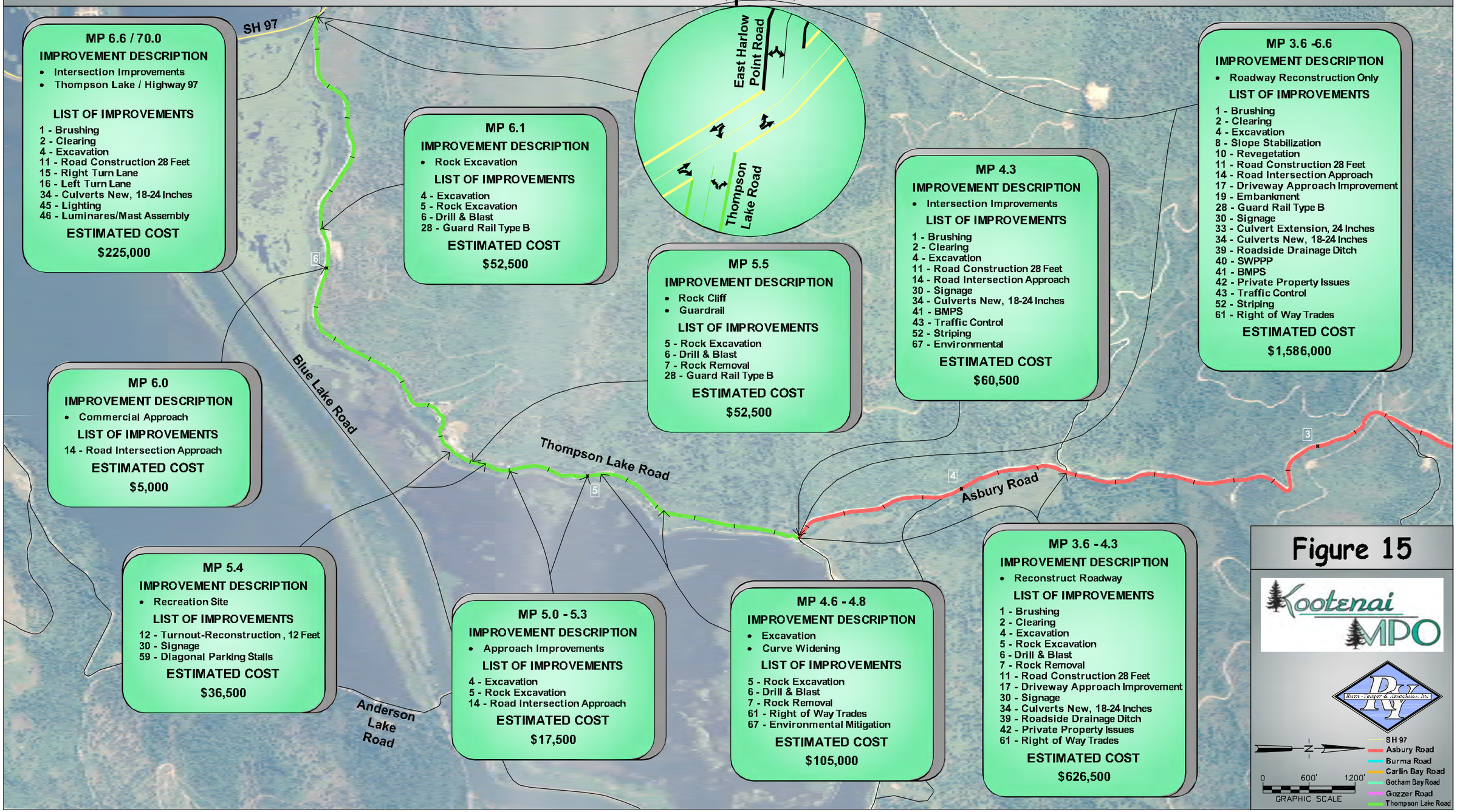
State Highway 97 Corridor Study

Alternate Routes - East Thompson Lake Road to Bottom of S Curves

Potential Improvements

SUGGESTED IMPROVEMENTS COST ESTIMATE
THIS SHEET $2,767,000
**These costs do not include Right-of-Way Acquisition, Preliminary Engineering and Plans, Construction Engineering and Surveying, Contingencies, Environmental Permitting, Private Property Impacts, or Utility Relocates, add 50% to cover these costs.



MP 6.6 / 70.0
IMPROVEMENT DESCRIPTION
- Intersection Improvements
- Thompson Lake / Highway 97

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
11 - Road Construction 28 Feet
15 - Right Turn Lane
16 - Left Turn Lane
34 - Culverts New, 18-24 Inches
45 - Lighting
46 - Luminares/Mast Assembly

ESTIMATED COST
$225,000

MP 6.1
IMPROVEMENT DESCRIPTION
- Rock Excavation

LIST OF IMPROVEMENTS
4 - Excavation
5 - Rock Excavation
6 - Drill & Blast
28 - Guard Rail Type B

ESTIMATED COST
$52,500

MP 5.5
IMPROVEMENT DESCRIPTION
- Rock Cliff
- Guardrail

LIST OF IMPROVEMENTS
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
28 - Guard Rail Type B

ESTIMATED COST
$52,500

MP 4.3
IMPROVEMENT DESCRIPTION
- Intersection Improvements

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
30 - Signage
34 - Culverts New, 18-24 Inches
41 - BMPS
43 - Traffic Control
52 - Striping
67 - Environmental

ESTIMATED COST
$60,500

MP 3.6 -6.6
IMPROVEMENT DESCRIPTION
- Roadway Reconstruction Only

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
8 - Slope Stabilization
10 - Revegetation
11 - Road Construction 28 Feet
14 - Road Intersection Approach
17 - Driveway Approach Improvement
19 - Embankment
28 - Guard Rail Type B
30 - Signage
33 - Culvert Extension, 24 Inches
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
40 - SWPPP
41 - BMPS
42 - Private Property Issues
43 - Traffic Control
52 - Striping
61 - Right of Way Trades

ESTIMATED COST
$1,586,000

MP 6.0
IMPROVEMENT DESCRIPTION
- Commercial Approach

LIST OF IMPROVEMENTS
14 - Road Intersection Approach

ESTIMATED COST
$5,000

MP 5.4
IMPROVEMENT DESCRIPTION
- Recreation Site

LIST OF IMPROVEMENTS
12 - Turnout-Reconstruction , 12 Feet
30 - Signage
59 - Diagonal Parking Stalls

ESTIMATED COST
$36,500

MP 5.0 - 5.3
IMPROVEMENT DESCRIPTION
- Approach Improvements

LIST OF IMPROVEMENTS
4 - Excavation
5 - Rock Excavation
14 - Road Intersection Approach

ESTIMATED COST
$17,500

MP 4.6 - 4.8
IMPROVEMENT DESCRIPTION
- Excavation
- Curve Widening

LIST OF IMPROVEMENTS
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
61 - Right of Way Trades
67 - Environmental Mitigation

ESTIMATED COST
$105,000

MP 3.6 - 4.3
IMPROVEMENT DESCRIPTION
- Reconstruct Roadway

LIST OF IMPROVEMENTS
1 - Brushing
2 - Clearing
4 - Excavation
5 - Rock Excavation
6 - Drill & Blast
7 - Rock Removal
11 - Road Construction 28 Feet
17 - Driveway Approach Improvement
30 - Signage
34 - Culverts New, 18-24 Inches
39 - Roadside Drainage Ditch
42 - Private Property Issues
61 - Right of Way Trades

ESTIMATED COST
$626,500

Figure 15

Kootenai MPO

Ruen-Yeager & Associates, Inc.

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0 600' 1200'
GRAPHIC SCALE

- SH 97
- Asbury Road
- Burma Road
- Carlin Bay Road
- Gotham Bay Road
- Gozzer Road
- Thompson Lake Road

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ALTERNATE ROUTES COST SUMMARY

The review of alternate routes for State Highway 97 does not truly yield a sole route that serves as an alternate to travel on SH 97. The only true alternate route to SH 97 is State Highway 3 connecting SH 97 to Interstate 90 at the Rose Lake interchange at Interstate 90. Since SH 3 only connects to SH 97 at one southern terminus on a consistent year round basis, the alternate routes are the only viable routes for portions of trips on SH 97. Improvement of the alternate routes may prove to be a viable option under improved conditions for some users of SH 97, depending geographically where the trip begins or ends, but ultimately route decisions are based on time, driver comfort, purpose of the trip, roadway conditions, and perceived travel times.

The cost summary in Table 17 is for full improvement of the alternate routes to Associated Highway District standards and is listed in 2007 dollars. Costs do not include inflation, right of way acquisition, preliminary engineering and plans, construction engineering, construction surveying, contingencies, environmental permitting, private property impacts, and utility relocation.

Table 17. Alternate Routes Improvements Estimated Costs

Alternate Route	Estimated Costs
Burma Road	$3,358,000
Gozzer Road	$549,000
Gotham Bay Road	$2,068,000
Carlin Bay Road	$3,651,500
Asbury/Thompson Lake Road	$5,650,000
Alternate Route Total	**$15,276,500**

Source: Idaho Transportation Department - 2007 Bid Average Unit Price Report and East Side Highway District.

Individual Alternate Route maps and cost sheets are included in the appendices of this report.

IX. VEHICLE FERRY ALTERNATIVE

A vehicle ferry option has been proposed to provide both vehicle and passenger (pedestrian and bicycle) ferry service across Lake Coeur d'Alene. The ferry, as proposed would connect the town of Harrison, Idaho along SH 97 on the east side of Coeur d'Alene Lake with US 95 in the vicinity of 16:1 and Sun Up Bays, on the west side of Coeur d'Alene Lake.

Ferry terminals have been proposed in downtown Harrison and at either one of the two locations on the west side of Coeur d'Alene Lake. The west side locations include the 16:1 Bay near the end of Cave Bay Road or near the terminus of Sunup Bay Road near Sunup Bay and the public boat launch (Figure 16).

The proposed ferry could provide some relief to the additional traffic generated by new development within the SH 97 Study Corridor by providing an alternate travel route and a more direct access to Spokane via Rockford, Washington on State Routes 27 and 58 and to Coeur d'Alene via US 95 along the west side of Coeur d'Alene Lake.

Providing a ferry alternative to travel on SH 97 or SH 3 could reduce some of the overall traffic volumes on these roadways. Choosing to ride this mode of travel could be limited by cost of the ferry trip, travel time savings, geographic origin or destination, ferry headways, weather, ease of use, and hours and days of operation. Overall, some traffic could be diverted to this mode from approximately the lower third of the Study Corridor and from areas further south on SH 3 in the St. Maries vicinity. Continued development in the northern two thirds of the Corridor should have little impact on a ferry system, unless *future destination type* development occurs in the lower third of Coeur d'Alene Lake. Due to the out of direction travel and perceived travel time involved with the voyage, it would be doubtful that much of the ferry volume would be captured from the northern two thirds of the corridor. However, a reduction in vehicle trips from the southern portion of the corridor will relieve some congestion in the corridor.

Typically, alternative modes capture between one and five percent of the total trips in an area. Alternate mode capture can be higher or lower depending on the location and type of modal interface. Since this type of transportation has not been available on Coeur d'Alene Lake since the 1920s, the "revival" of service could spur other transportation users rather than just commuter users. The original steamer service was a passenger ferry that served the lake. Tourism, recreation, and trailhead access to the Trail of the Coeur d'Alenes, as well as destination resort development could be new users of the system. Again, depending on the locations of the ferry terminals, the users could be drawn to this mode for different reasons. Ferry service is more successful in terms of trip capture when available modal options are limited or geographically restricted, such as the Keller Ferry or Gifford Ferry on Lake Roosevelt. Net reduction in trips to other portions of SH 97 may appear negligible, due to the small capacity of the ferry.

Another key component of the ferry system would be to have access to public transportation on one or both trip ends. Due to the remoteness of the ferry terminals and to appeal to a broader base of users, interlining with transit service would make the mode choice more appealing in completing the trip to destinations beyond the ferry terminals.

The ferry boat, as proposed (Figure 17) could potentially carry up to 20 passenger vehicles, with provisions for pedestrian and bicycle passengers and be large enough for truck traffic (tractor trailer combinations up to approximately 50 feet in length). The proposed maximum service speed is 10 knots. The proposed ferry routes between Harrison and the two west side locations vary between 4.5 and 6.5 miles each way and would take between 25 and 35 minutes of travel in each direction.

Two ferry terminals would be required to be constructed to serve the ferry route. The ferry terminal complex improvements include:

Harrison

- Ferry terminal in the Harrison Central Business District area with access to SH 97
- Intersection and roadway improvements for West Harrison Street and the approach to terminal complex
- Parking for the ferry pedestrian/bicycle users
- Vehicle queuing lanes for ferry bound vehicles
- Exit lanes for departing ferry vehicles
- Ferry docking and mooring facilities
- Potential maintenance facility and/or terminal building

West Side of Coeur d'Alene Lake

- Ferry terminal in the 16:1 Bay or Sun Up Bay areas
- Roadway improvements for the approach road(s) to the west side terminal connecting to US 95
- Parking for the ferry pedestrian/bicycle users
- Vehicle queuing lanes for ferry bound vehicles
- Exit lanes for departing ferry vehicles
- Ferry docking and mooring facilities
- Potential maintenance facility and/or terminal building

Cost estimate for the ferry terminal roadway improvements in Harrison is $175,000 with estimated terminal and related facilities costs at $2,500,000 for each terminal. The estimated ferry cost is $6,000,000. The ferry vessel is approximately 56 feet long and can hold up to 20 passenger cars as well as pedestrians and bicyclists. Cost estimates to improve the access roadways in the 16:1 or Sun Up Bay areas are $4,845,400 or $1,708,907, respectively. Roadway improvements to provide connectivity to US 95 on the west side of Lake Coeur d'Alene would require reconstruction of up to 40,000 lineal feet of roadway depending on the location of the west side terminal.

Steamer Harrison at Harrison Dock

The easiest way to get to Harrison was by water. The Oregon Washington Railway & Navigation Company, which absorbed the Oregon Railway and Navigation Company, constructed the 600 passenger steamer Harrison to provide transportation. People traveling from the west could take a train to Amwaco and board the steamer for a six mile trip across the lake. This new route was about 25 miles shorter than the previous line that went further south through Tekoa and Plummer. In the early 1920s, passenger service stopped, but they continued to haul freight until 1932, when the line was abandoned.

The above costs do not include annual operating and maintenance expenses, which are estimated to be approximately $450,000. The ferryboat outboard profile is shown on Figure 17, on-board vehicle arrangement plan on Figure 18, and a midship cross section on Figure 19.

Operation of the ferry system could be provided through the Coeur d'Alene Tribe of Indians, as they are the operators of the public transit system in Kootenai County under Citilink or another designated operator. Potential funding of the project could be available through the Federal Transit Administration (ferry vessels, terminals, and operations and maintenance). Additional funding could be provided through the Federal Highway Administration and the Idaho Transportation Department, if the route were classified as an alternate route to State Highway 97. Additional funding through the Bureau of Indian Affairs may be available for roadway improvements on the Coeur d'Alene Indian Reservation. Another option for non-traditional funding would be to include lake history and earlier passenger ferry/freight steamer service and incorporate into the terminal locations and parking areas. This may open funding sources that could be combined with trailhead locations.

State Highway 97 Corridor Study
Potential Ferry Routes

Kootenai MPO

DJ&A

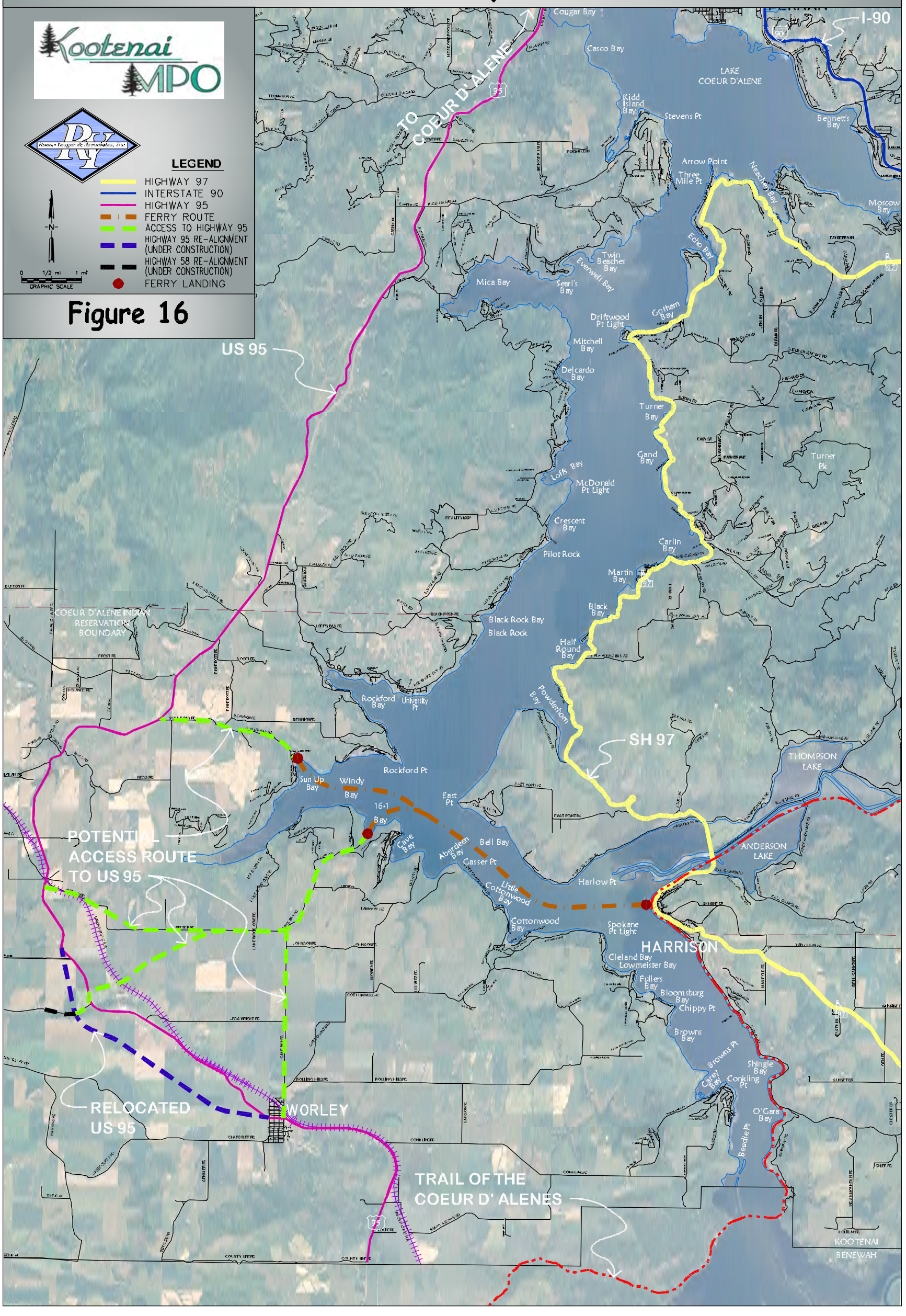
LEGEND

- HIGHWAY 97
- INTERSTATE 90
- HIGHWAY 95
- FERRY ROUTE
- ACCESS TO HIGHWAY 95
- HIGHWAY 95 RE-ALIGNMENT (UNDER CONSTRUCTION)
- HIGHWAY 58 RE-ALIGNMENT (UNDER CONSTRUCTION)
- FERRY LANDING

N

0 1/2 mi 1 mi
GRAPHIC SCALE

Figure 16



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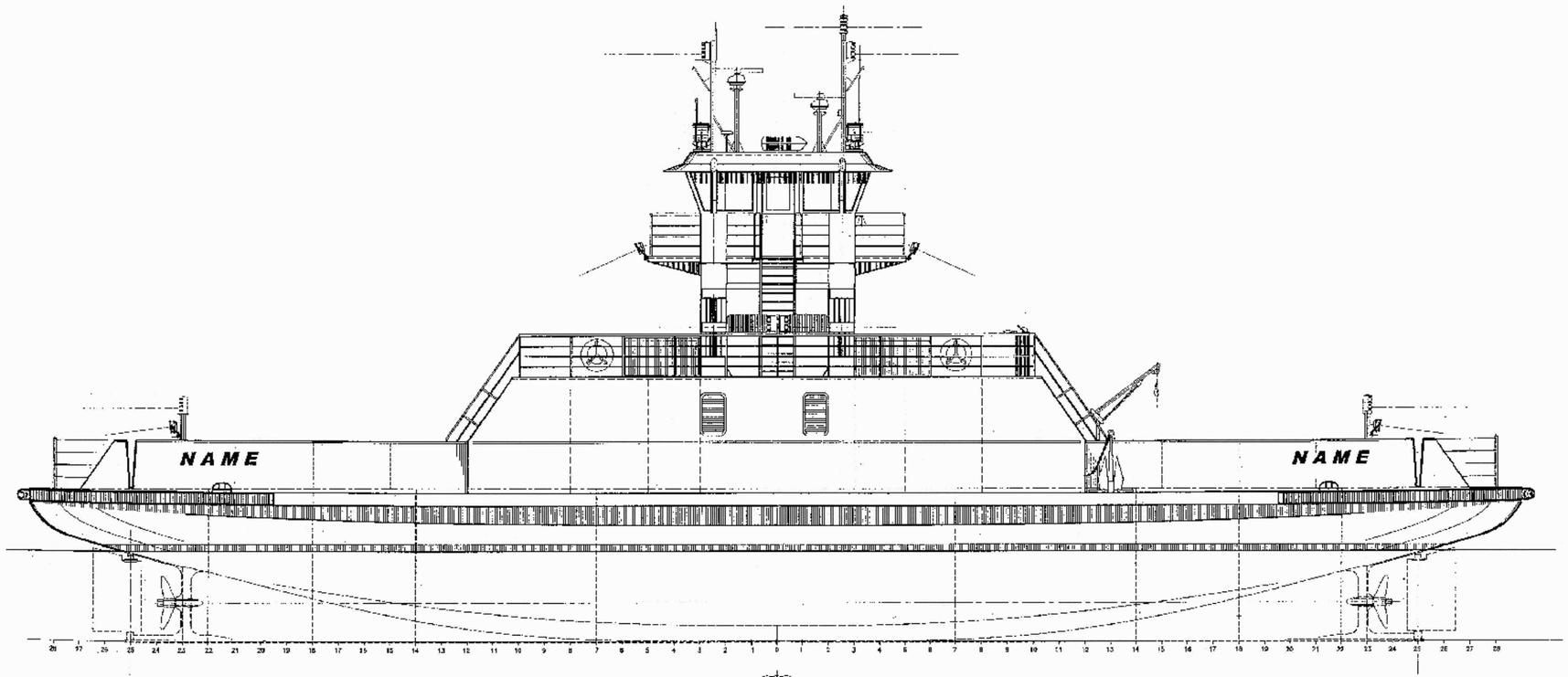
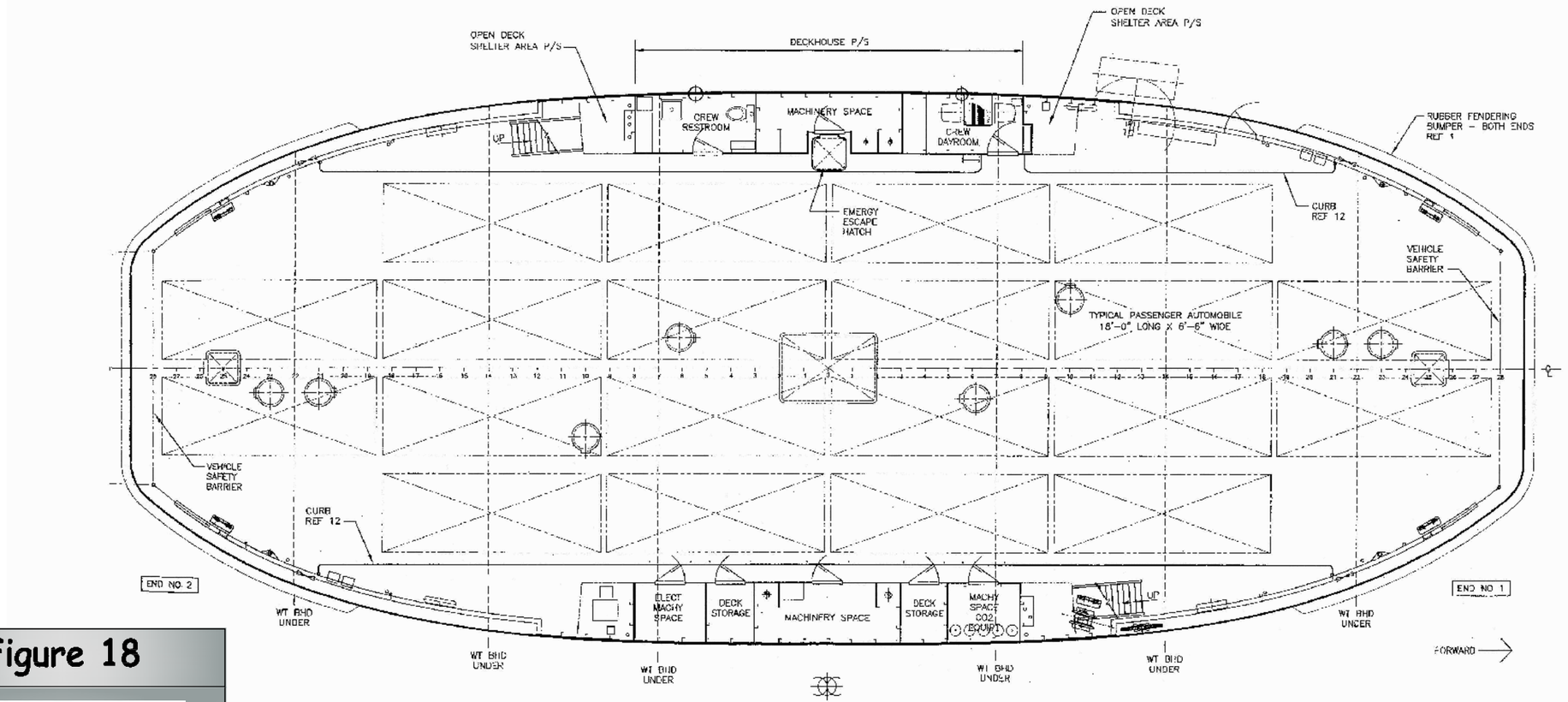
State Highway 97 Corridor Study
Ferry Plan



OUTBOARD PROFILE

Figure 17

State Highway 97 Corridor Study
Ferry Plan



VEHICLE ARRANGEMENT PLAN

Figure 18

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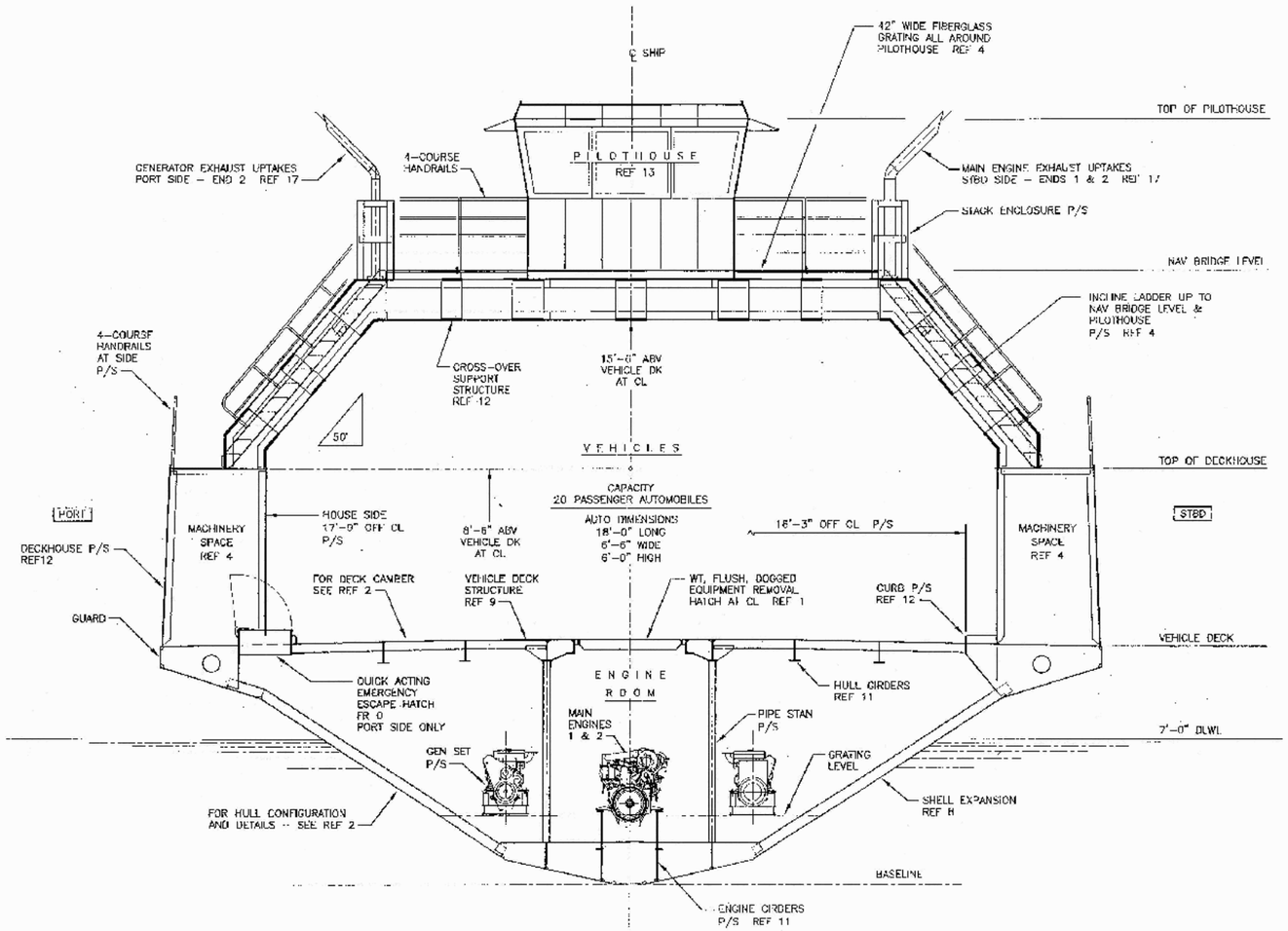
State Highway 97 Corridor Study
Ferry Plan



MIDSHIP SECTION

VIEW TAKEN AT FR 0
LOOKING FORWARD
TOWARDS END NO 1

Figure 19

Kootenai MPO

DV Davis Vessel & Associates, Inc.

X. ENVIRONMENTAL SCAN

INTRODUCTION

The purpose of the Environmental Scan is to identify the most critical environmental planning factors, including those land use, natural, and physical environmental factors that could affect the analyses and development of improvement options for the State Highway 97 (SH 97) Corridor. Human elements, such as existing and zoned land uses, major roads, and highways, in relation to the natural elements (i.e., rivers and lakes, aquifer recharge zones, etc.) have the greatest constraint on any proposed new alignments or secondary route improvements within the study area.

Existing land uses and land use regulations constrain new roadway alignments. In addition, federal, state, and local laws protect the water, air, cultural, and natural resources within the region. Those environmental laws and regulations that guide or influence land development within the SH 97 Corridor study area were followed to complete this document.

The Environmental Scan is organized into two major study elements: Human and Natural Environments. In general, the pattern of residential development within the study area over the past decade has changed dramatically in the SH 97 study area. This has resulted in increased residential density and an overall increase in total number of dwelling units, well beyond the typical projected growth rate. This pattern has resulted in elevated concerns about adequate roadway capacity over the length of SH 97.

HUMAN ELEMENTS

Current Land Use / Zoning

Data Source

Data sources include the Comprehensive Plan Existing Land Use map (2008), and Zoning map of Kootenai County and the actual existing land uses within the corridor study area. Figures 20 and 21 depicts the existing Kootenai County Comprehensive Plan Existing Land Use and Zoning respectively within the study area.

Land uses and Comprehensive Plan designations within the City of Harrison along the corridor include Single-Family Residential, Social-Institutional-Semi Public, Public, Commercial, Light Industrial, and Public Trails and Paths.

Role in Corridor Planning

Existing land use and zoning information is important in the corridor planning process to help determine whether changes in land use impact transportation facilities within the study area. The location and distribution of commercial uses, employment areas, and housing have a direct impact on transportation needs. Currently, with the presence of only limited commercial and

State Highway 97 Corridor Study

Kootenai County Comprehensive Plan 2008 Existing Land Use

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State Highway 97 Corridor Study
Zoning

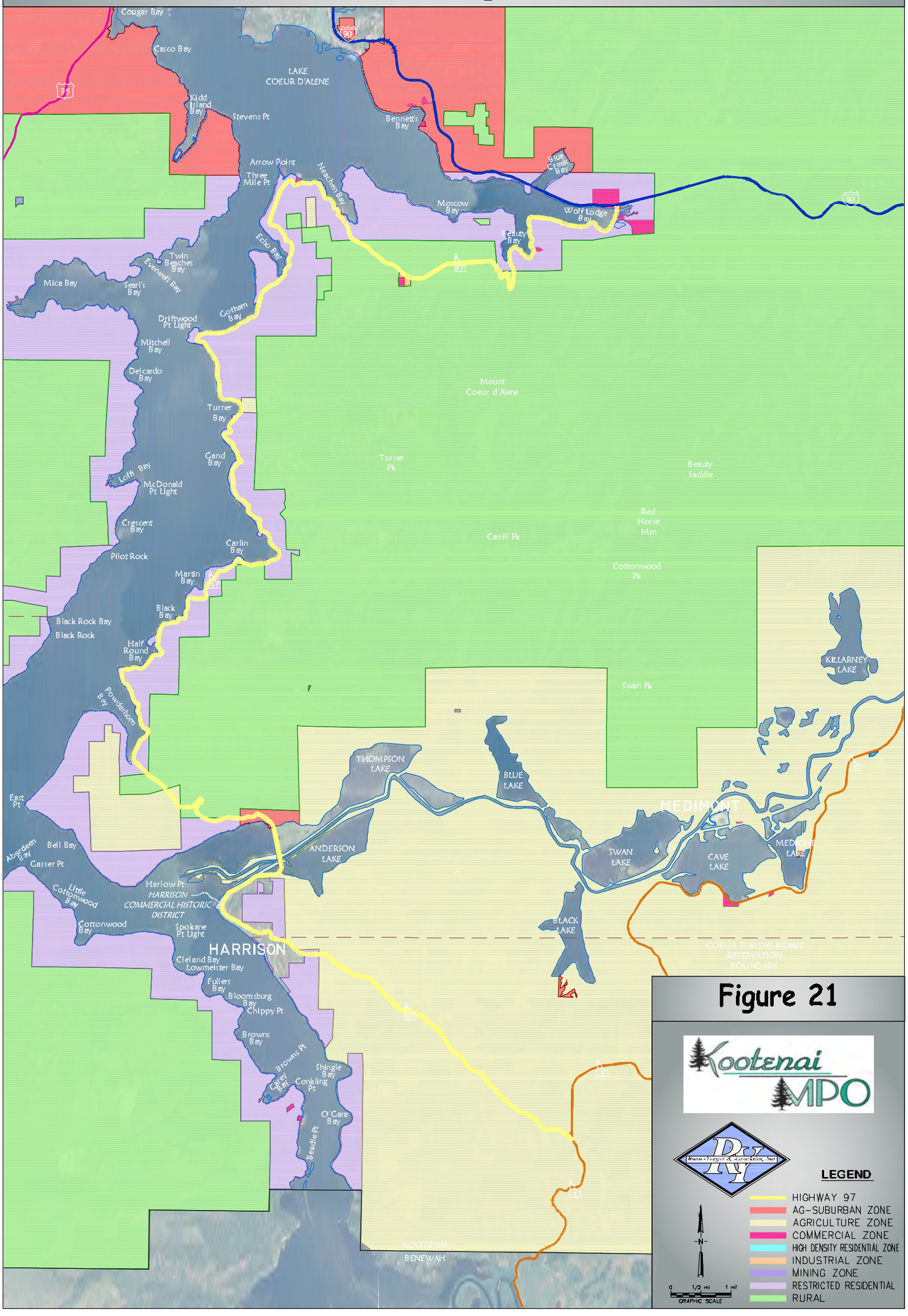

Figure 21

Kootenai MPO

LEGEND

- HIGHWAY 97
- AG-SUBURBAN ZONE
- AGRICULTURE ZONE
- COMMERCIAL ZONE
- HIGH DENSITY RESIDENTIAL ZONE
- INDUSTRIAL ZONE
- MINING ZONE
- RESTRICTED RESIDENTIAL
- RURAL

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employment opportunities along SH 97, many residents use the highway to meet daily needs either in the Coeur d'Alene, Harrison, or St. Maries areas.

Existing land use and zoning designations also provide information about the location of uses that may represent obstacles for road extensions, widening, or roadway improvements. For example, the sparsely populated generally public land areas along the stretch of SH 97 from the Wolf Lodge Bay area to the Beauty Bay area has some physical characteristics (steep mountainous public land) that create significant obstacles for implementing many roadway improvements. In the southern study area, farming uses are predominantly seen south of Harrison to the SH 97/SH 3 junction. The southern area also includes the Coeur d'Alene Tribe of Indians Reservation lands.

The region includes scattered single-family dwellings at predominantly rural sites. These tend to be at established clustered lakefront communities and newly developed secondary waterfront communities. East of SH 97, land use is designated as Rural, even though the zoning classifications allow Restricted Residential zoning; the current land use is predominately rural in kind.

Gozzer Ranch, a large Planned Unit Development (permitted in 2006), has been approved and under construction in the study area. This project consists of approximately 600 acres and includes approximately 350 residential units with a private golf course representing a new trend in the SH 97 Corridor study area.

Role in Environmental Documentation

As part of the environmental documentation process, it is necessary to look at issues such as wildlife, impacts on water resources, emergency response times, and the current traffic capacity of SH 97. Land use information is helpful in evaluating and recognizing the severity of these impacts. Any improvement concepts that are proposed through areas that include existing residential land uses and residential zoning are likely to result in additional short-term community disruption. The level of detail required for land use and zoning analyses will depend on the improvement concepts proposed. Improvements such as shoulder widening in some areas will not have a significant impact on adjacent properties, while roadway realignment may require substantial retaining walls and erosion control measures. The current data sources provide adequate resources for many of the minor improvement analyses. Larger improvements or bundling of several smaller improvements into a large project will require more extensive impact assessments.

Inventory

The 1995 Kootenai County Comprehensive Plan established seven geographic regions based on topography, soils, climate, and land use. Variations exist within each region, but each is uniform enough to be considered an individual unit. The project study area is located within the Coeur d'Alene Lake Region. The Coeur d'Alene Lake Region is located in the south-central part of Kootenai County and covers approximately 179 square miles. The area is comprised of Coeur d'Alene Lake, its shoreline, and the surrounding areas. The area surrounding the lake is generally steep with limited level or gently sloping areas.

The western and southern portions of the Region are underlain by the Columbia River Basalt Group and Latah Formation[1]. The predominant soil group is the Blinn-Lacy-Bobbitt soils[2]. The western and northern portions are underlain by the Precambrian Belt Supergroup of metamorphosed sediments with some isolated basalts and Latah Formation sediments.

Planned Land Use

Data Sources

Data sources include the Comprehensive Plan map of Kootenai County. The Future Land Use Map (Figure 22) shows planned land use according to the current Kootenai County Comprehensive Plan.

Role in Corridor Planning

The Comprehensive Plan for Kootenai County identifies how and where land use planning intends to direct future growth. The Future Land Use map (draft 2008) illustrates areas that are planned for open space with limited residential use, timber areas, federal lands, agricultural, rural, and suburban-residential use. For corridor planning, it is important that the planning effort consider the long-range plans and goals of the local jurisdictions. The Kootenai County Comprehensive Plan is currently being revised (February 2009) and the Kootenai County Board of Commissioners has received recommendations from the Kootenai County Planning Commission and subcommittees. Hearings are planned for late winter or spring of 2009.

The recommended revisions to the Kootenai County Comprehensive Plan are centered around zoning and land use designation changes, development density changes, impact fee schedules, and the suitability of sites for development. The new Comprehensive Plan may change some of the future land uses within the corridor study area. As part of the environmental documentation process, planned land use needs to be considered. Highway improvement concepts will likely need to be consistent with Kootenai County and City of Harrison Comprehensive Plans or identify plan changes that are necessary for consistency.

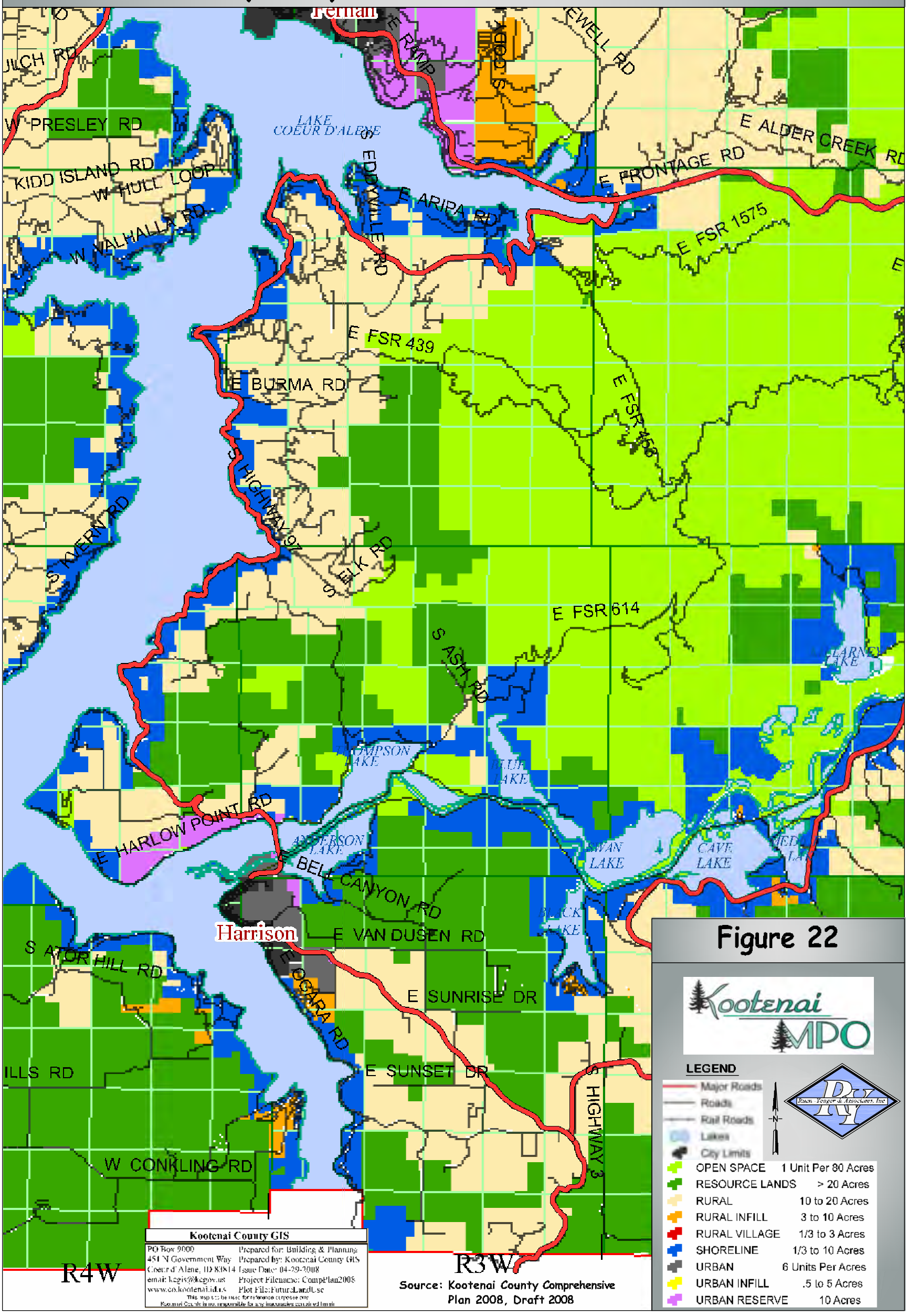
Several large land development projects have been proposed: one larger project of approximately 1,500 dwelling units with up to three golf courses on 2,000 acres in the Powderhorn Bay area; and, another private golf course community in the Moscow Bay area. Neither project has received approval at this date. Large tracts of developed land, such as these two developments could have significant impacts within the study area depending on the project location and the traffic mitigation measures implemented by the project.

Inventory

According to the Kootenai County Zoning map (Figure 21), the zoning classifications within the corridor study area are mostly Rural to the east of SH 97 and Restricted Residential to the west of SH 97, with limited Commercial use along both sides of SH 97.

[1] Geologic Map of the Coeur d'Alenes, 30 x 60 Minute Quadrangle, Idaho 2002, Lewis, Reed S. , et al
[2] Kootenai County Soil Survey , U.S.D.A. Soil Conservation Services , 1975

State Highway 97 Corridor Study
Kootenai County Comprehensive Plan 2008 Future Land Use



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Prime Agricultural Farmland

Data Sources

Prime farmland descriptions and soil association maps were obtained from Kootenai County Soil Survey, published by the United State Department of Agriculture (USDA), National Resources Conservation Service (NRCS). Bob Flaggor, soil scientist for NRCS, provided a list of soils that are considered prime farmland soils. The list is contained in appendices of the document.

Role in Corridor Planning

Within the corridor study area, two prime farmland soil types have been located south of Harrison and east of SH 97. Primarily, the *Taney silt loam, 3 to 7 percent, and 112 Chatcolet cobby loam, 7 to 25 percent* are found within limited areas of the corridor study area. During the preliminary design of roadway improvements in these areas, the USDA Farmland Conservation Impact Rating form should be used to analyze impacts of potential improvements on prime farmland. Design alternatives which can minimize impacts to the most extent possible to prime and unique farmland should be taken into consideration.

Inventory

Within the corridor study area, there is a very limited amount of farmland, thus very limited possible prime farmland soils that could be impacted by recommended roadway improvements. Most improvements recommended in the area south of Harrison are within the existing right of way and not presently in agricultural use.

Land Ownership, Parks, and Recreation

Data Sources

Locations of state and federal land were obtained from Bureau of Land Management (BLM). Detailed information about specific tracts of land was provided by Idaho Department of Parks and Recreation, U.S. Forest Service as part of United States Department of Agriculture (USDA), Coeur d'Alene Tribe of Indians Reservation land, State of Idaho Fish and Game land, and the Idaho Department of Lands as shown on Figure 23.

Role in Corridor Planning

Parks and recreation areas exist in selected areas throughout the corridor study area. These managed facilities have minor influences on corridor planning; however, public access must be maintained. Public lands are limited and dispersed within the study area.

Role in Environmental Documentation

Parks and recreation data collection is essential to determining if Section 4(f) (49 U.S.C. 303) Section 771.135 Department of Transportation Act of 1966 applies to any significant publicly owned park and/or recreation areas. Intrusion on these parks and recreation areas would require a use permit from the authorizing agency and potentially a Section 4(f) evaluation from Federal Highway Administration.

State Highway 97 Corridor Study
Land Ownership

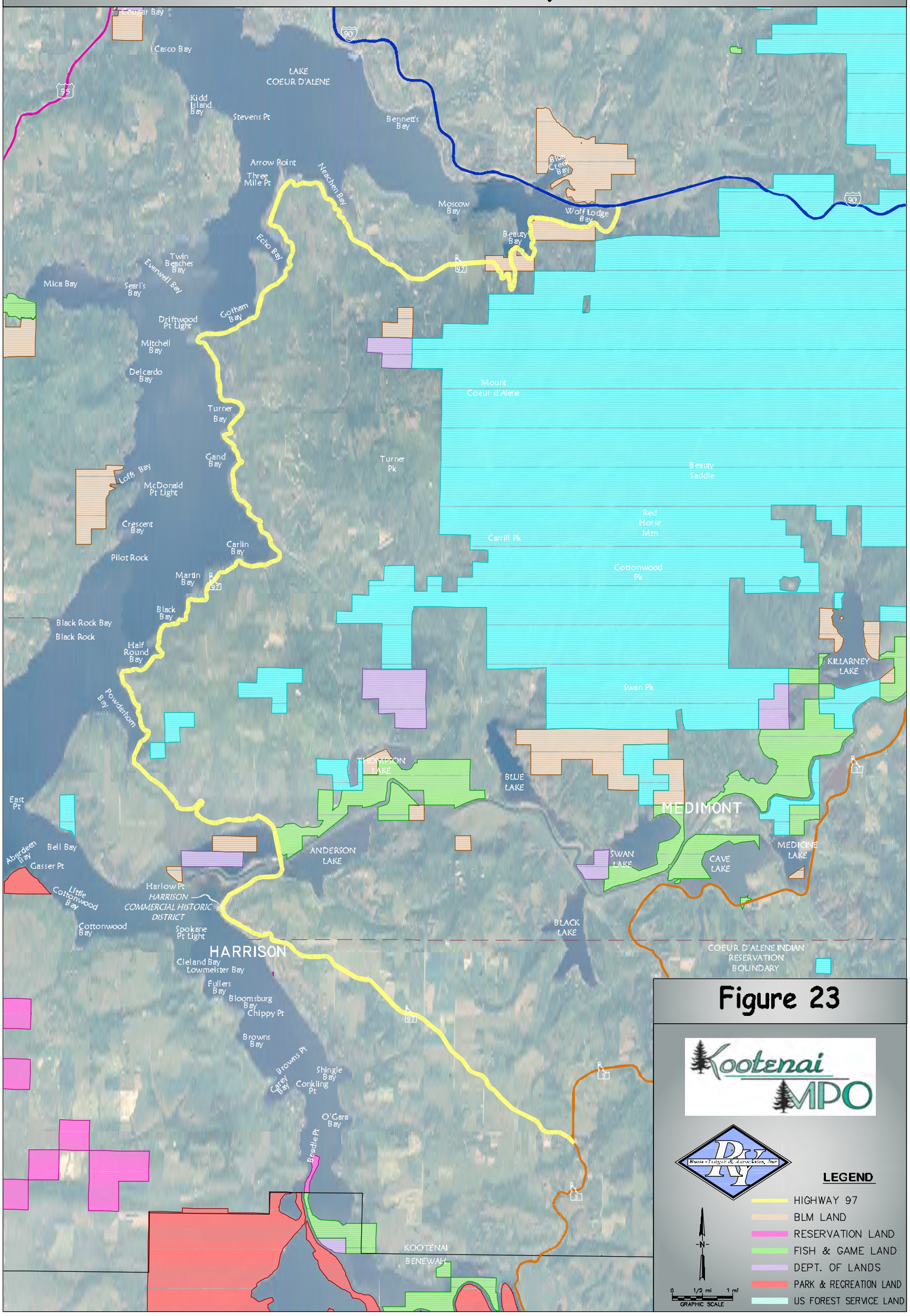

Figure 23

Kootenai MPO

Rivers - Trimpi & Associates, Inc.

LEGEND

- HIGHWAY 97
- BLM LAND
- RESERVATION LAND
- FISH & GAME LAND
- DEPT. OF LANDS
- PARK & RECREATION LAND
- US FOREST SERVICE LAND

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0 1/2 mi 1 mi

GRAPHIC SCALE

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Inventory

U.S. Forest Service Lands
The USDA administers large tracts of land as National Forest near the study area. The Coeur d'Alene National Forest borders the eastern side of the corridor and covers much of the adjacent Coeur d'Alene Mountains. These forest areas are heavily used by the general public for recreational opportunities, such as hiking, fishing, camping, hunting, skiing, and snowmobiling.

State Lands
The Idaho Department of Lands does have property, which they administer, within the corridor study area according to Monte White, Idaho Department of Lands (IDL) representative. A property ownership search indicates that IDL has two small parcels southwest of Coeur d'Alene Mountain within the SH 97 Corridor Study area.

BLM Lands
The BLM is currently gathering information, public comments, concerns, opportunities, and ideas that will be considered in the development of a Recreation Management Plan for 736 acres of BLM administered public lands in the Blue Creek Bay area on Lake Coeur d'Alene. This project is located east of the City of Coeur d'Alene and northwest of the Wolf Lodge Bay area, but not within the study area. Within the corridor is the Mineral Ridge Trail and Mineral Ridge boat launch, which are located between Wolf Lodge Bay and Beauty Bay.

Parks and Recreation

Areas within the SH 97 Corridor provide recreation opportunities (see Figure 24) for the general public. Coeur d'Alene Lake offers water sports, such as boating and fishing. Beaches, public docks, and boat launch areas are scattered along the Lake Coeur d'Alene shoreline. East of the corridor study area, there are nine lakes in the Coeur d'Alene River chain lake area including Rose, Medicine, Cave, Killarney, Blue, Black, Swan, Anderson, and Thompson Lakes which create opportunities for recreational users to fish, boat, and swim. The corridor also offers excellent hunting, snowmobiling, camping, and hiking opportunities.

The Trail of the Coeur d'Alenes is a trail system, which follows the former Union Pacific Railroad right of way from Mullan, Idaho, a mountain mining town near the Montana State border, to Plummer, Idaho, a town on the prairie near the Washington State border. About 72 miles of paved path spans from high mountain splendor, through the historic Silver Valley, to the Coeur d'Alene River chain lake region, and along the shore of Lake Coeur d'Alene, over a bridge to Heyburn State Park and then on through the Coeur d'Alene Indian Reservation. A portion of this trail system is located within the SH 97 Corridor study area. Other parks and recreational facilities in the corridor are as follows:

- Mineral Ridge boat launch at Wolf Lodge Bay provides water access.
- Mineral Ridge National Scenic Trail, operated by BLM, provides an interpretive trail system with picnic, hiking, and parking facilities.
- Beauty Bay Recreation and Campground site at the top of Beauty Bay Hill, operated by BLM, provides overnight camping and picnic facilities.
- Neachen Bay provides a boat launch with a small dock, restrooms, and limited parking.

State Highway 97 Corridor Study
Recreation Areas

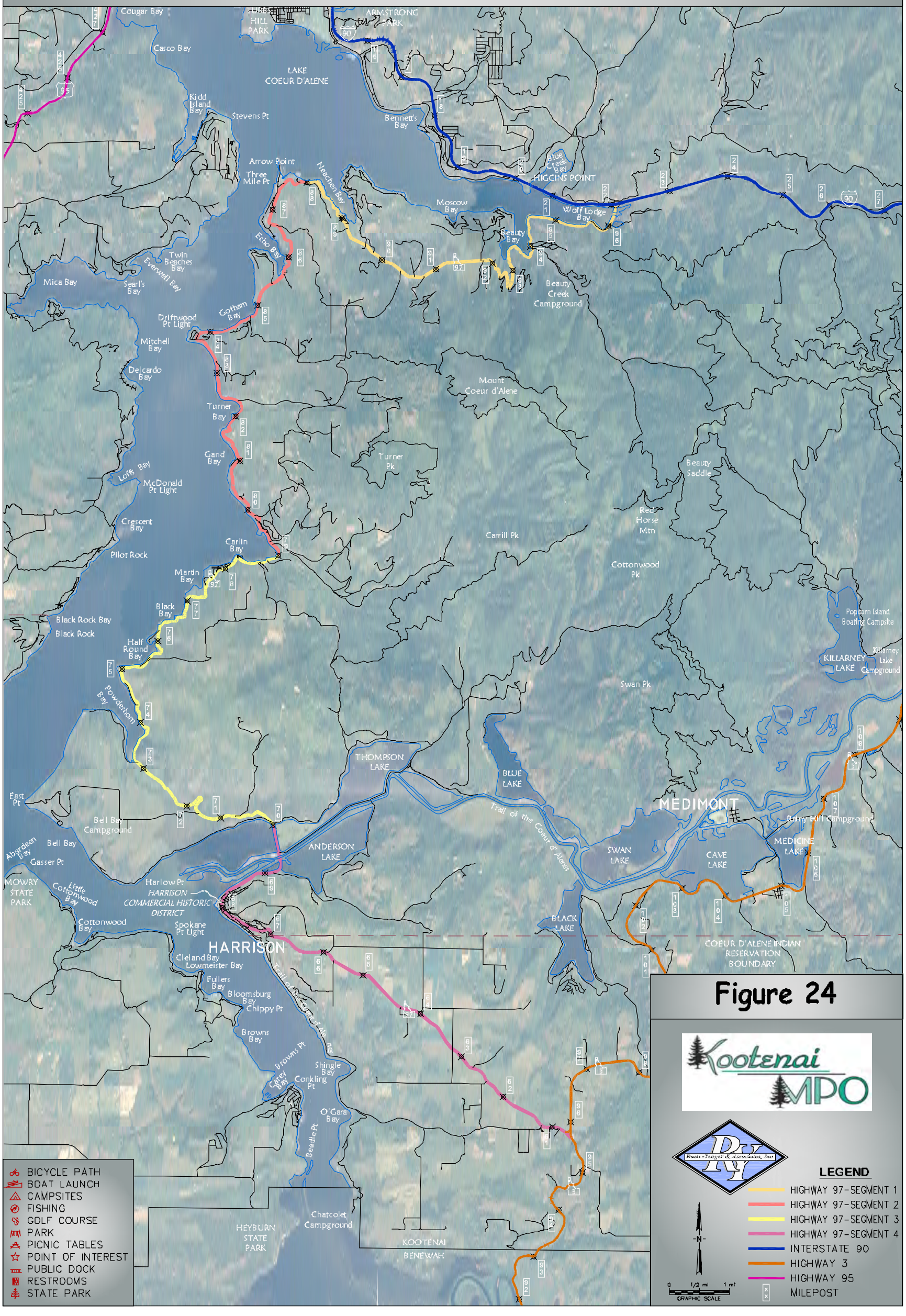

Figure 24

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- Mount Coeur d'Alene, a USFS recreation site, provides hiking, biking, motorcycle, and off road vehicle trails.
- Turner Bay provides a small public dock.
- Turner Point provides a dock and restrooms.
- Carlin Bay provides a boat launch and a small dock.
- Bell Bay (USFS) Campground provides overnight camping and picnic facilities along with a boat dock.
- Harlow Point provides a boat launch, small dock, and parking for single vehicles and vehicles with trailers.
- Harrison Docks provides a boat launch, a large docking facility, swimming beach area, restrooms, running water, breakwater, and parking for both single vehicles and vehicles with trailers. Also located at the Harrison Docks is a small lakeside campground.

Cultural and Historic Resources

Data Sources

A list of historic structures protected under the National Register of Historic Places (NRHP) was obtained from the Idaho State Historic Preservation Office (SHPO).

Role in Corridor Planning

Within the corridor study area, cultural sites, historical districts/sites, and parks and recreation areas may have historical significance under Section 106 of the National Historic Preservation Act (NHPA). A Section 4(f) evaluation for the Federal Highway Administration may be required of these resources. The existence of these resources will be substantiated, and if present, then these resources will be avoided in the design of improvements within the study area. Historical and archaeological resources could be critical factors in the evaluation of roadway improvements within the study area.

Role in Environmental Documentation

Locations of known archaeological sites must be determined by a licensed archaeologist. During the improvement concepts analysis, Class II surface surveys may be conducted to ascertain the potential for an archaeological site. Locations of historically significant structures on the NRHP will also be researched through the State Historic Preservation Office (SHPO) during the improvement concepts analysis, as part of the environmental documentation. Field investigations may be necessary to locate and determine the cultural significance of any sites identified within the study area.

Inventory

According to SHPO, a variety of cultural and historic resources have been recorded throughout the study area. The Harrison Commercial District (#961220) and the Lower Carlin Bay School (#86003780) are listed under the NHPA Register within the corridor study area. An archaeological survey will be required as part of the environmental documentation to determine what resources are within the corridor study area, if more are present or later identified. At that

time, preliminary design of improvements will take into consideration what resources have been identified within the corridor study area.

Air Quality

Data Sources

Mark Boyle, Air Quality Specialist for the Idaho Department of Environmental Quality (IDEQ), provided information regarding the corridor air quality and area programs.

Role in Corridor Planning

Under the authority of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) has developed and promulgated health-based air quality standards that limit the maximum levels of certain pollutants in outdoor air. Idaho has adopted most of these standards into the state Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01) and IDEQ has been delegated the authority to issue air quality permits and enforce air quality regulations in the state.

Under the CAA, the EPA has established the National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment, which specify maximum concentrations for carbon monoxide (CO), particulate matter less than 10 micrometers in size (PM_{10}), ozone, sulfur dioxide, lead, and nitrogen dioxide. Nonconformance with NAAQS can threaten programming and implementation of transportation projects.

Role in Environmental Documentation

Any improvements or transportation projects should consider improving traffic flows and reducing delays to potentially decrease concentrations of carbon monoxide, ozone, and nitrogen oxide compounds below current conditions. The traffic studies conducted during the corridor planning effort can be used to provide estimates for air modeling of future vehicle emission-related pollutants.

Inventory

Per conversations with IDEQ, there is one monitoring site near Harrison, which the Coeur d'Alene Tribe is presently monitoring for effects of population growth on the generation of particulate matter.

IDEQ has adopted the Transportation Conformity Rules, which apply to those transportation projects in non-attainment areas. Since Kootenai County is within an attainment area for particulate matter, but is in an unclassified area for all other criteria pollutants, these rules do not currently apply. IDEQ encourages the use of the conformity process to evaluate the potential impacts of regionally significant projects in Kootenai County (Boyle, 2008). Proposed changes in the Non-Attainment Area program in Idaho may impact future improvement projects.

Idaho Congestion Mitigation Air Quality Program was established to reduce transportation related sources of emissions such as PM_{10}. Emission inventory studies have shown that fugitive road dust emissions are a major source of PM_{10} in most western U.S. communities. Emissions inventories conducted in Kootenai County indicate that fugitive road dust is the single largest

source of PM_{10} in this airshed on an annual basis. IDEQ has received numerous air quality complaints regarding road dust from residents in the East Side Highway District. These complaints are nearly exclusively from unpaved road emissions. Some emissions may be caused by new development within the area with unimproved roads.

Noise

Data Sources

Per conversations with Idaho Transportation Department personnel, there are no known noise monitoring stations within the corridor study area and no noise data was located during project research efforts.

Role in Corridor Planning

Noise impacts may be a result of major improvements to any highway. These noise-sensitive receptors may be located within the study area. However, these receptors will not be monitored as part of the corridor planning effort.

Role in Environmental Documentation

A noise study may be required to be completed to identify these noise-sensitive receptors and will define existing conditions and evaluate the impacts of future development. As part of a noise study, monitoring stations would be established and analyzed to accurately establish mitigation measures, if needed.

NATURAL ELEMENTS

Geology and Soils

Data Sources

The Kootenai County Comprehensive Plan (1994 and draft 2008) provided information regarding subsurface geology and geologic hazards. The Idaho Geological Survey provided history on faults and earthquakes in the area. Soil descriptions and maps were provided by the Kootenai County Soil Survey. A Phase I Materials Report for SH 97 - Beauty Bay Hill was conducted by Toothman Orton Engineering Company in 2005, and a Phase I Materials Report and Geologic Reconnaissance was completed for Burma Road and Gotham Bay Road to Junction SH 97 in 2008 by J-U-B Engineers, Inc.

Role in Corridor Planning

Geologic factors, including fault lines, areas underlain by the Columbia River Basalt group, Latah Formation, and outcrops of rock along Beauty Bay Hill have been mapped as part of the Precambrian Belt Super Group Formation including the Pritchard and Revett Formations along with the Columbia Basin Basalts and interbedded Latah Formations (GeoEngineers, February 27, 2006). The Belt Super Group is also the major outcrop along the Coeur d'Alene Lake shore between mileposts 90-96. These rock and associated soil types are considered to be unstable on steeper slopes and have a high hazard of erosion. Avoiding unnecessary disturbance of these rock and soil types should be considered whenever and wherever possible.

Role in Environmental Documentation

Idaho is ranked fifth nationally in terms of seismic risk. Information from the Idaho Geological Survey indicates areas of relative seismic shaking hazard and puts Kootenai County in a moderate risk category. This designation is largely based on the potential for earthquakes centered elsewhere to cause local damage.

Some roadway improvements will be reviewed for potential impacts from geologic hazards and poor soil conditions. Soils can influence the design and construction of new or improved roads therefore, soil characteristics must be considered during the engineering design. BMPs will be prescribed during the environmental review process for each roadway improvement option

Inventory

According to Kootenai County, the U.S. Geological Survey recognizes one major fault adjacent to corridor study area (Figure 25) the Coeur d'Alene Fault (Kootenai County, 1994). The Coeur d'Alene Fault runs north and south along the Coeur d'Alene Lake eastern shore. Also within Kootenai County are two additional major faults not located near the corridor study area: the Rathdrum Fault and the Osburn Fault. The Rathdrum Fault runs north and south under the Rathdrum Prairie. The Osburn Fault, which runs from Coeur d'Alene southeast into Montana, constitutes much of the Lewis and Clark Seismic Zone in Idaho. The Lewis and Clark Seismic Zone is north of Interstate 90 through the Silver Valley and into Montana.

Landslides are a serious threat to human safety and property (Kootenai County Comprehensive Plan, draft 2008). Stable hillsides require a critical balance of vegetation, geology, slope, soil, and precipitation. Landslides and slumps occur where there is not enough friction to support the overburden (Kootenai County Comprehensive Plan, draft 2008). Many of the steeper slopes around the corridor study area, especially along Coeur d'Alene Lake have these characteristics and a history of landslides.

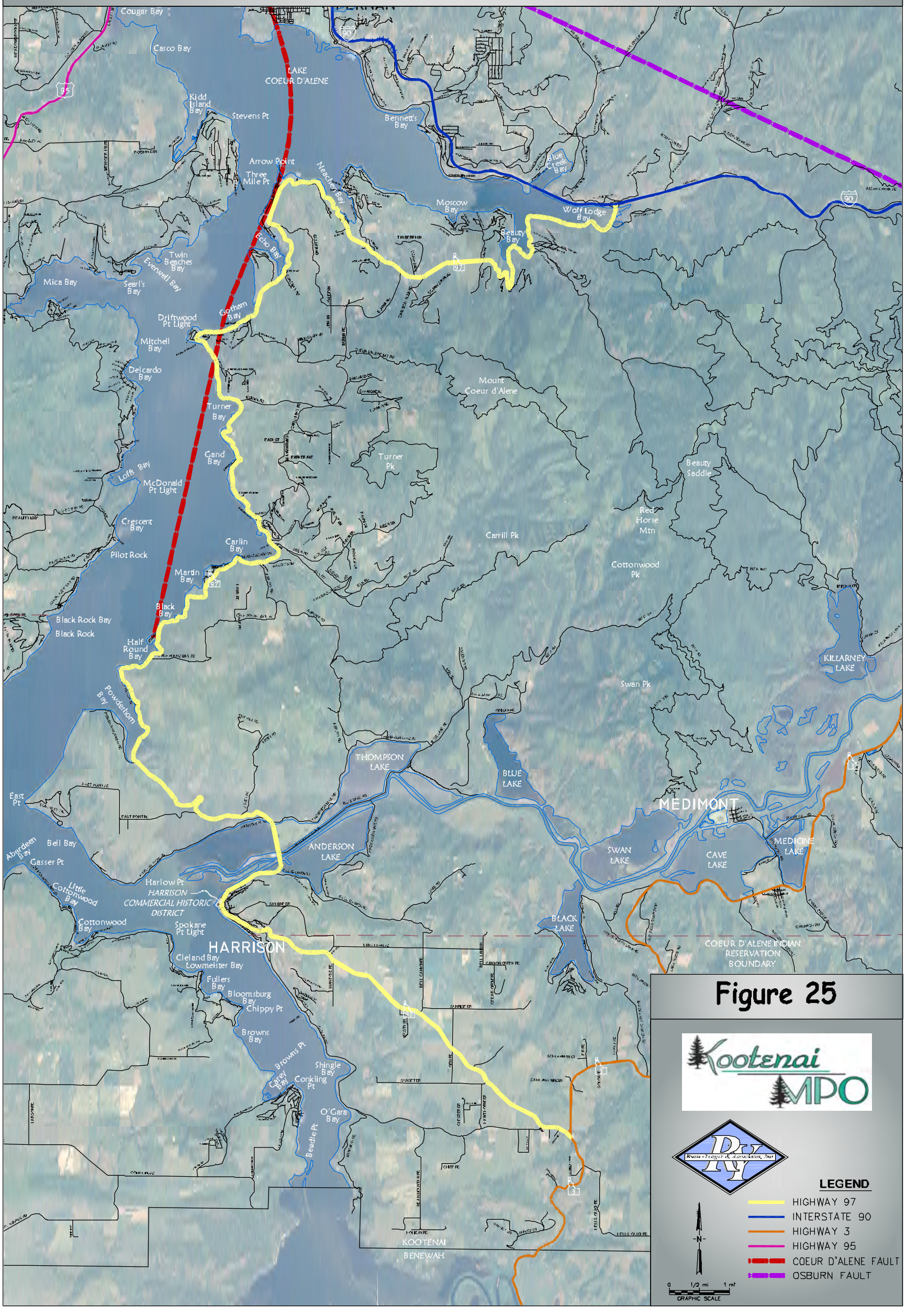
Erosion reduces soil productivity, pollutes surface water, reduces stream flow, and damages property. Many soils along Coeur d'Alene Lake have soil types that have naturally high erosion potential. Construction site erosion and sedimentation control are now required by the Kootenai County Site Disturbance Ordinance, Number 374 for any building within 500 feet of surface water or on slopes steeper than fifteen (15) percent (Kootenai County Comprehensive Plan, draft 2008).

Soil and Slopes

As depicted on Figure 26, the soils and slopes (Figure 27) within the SH 97 Study Area are as follows:

Blinn stony loam, 5 to 35 percent slopes: These soils are a moderately deep, well-drained soil that formed in material weathered from basalt and a thin mantle of loess and volcanic ash. These soils are mainly uses for woodland, wildlife habitat, grazing, and some pasture hay.

State Highway 97 Corridor Study
Seismic Hazard Faults



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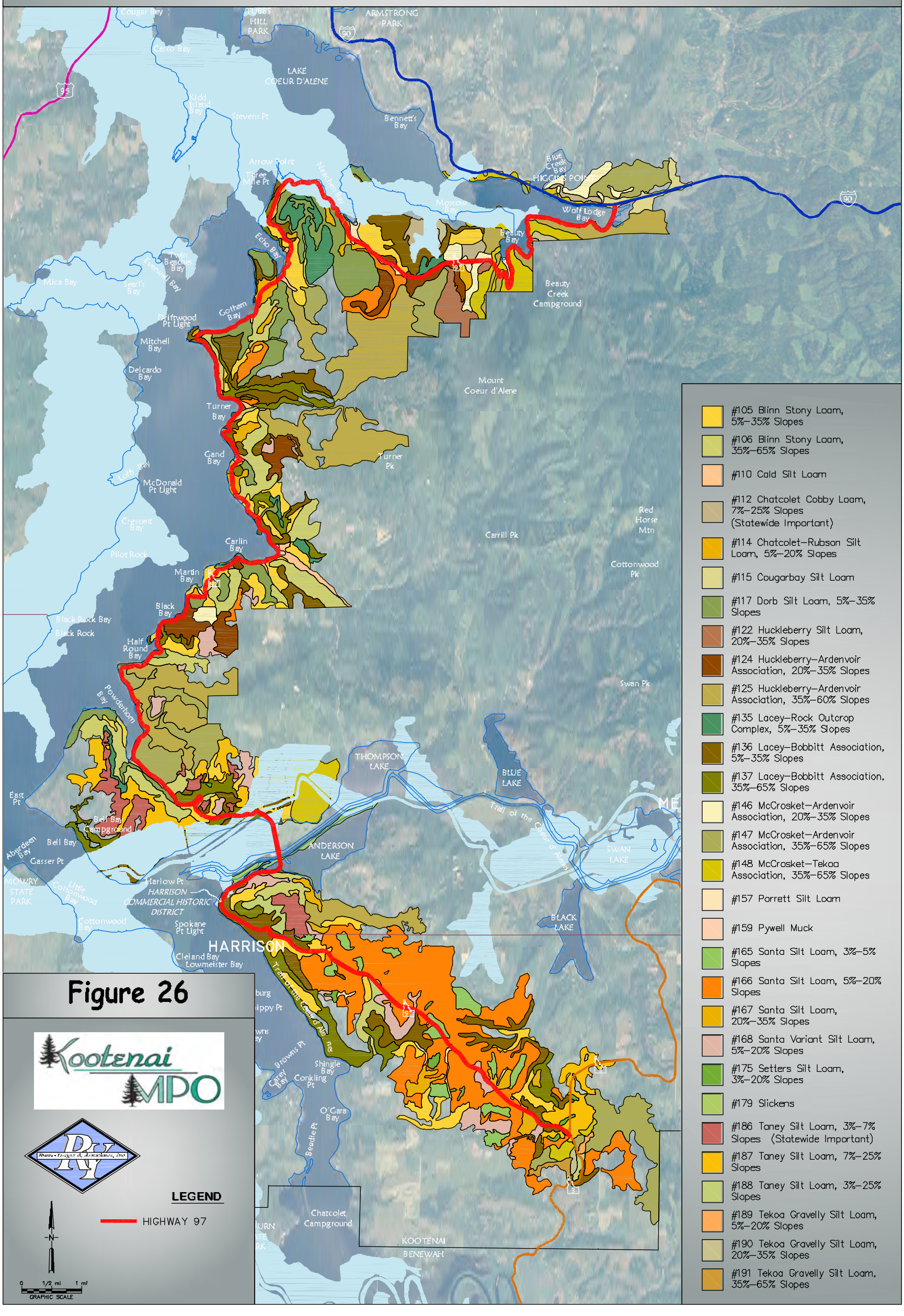
State Highway 97 Corridor Study

Soils



#105 Blinn Stony Loam, 5%–35% Slopes

#106 Blinn Stony Loam, 35%–65% Slopes

#110 Cald Silt Loam

#112 Chatcolet Cobby Loam, 7%–25% Slopes (Statewide Important)

#114 Chatcolet–Rubson Silt Loam, 5%–20% Slopes

#115 Cougarbay Silt Loam

#117 Dorb Silt Loam, 5%–35% Slopes

#122 Huckleberry Silt Loam, 20%–35% Slopes

#124 Huckleberry–Ardenvoir Association, 20%–35% Slopes

#125 Huckleberry–Ardenvoir Association, 35%–60% Slopes

#135 Lacey–Rock Outcrop Complex, 5%–35% Slopes

#136 Lacey–Bobbitt Association, 5%–35% Slopes

#137 Lacey–Bobbitt Association, 35%–65% Slopes

#146 McCrosket–Ardenvoir Association, 20%–35% Slopes

#147 McCrosket–Ardenvoir Association, 35%–65% Slopes

#148 McCrosket–Tekoa Association, 35%–65% Slopes

#157 Porrett Silt Loam

#159 Pywell Muck

#165 Santa Silt Loam, 3%–5% Slopes

#166 Santa Silt Loam, 5%–20% Slopes

#167 Santa Silt Loam, 20%–35% Slopes

#168 Santa Variant Silt Loam, 5%–20% Slopes

#175 Setters Silt Loam, 3%–20% Slopes

#179 Slickens

#186 Taney Silt Loam, 3%–7% Slopes (Statewide Important)

#187 Taney Silt Loam, 7%–25% Slopes

#188 Taney Silt Loam, 3%–25% Slopes

#189 Tekoa Gravelly Silt Loam, 5%–20% Slopes

#190 Tekoa Gravelly Silt Loam, 20%–35% Slopes

#191 Tekoa Gravelly Silt Loam, 35%–65% Slopes

Figure 26

Kootenai MPO

DKS Associates

LEGEND

HIGHWAY 97

N

0 1/2 mi 1 mi

GRAPHIC SCALE

State Highway 97 Corridor Study
Slope Percentages

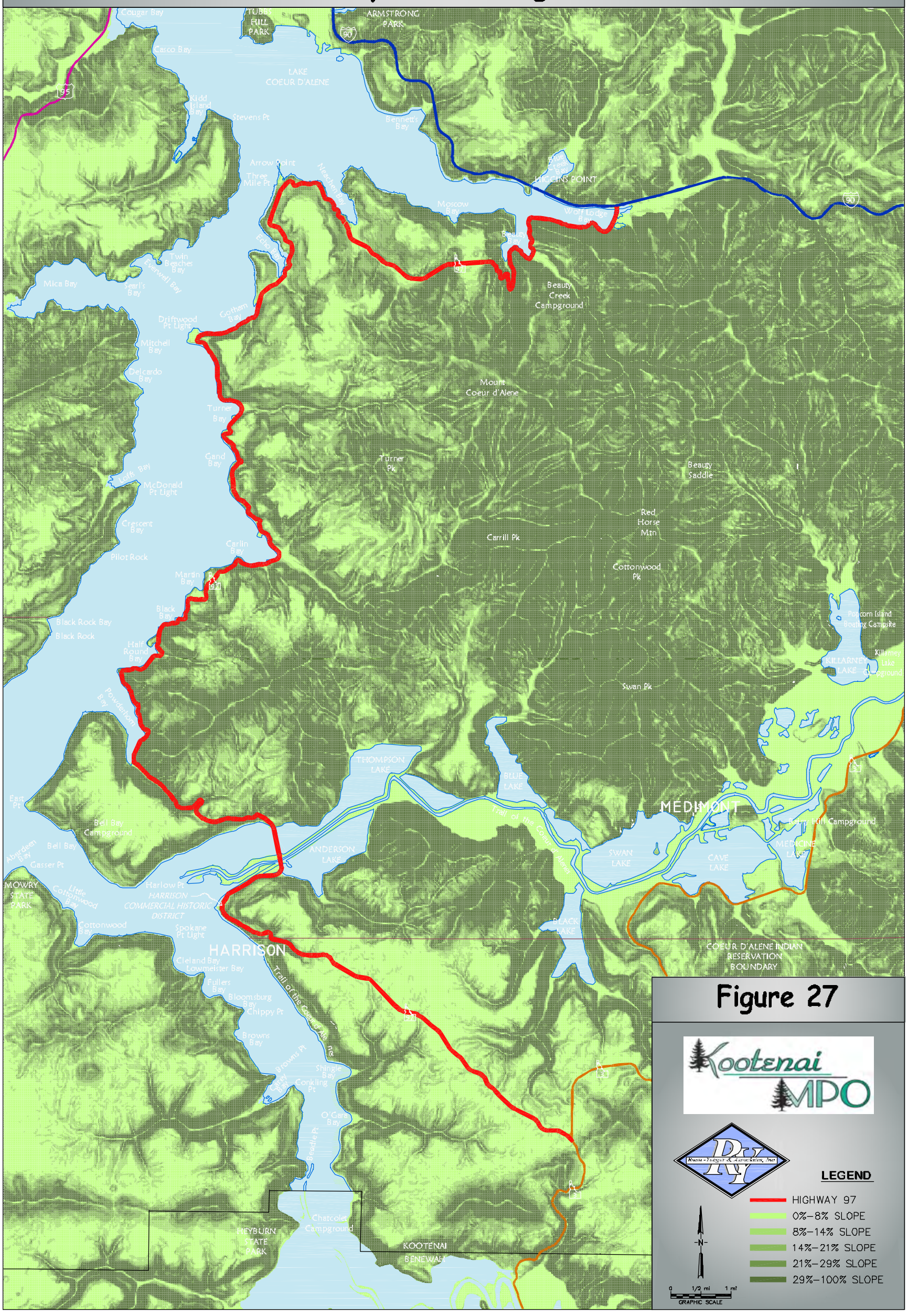


Figure 27

Kootenai MPO

DY Kittelson & Associates, Inc.

LEGEND

- HIGHWAY 97
- 0%–8% SLOPE
- 8%–14% SLOPE
- 14%–21% SLOPE
- 21%–29% SLOPE
- 29%–100% SLOPE

-N-

0 1/2 mi 1 mi
GRAPHIC SCALE

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Available water capacity of these soils is low. Permeability is moderate, runoff is rapid to very rapid, and hazard of erosion is very high. Limitations for home sites and road construction are slope, depth to bedrock, and stability.

Blinn stony loam, 35 to 65 percent slopes: These soils are a moderately deep, well-drained soil that formed in material weathered from basalt and thin mantle of loess and volcanic ash. These soils are mainly used for woodland, wildlife habitat, and limited grazing.

Available water capacity of these soils is low. Permeability is moderate, runoff is rapid to very rapid, and hazard of erosion is very high. The main limitation for construction is the high cost of site preparation because of the steep slope. Home site development and road construction are limited by the depth to bedrock and stoniness. Limitations for recreational use are steep slopes and stoniness.

Cald silt loam: These soils are a very deep, somewhat poorly drained soil that formed in alluvium mainly from loess with variable amounts of volcanic ash. These soils are used for small grain, hay pasture, and grass seed production.

Available water capacity for these soils is high. Permeability is moderately slow, runoff is very slow, and the hazard of erosion is slight. These soils have severe limitations for home sites and roads because of the potential of hazard of flooding, the high seasonal water table, and the low support strength of the soil.

Chatcolet cobby loam, 7 to 25 percent slopes: These soils are very deep, moderately well-drained soil that formed in volcanic ash and loess over lake-laid sediment. It is on glaciolacustrine terraces. These soils are mainly used for woodland, pasture, and home sites.

Available water capacity is moderate to high. Permeability is moderately slow, runoff is rapid to very rapid, and the hazard of erosion is high to very high. The main limitation for home sites and sanitary facilities is slope. The use of septic tank absorption fields is also restricted by the permeability of the subsoil. Construction of roads and dwellings is limited by the inherent low support strength of the soil and potential frost action damage. Design considerations include placing footings below depths of frost penetration.

Chatcolet-Rubson silt loams, 5 to 20 percent slopes: These rolling to hilly soils are on glaciolacustrine terraces. These soils are mainly used for woodland, hay, pasture, and some small grain production.

Available water capacity for these soils is high. Permeability is moderate, runoff is rapid, and the hazard of erosion is high. The construction of roads and dwellings is limited by inherent low support strength of the soils and potential frost action damage. Design considerations include placing footings below depths of frost penetration.

Cougarbay silt loam: This type of soil is a nearly level, very deep, very poorly drained soil that formed in recent lake sediment and sandy alluvium. It is on low lying bottomland areas adjacent to lakes. This soil is mainly used for pasture and hay.

Available water capacity is high. Permeability and runoff are very slow, and the hazard of erosion is slight. Construction is limited by the high shrink-swell potential and the inherent low support strength of the soil.

Dorb silt loam, 5 to 35 percent slopes: These soils are moderately deep, well-drained soil that formed in material weathered from basalt and a mantle of volcanic ash. It is found on Basaltic plateaus and in canyons. These soils are mainly used for woodland, recreation, wildlife habitat, and watersheds.

Available water capacity is very low. Permeability is moderate, runoff is rapid, and the hazard of erosion is high. Limitations for the construction of home sites, roads, and sanitary facilities are slope and depth to rock. Other limitations are large stones in the subsoil and frost action damage. Construction footings need to be extended below the depth of frost penetration.

Huckleberry silt loam, 20 to 35 percent slopes: These soils are a moderately deep, well-drained soil that formed in loess and volcanic ash mixed with material weathered from metasedimentary rock. It is located on mountain sides. These soils are not suited for cultivation. Its main uses are timber production, wildlife habitat, watershed, and limited grazing on cleared areas.

Available water capacity is low. Permeability is moderate, runoff is very rapid, and the hazard of erosion is very high. The main limitations for the construction of homes, buildings, and roads are the slope, depth to bedrock, and high potential for frost action damage.

Huckleberry-Ardenvoir association, 20 to 35, and 35 to 60 percent slopes: This association is made up of steep to very steep soils on mountainsides. Most of these soils are used for livestock grazing in small limited cleared areas. Most of these soils are used for woodland timber production, watershed, and wildlife habitat.

Available water capacity is low. Permeability is moderate, runoff is very rapid, and the hazard of erosion is very high. Road and dwelling construction is subject to potential damage from frost action. Small stones hinder excavation operations.

Lacey-Rock outcrop complex 5 to 35 percent slopes: These soils are shallow, well-drained soil that formed in material weathered from basalt, with a small amount of loess in the upper part of the profile. These soils are mainly used for woodland, recreation, and wildlife habitat.

Available water capacity is very low. Permeability is moderate, runoff is very rapid, and the hazard of erosion is very high. Home sites, roads, sanitary facilities, and recreational development are limited by slope and depth to rock.

Lacey-Bobbitt association, 5 to 35, and 35 to 65 percent slopes: These soils are shallow and moderately deep on mountainside and terrace escarpments. These soils are used for woodland, wildlife habitat, recreation, and limited grazing.

Available water capacity is low. Permeability is moderately, runoff is rapid, and the hazard of erosion is high. Limitations for home sites, roads, and sanitary facilities are the depth to rock, the slope, and large stones.

McCrosket-Ardenvoir association, 20 to 35, and 35 to 65 percent slopes: These soils are a deep, well-drained soil over metasedimentary rock and bedrock, and loess. These soils are used for timber production, grazing, wildlife habitat, and recreation.
Available water capacity is low. Permeability is moderate, runoff is very rapid, and the hazard of erosion is very high. Slope and depth to rock are the main limitations for home sites, roads, and sanitary facilities.

Mccrosket-Tekoa association, 35 to 65 percent slopes: These soils are moderately deep to deep, well-drained soil over shale bedrock and over metasedimentary rock. It formed in material weathered from shale or sandstone and a mantle of loess and volcanic ash and metasedimentary rock and loess. These soils are mainly used for timber production, wildlife habitat, watershed, and limited grazing.

Available water capacity is very low to low. Permeability is moderate, runoff is very rapid, and the hazard of erosion is very high. All structural and recreational development is limited by the very steep slope and depth to bedrock.

Porrett silt loam: This soil is a very deep, very poorly drained soil that formed in mixture of loess and volcanic ash material. It is on alluvial bottom lands and broad drainage ways. These soils are used for hay and pastures.

Available water capacity is high. Permeability is moderately slow, runoff is slow, and the hazard of erosion is none to slight. Roads, buildings, and sanitary facilities are limited by the potential for flooding and by seasonal high water table. Building and road construction are also limited by the potential frost action damage and inherent low support strength of the soil. Drainage is limited by flooding and the moderately slow permeability.

Pywell muck: This soil is very deep, very poorly drained soil that formed in organic materials mainly from herbaceous plants, but includes some material from trees and shrubs. This soil is used for small grain, hay, pasture, and grass seed.

Available water capacity is very high. A high water table ranges from the surface to 24 inches in spring. Permeability moderate, runoff is very slow, and the hazard of erosion is slight. Channelization is possible during flooding. Limitations for building sites, roads, and sanitary facilities are the high water table, excess humus, and the possibility of flooding.

Santa silt loam, 5 to 20 percent slopes: These soils are moderately deep to fragipan. It is a moderately well-drained soil that formed in deep loess, deposits that have a minor influence from volcanic ash. These soils are used for woodland, grazing, hay, pasture, small grain, and bluegrass for seed production.

Available water capacity is moderate. Permeability is very slow in the fragipan, causing a perched water table at a depth of 22 to 36 inches in the spring. Runoff is rapid, and the hazard of erosion is high. Building and road construction is limited by slope, the perched water table during wet periods, and potential frost action damage. Septic tank absorption fields are limited by the perched water table and very slow permeability of the soil.

Santa Variant silt loam, 5 to 20 percent slopes: These soils are a moderately deep, moderately well-drained soil that formed in loess deposits over fractured basalt or metasedimentary rock. These soils are used for woodlands.
Available water capacity is low. Permeability is very slow in the fragipan, causing a perched water table at a depth of 16 to 25 inches in spring. Runoff is very rapid and the hazard of erosion is very high. Buildings are limited by the very slow permeability of the subsoil, the perched water table, and depth to bedrock. Septic tank absorption fields are limited by the subsoil. On steeper areas, slope is an additional limitation for buildings and sanitary facilities. The design and construction of roads are subject to potential frost action damage.

Setters silt loam, 3 to 20 percent slopes: These soils are a very deep, moderately well-drained soil that formed in deep loess. These soils are mainly cultivated and are in an irregular pattern associated with the more extensive Taney soils.

Available water capacity is high. Permeability is very slow, runoff is rapid, and the hazard of erosion is high. The construction of buildings and roads is also limited by the inherent low strength of the soil, the perched water table, potential frost action damage, and the high shrink-swell potential of the soil during wetting and drying.

Slickens: This miscellaneous area is made up of poorly drained accumulations of medium textured materials, separated in ore mill operations, over stratified moderately fine and fine textured soil, and organic material. It is on the flood plain along the Coeur d'Alene River and mainly consists of mine tailings from the Coeur d'Alene Mining District and alluvium from yearly overflow.

Permeability and the available water capacity are variable. Runoff is slow. Erosion by channelization is a hazard during yearly overflow. Severe limitations for all structural development and recreational areas are flooding and high water table.

Taney silt loam, 3 to 7 percent slopes: These soils are a very deep, moderately well-drained soil that formed in deep loess with a minor influence from volcanic ash. These soils are mainly used for small grain, peas, lentils, grass for seed production, hay, pasture, and woodland.

Available water capacity is high. A perched water table is at a depth of 18 to 30 inches in spring. Permeability is slow, runoff is medium, and the hazard of erosion is moderate. Limitations for home sites and septic tank absorption fields are the slow permeability of the subsoil and the seasonal perched water table. The primary limitations for the construction of roads are potential frost action damage and the inherent low support strength of the soil.

Taney silt loam, 7 to 25, and 3 to 25 percent slopes: These soils are a very deep, moderately well-drained soil that formed in deep loess with a minor influence from volcanic ash. These soils are mainly used for small grain, peas, lentils, grass for seed production, hay, pasture, and woodland.

Available water capacity is high. A perched water table is at a depth of 18 to 30 inches in spring. Permeability is slow, runoff is rapid, and the hazard of erosion is high. Limitations for home sites and septic tank absorption fields are slope, the slow permeability of the subsoil, and a seasonal perched water table. The main limitations for roads are potential frost action damage, slope, and the inherent low support strength of the soil.

Tekoa gravelly silt loam, 20 to 35 percent slopes: These soils are a moderately deep, well-drained soil that formed in material weathered from shale, siltstone, or sandstone, or sandstone with a mixture of loess and volcanic ash in the upper part of the profile. These soils are used for timber production, grazing, and wildlife habitat.

Available water capacity is very low to low. Organic matter content in the surface layer is high. Permeability is moderately slow, runoff is very rapid, and the hazard of erosion is very high. Limitations for home site development, roads, and sanitary facilities are severely limited by the slope and depth to rock. Road construction is limited by potential frost action damage.

Water Resources

Data Sources

Streams, rivers, and lake locations were obtained by the Nation Wetland Inventory map and the Federal Emergency Management Agency (FEMA) maps were used to obtain the 100 year flood data. The Environmental Protection Agency (EPA) website was accessed to obtain information regarding the water bodies within the Coeur d'Alene Lake Watershed.

Role in Corridor Planning

Protection of floodways is critical in corridor planning for both sound roadways as well as preservation of clean water. Any improvements that would encroach on the 100 year flood plain would require special design and permitting conditions during environmental documentation.

Role in Environmental Documentation

Water resource concerns are extremely important when considering improvement concepts for roadway projects. Recreationists and wildlife depend on access to lakes and rivers. The environmental documentation will evaluate streams, rivers, and floodways with the intent of locating any new roadway improvements and bridges in areas of lowest-quality wildlife habitat, with the minimum impact on streams and floodways, and out of flood-prone areas, whenever possible. A practicable alternative analysis is typically performed to ascertain the best design given the site-specific environmental constraints. Streams and floodways are particularly significant, as many of the threatened and endangered species in the study area are associated with streams and wetlands.

Inventory

Lake Coeur d'Alene is the largest lake within Kootenai County with approximately 25,000 acres of lake surface and is over 25 miles long (Kootenai County Comprehensive Plan, draft 2008). Lakes and streams have become a focal point in Kootenai County. Human activities near lakes have resulted in increased nutrient levels in the water bodies. This, in turn, causes lakes to become more biologically productive and causes the aging process to accelerate. Streams, rivers, and lakes are very important to the residents in the area. Coeur d'Alene Lake has two principal tributaries: Coeur d'Alene and St. Joe Rivers, which drain the Coeur d'Alene and St. Joe Mountains, subsets of the Bitterroot Range. The Coeur d'Alene Lake outflow is partially controlled by the Post Falls Dam, which provides hydroelectric power, limited flood control, and irrigation supply. A Run of The River Operational Plan is typically used in lake level modification by the Post Falls Dam. The extensive gravel bar at the head of the Spokane River in Coeur d'Alene provides a bottleneck to river flows, which limits the flood control and lake level manipulation that the dam in Post Falls can achieve.

The Coeur d'Alene River discharges into the lake near Harrison, Idaho. The river has three major reaches, the North Fork, the South Fork, and the reach downstream of the two Forks. The St. Joe River discharges several miles to the south of the study area in St. Maries, Idaho and has numerous major tributaries and an extensive high mountain drainage basin.

There are numerous sub basins within the corridor study area that have both seasonal and year round creeks such as Wolf Lodge Creek in Wolf Lodge Bay, Beauty Creek in Beauty Bay, Squaw Creek in Neachen (Squaw) Bay, Gotham Creek in Gotham Bay, Turner Creek in Turner Bay, Carlin Creek and Elk Creek in Carlin Bay, Powderhorn Creek in Powderhorn Bay, Harrison Slough, and the mouth of the Coeur d'Alene River near Harrison. Numerous unnamed tributary creeks are also present within the corridor study area. During the preliminary design of any roadway improvements, these rivers, lakes, and creeks will need to be analyzed for potential impacts and will require coordination with appropriate agencies to keep impacts to a minimum.

Floodplains

The Flood Insurance Rate Maps, prepared by Federal Emergency Management Agency (FEMA), show areas of 100 year flood, Base Flood Elevations, and Flood Hazard not determined area, noted as being Zone A. The study area is generally designated as Zone A. Many of the areas located adjacent to Coeur d'Alene Lake and the surrounding creeks associated with the area study have the Zone A designation. Zone C designations, are areas of minimal flooding which are located outside the Coeur d'Alene Lake and Coeur d'Alene Lake shoreline areas. Zone A7, are noted as areas of 100 year flood Base Flood Elevation and Flood Hazard factors determined, these areas are located along Anderson Lake and Coeur d'Alene River (FEMA, 1982).

Floodwaters have traditionally been a common hazard in the County. In some locations, floods can be frequent and severe, resulting in extensive property damage and, in some cases, result in bodily injury or loss of life. The County has recognized this hazard and has taken steps to reduce exposure to flood hazards through the Flood Damage Prevention Ordinance, No. 333. The ordinance prohibits all encroachments into floodways unless certification by a registered professional engineer or architect is provided, which demonstrates that encroachments will not

result in any increase in flood levels during the occurrence of the base flood discharge (Kootenai County Comprehensive Plan, draft 2008).

Wetlands

Role in Corridor Planning

The National Wetlands Inventory (NWI) Maps show a number of potentially jurisdictional wetlands within the corridor study area around the Beauty Bay, Wolf Lodge, and Blue Creek areas (see Figure 28). These identified wetlands are primarily associated with waterways. Recommended improvements would typically avoid wetlands, whenever possible. Where recommended improvements impact wetlands, a practicable alternatives analysis will be performed. If impacts to wetlands are determined to be the most practicable alternative, then impacts will be minimized and wetland compensation will be required. Within the corridor study area, there are potential roadway improvements that could impact wetlands associated with creeks; such as, Carlin Creek, Powderhorn Creek, Echo Creek, Gotham Bay Creek, Squaw Creek, Beauty Creek, and several others.

Role in Environmental Documentation

As with streams and rivers, wetlands will be a critical factor in the design of improvements within the study area. A field review of improvements will be necessary to determine the location of wetlands that are not shown on the NWI mapping. Formal wetland delineation will be necessary to determine the exact boundaries of wetlands within any roadway improvement areas; this wetland delineation will not be official or final until the U.S. Army Corps of Engineers (ACOE) concurs.

There are jurisdictional wetlands within the study area, which are managed by the ACOE. Impacts on jurisdictional wetlands and waters of the United States must be avoided or minimized to the best extent possible. If impacts on jurisdictional wetlands are unavoidable, wetland delineation and a Section 404 permit are necessary. Unavoidable impacts on wetlands and waters of the United States will be mitigated in accordance with federal, state, and local statutes. Non-jurisdictional wetland impacts are not regulated by the ACOE, but may require state or local agency permitting.

Inventory

Within the border of Coeur d'Alene Lake, there are the following three priority wetland areas, per the Coeur d'Alene Lake Management Plan (IDEQ and Coeur d'Alene Tribe, 1995) and the NWI Map:

- Wolf Lodge Bay
- Beauty Bay
- Blue Creek Bay

Additional wetland areas along the corridor study area would be related to creeks, streams, and rivers. During the preliminary design of the improvement projects, these rivers, lakes, creeks, and wetlands will need to be analyzed for impacts; minimization of impacts to these wetlands is a key component in establishing road improvements throughout the study area.

Water Quality-Limited Waters

Data Sources

Under the Clean Water Act of 1972, states are required to develop a list of impaired waters. This list is referred to the Section 303(d) impaired waters inventory. Section 303(d) water bodies are waters that have been designated as impaired and are under special rules to limit discharges and activities to the impaired water bodies in order to not further degrade their conditions. A list of 303(d) water bodies was acquired from the EPA website for the Coeur d'Alene Lake Watershed. Listed water bodies within the corridor study area include Coeur d'Alene River North and South Forks, Thompson Lake, Turner Creek, Beauty Creek, Coeur d'Alene Lake, and Wolf Lodge Creek.

Role in Corridor Planning

The listed creeks, rivers, and lakes could be impacted by improvements within the study area, because there are water quality limited creeks, rivers, and lakes, any improvements would not degrade these waterways due to permitting required for roadway improvements.

Role in Environmental Documentation

Water quality is likely to play a significant role within the study area. Most of the roadway improvements will take place along Coeur d'Alene Lake and a few along creeks, streams, and the Coeur d'Alene River on the alternate routes that could impact the water quality in these areas. However, with any roadway improvement, runoff from all new impervious surfaces will be detained and treated to federal, state, and local standards before discharge.

Inventory

Seven water bodies previously listed in this section within the study area are listed under Section 303(d) of the Clean Water Act (CWA) as being water quality limited.

By enacting the federal Clean Water Act of 1977 (33 U.S.C. 1251) and subsequent revisions, the EPA was given authority to implement regulations for the control of pollutants and contaminants in water resources. The Idaho Department of Environmental Quality has jurisdiction over water quality, with the State's Surface Water Program. IDEQ monitors Idaho's waters and assesses water quality with data collected every two years. From this assessment, the Department creates an implementation plan, such as a Lake Management Plan for Lake Coeur d'Alene (Kootenai County Comprehensive Plan, draft 2008).

IDEQ is also responsible for watershed protection. Watersheds are upland sites, which carry natural and/or human made pollutants to the surrounding water systems such as lakes, streams, rivers. Pollutants can have diverse effects on the surrounding environment with potential damage to fish, wildlife, vegetation, and water quality. IDEQ provides field evaluation progress reports, which can assist in evaluating changes in land use. These field evaluations also assist in the environmental planning process and selection of Best Management Practices (BMPs) to address impacts and changes in use (Kootenai County Comprehensive Plan, draft 2008).

State Highway 97 Corridor Study
Wetlands

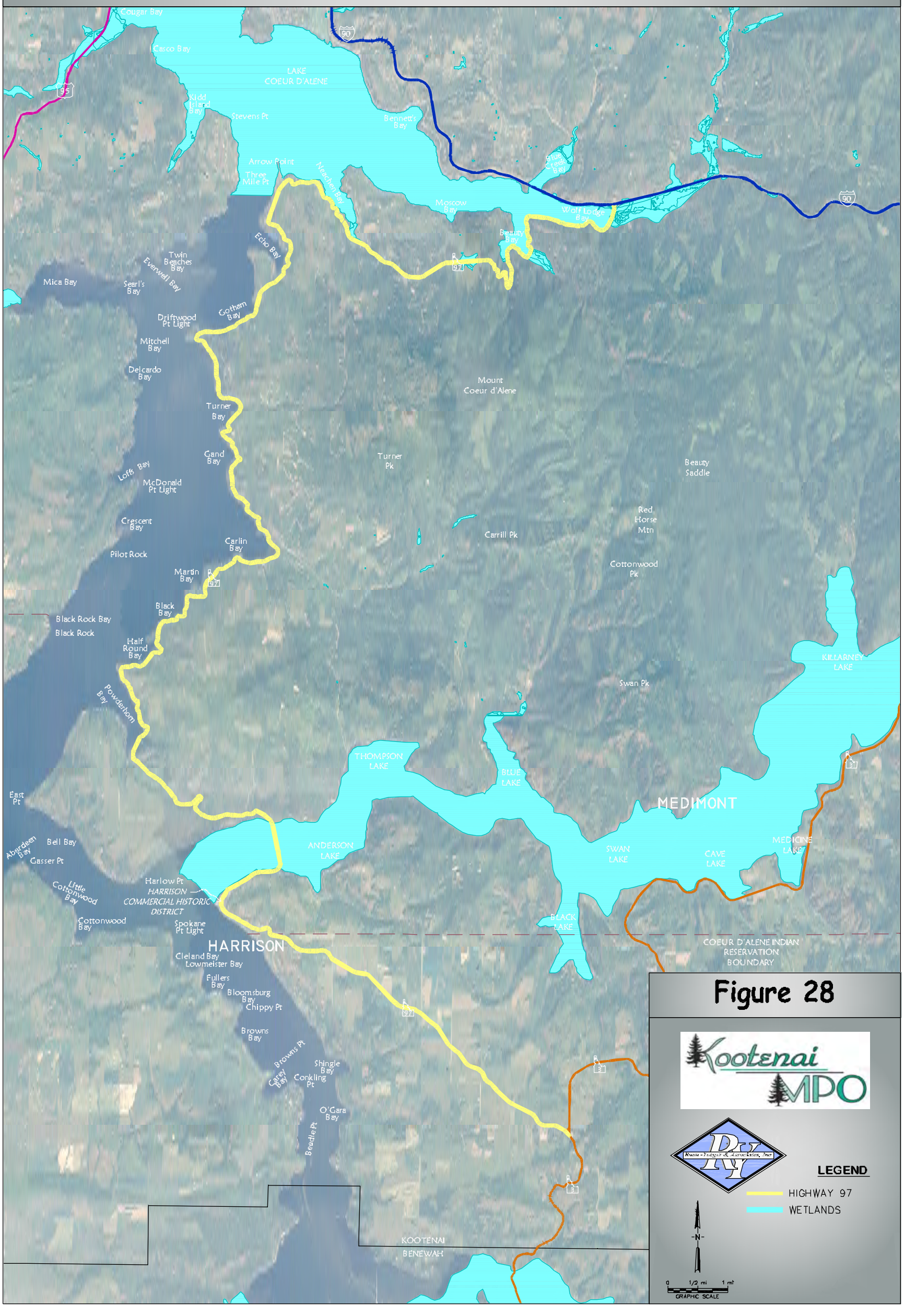

Figure 28

Kootenai MPO

DTA Kittelson & Associates, Inc.

LEGEND

HIGHWAY 97

WETLANDS

-N-

0 1/2 mi 1 mi

GRAPHIC SCALE

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Many of the major lakes, rivers, and streams in Kootenai County are impaired due to one or more human caused pollutants. To begin restoration of these waters, a scientific analyses has been performed by IDEQ to determine what pollutants are causing the impairment and how much of a reduction of those pollutants are necessary to recover the threatened or lost beneficial uses. This analysis is termed a "Total Daily Maximum Load" (TMDL) (Kootenai County Comprehensive Plan, draft 2008).

Much of the Coeur d'Alene River watershed is contaminated with heavy metal-laden sediment from a century of mining activities in the Silver Valley. These contaminated sediments were transported in the Coeur d'Alene River during peak flows, typically in late winter or early spring and during periodic flood events. An estimated 72 million metric tons of metal contaminated sediment flowed directly into Coeur d'Alene Lake and was deposited in lakebed sediments (Kootenai County Comprehensive Plan, draft 2008).

Contaminated sediments continue to be transported down into many of the Coeur d'Alene River Chain Lakes and Coeur d'Alene Lake during high-water events. A large amount of metal-laden sediment has been deposited in Coeur d'Alene Lake, where natural currents to the Spokane River outlet have deposited contaminated sediments over much of the lake.

The Coeur d'Alene Lake Management Plan (August 2002) under joint development by the State of Idaho and the Coeur d'Alene Tribe, acknowledges the presence of metals and contaminated lakebed sediments and the potential environmental hazard. The management plan aims to reduce and, where possible, to eliminate nutrient loading in the lake to prevent remobilization of metals chemically bonded to contaminated sediments in the lakebed from entering the water (Kootenai County Comprehensive Plan, draft 2008). IDEQ, Water Quality Specialist, June Bergquist states, a new Coeur d'Alene Lake Management Plan is being updated at this time to include additional scientific information.

Hazardous Waste/Materials

Data Sources

Mark Kalbaugh, IDEQ Hazardous Materials/Waste Specialist, was contacted regarding the study area. The following state and federal databases were reviewed for potential hazardous sites within the study area:

- Idaho State Leaking Underground Storage Tank (LUST) list.
- Idaho State Underground/Aboveground Storage Tank (UST/AST) list.
- United States Environmental Protection Agency (USEPA) Comprehensive Environment Response, Compensation, and Liability Information System (CERCLIS) list.
- USEPA Resource Conservation and Recovery Information System (RCRIS) list.

Role in Corridor Planning

Since hazardous materials/waste sites within the study area are minimal, roadway improvements are not likely to contain underground storage tanks or other related contaminants. The Coeur

d'Alene River Valley is mostly contaminated with heavy metal-laden sediment from a century of mining activities in the Silver Valley, these areas will be acknowledged during the preliminary design of roadway improvements, and any special considerations for removal or capping of contaminated sediments shall be implemented.

Role in Environmental Documentation

Environmental hazardous areas, such as Superfund sites and other contaminated areas should be avoided to the greatest extent possible during the project design phase to minimize costs and environmental impacts to these sites and areas.

Inventory

LUST/UST/Remediation
According to the IDEQ, State LUST/UST and remediation database, there are four facilities with LUSTs that fall within the study area. All four sites have been completely remediated. The IDEQ database includes detailed reports on the remediation efforts for these sites.

Threatened and Endangered Species

Data Sources

The Endangered Species Act (ESA) of 1973 directs federal agencies to ensure that agency actions authorized, funded, or carried out by them are not likely to jeopardize the existence of any threatened or endangered species, or result in the destruction or modification of critical habitat**.**

A threatened and endangered species list was obtained from United States Fish and Wildlife Service (USFWS) and from the Idaho Department of Fish and Game (IDFG) Conservation Data Center to gather information needed to address wildlife and wildlife habitat in the project area. The threatened and endangered species list contains listed, proposed, candidate, and other species of concern potentially present with the study area.

Role in Corridor Planning

Improvements to roadways and bridges may have an impact on wildlife, fish, and other habitat. In general, any roadway improvements shall avoid any wildlife sanctuaries and fish hatcheries.

Role in Environmental Documentation

As part of the alternatives analyses, in the environmental documentation, detailed information pertaining to threatened and endangered species and critical habitat will be collected. An updated species list will be required during the impact analysis to include any species that has not been listed since the environmental scan document. A Biological Assessment may be prepared for those species to determine whether the alternatives analyses are likely to negatively affect the survival of those species.

The presence of threatened and endangered species may be a critical factor in the preliminary design of improvements depending on the improvement area and the design should seek to minimize unavoidable impacts on these species and their habitat. The design considerations will

evaluate habitat quality with the intent of locating the improvement in area with the lowest quality of habitat, and away from critical habitats for threatened and endangered species, and species of concern.

Inventory

Within the study area, wildlife habitat and threatened or endangered species were reviewed. Whitetail deer (*Odocoileus virginianus*) are known to inhabit the area due to the rural setting.

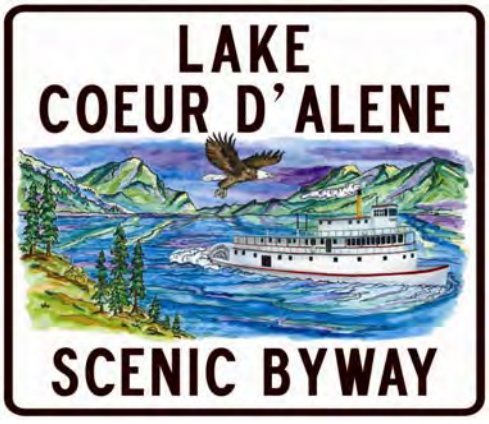
The wetlands in the Wolf Lodge Creek, Beauty Bay, Harrison Slough, and Thompson Lake areas provide for unique wildlife and wildlife habitat. Bald eagles (*Halieetus leucocephalus*) nest along the northern Coeur d'Alene Lake shore and forage in the fish and waterfowl resources of the bays.

According to the Threatened and Endangered Species list, there are no endangered species within the study area. Within the study area, Gray wolf (*Canis lupus*) was listed on the Experimental/Non-essential list, but according to the Idaho Department of Fish and Game, this species has been delisted as of March 28, 2008.

Threatened species of concern include Canada lynx (*Lynx Canadensis*), Bull trout (*Salvelinus confluentus*), Spalding's catchfly (*Silene spaldingii*), and the Water howellia (*Howellia aquatilis*). Bull trout species habitat is known to occur within the creeks, river, and lakes of the study area. Canada lynx are not within the study area and are usually found north at elevations of 4,000 feet and above. Canada Lynx feed off the snowshoe hare (*Lepus americanus*) (USFWS Federal Register, February 2008). The Yellow-billed Cuckoo is not known to be within the study area (Idaho Comprehensive Wildlife Conservation Strategy, 2006).

Scenic Byway

In response to the Intermodal Surface Transportation Efficiency Act of 1991, the Federal Highway Administration announced the interim policy for the National Scenic Byways Program. This interim policy set forth the criteria for the designation of roads as National Scenic Byways or all-American Roads based upon their scenic, historic, recreational, cultural, archaeological, and/or natural intrinsic qualities.



To be designated as a National Scenic Byway, a road must significantly meet criteria for at least one of the above six intrinsic qualities. The characteristics associated with the intrinsic qualities are those that are distinct and most representative of the region. The significance of the features contributing to the distinctive characteristics of the study area's intrinsic quality is recognized throughout the region. SH 97 has not been designated as a National Scenic Byway.

The State of Idaho has separate criteria to designate routes as State Scenic Byways and has established the Highway 97 Corridor as the "Lake Coeur d'Alene Scenic Byway", as such it serves two special functions: 1) to promote the scenic, historic, and backcountry byways of

Idaho, and 2) to provide funding for tourist amenities, kiosks, and signs that will assist the traveler.

To maintain this designation, special consideration needs to be given to the Scenic Byway Signage Policy. The purpose of this policy is to provide standard procedures and guidelines for fabrication, installation, and administration of multi-colored scenic byway signs and map boards that give specific information to the traveling public in regards to scenic byways within the state. A second requirement is to develop and implement a 14-point maintenance program.
Beginning at the junction of Interstate 90 and State Highway 97, the Scenic Byway route travels south along the eastern shoreline of Coeur d'Alene Lake and ends at the Highway 3 intersection, eight miles southeast of the City of Harrison. The highway is approximately 35.8 miles in length and is characterized as a two lane Major Collector roadway that serves local needs and provides an alternate route to SH 3.

In 1992, the Scenic Byway Sign Standards changed from "scenic route" to "scenic byway". The Idaho Transportation Department (ITD) entered into an agreement with the Idaho Department of Park and Recreation, Idaho Bureau of Land Management, United State Department of Agriculture Forest Service (both Northern and Intermountain Regions) to sign all scenic or historic byways the same as the current scenic route signs, with the exception of wording. This agreement applies to all National Forest scenic byways within the state as well. The purpose of this agreement was to comply with the Manual on Uniform Traffic Control Devices standard and maintain a uniform scenic byway sign program throughout the state. Any proposed signage for the SH 97 corridor will comply with these agreements.

ANTICIPATED IMPACTS OF SH 97 STUDY SEGMENTS

The SH 97 Corridor has been segmented by milepost to help identify specific locations for improvements and potential impacts. These segments are referred to as milepost segments and are typically further subdivided into 1/10 of a mile sections, this segmenting creates a number (i.e., 62.4 or 65.76) with one or two decimal points, which corresponds to the Idaho Transportation Department (ITD) route signage and the milepost highway location measurement system already in place. Listed below are areas noted by milepost section with notes regarding possible impacts from construction of the recommended improvements. Further environmental documentation would take place during preliminary and final design stages to identify, delineate, preserve, permit, and mitigate potential impacts. Typical segments with probable environmental impacts are listed below.

Milepost 60.6 – 60.8

According to the United States Geologic Survey (USGS) Topographic maps, there appears to be an unnamed perennial stream located just outside the improvement areas. The stream appears to be underground and does not appear to discharge into Coeur d'Alene Lake, this may or may not be impacted based on the improvements recommended for this area. There is a pond near the proposed tapering and acceleration lanes, which could have potential wetland habitat. Possibly, these wet areas could be non-jurisdictional, as they may not discharge into the waters of the United States (U.S). Further environmental evaluation needs to be completed, if improvement recommendations are acted upon in this area.

Milepost 63.2

The intersection improvements for South Gem Road may impact an unnamed perennial stream, which does not discharge into Coeur d'Alene Lake, per the USGS Topographic Map. These improvements may have impacts on wetlands, but a Section 404 permit may not be required because the stream does not discharge into waters of the U.S.

Mileposts 64.02 and 64.28

The USGS Topographic Map shows there is an unnamed perennial stream that discharges into Coeur d'Alene Lake. The perennial stream appears to be underground and is between two proposed improvements that may not impact the stream. If these improvements do impact the stream, a Section 404 ACOE permit would be required since the stream discharges into the water of the U.S. (Coeur d'Alene Lake).

Milepost 64.75 – 65.0

According to the USGS Topographic Map, there is one unnamed perennial stream, which discharges into Coeur d'Alene Lake. Based on the proposed improvements and the stream appearing to be underground, it is most likely this perennial stream would not be impacted.

Milepost 66.0

According to the USGS Topographic Map, there is an unnamed perennial stream that discharges into Coeur d'Alene Lake. This stream appears to be just north and underground of the proposed East Skyline Road intersection improvements. These improvements may have an impact on the perennial stream. If there is an impact to the stream, a Section 404 ACOE permit could be required.

Milepost 66 – 67

All the improvements along this one mile stretch could have impacts to an unnamed perennial stream that does discharge into Coeur d'Alene Lake. Although this stream is most likely underground, impacts could still occur. If the stream were impacted, a Section 404 ACOE permit would likely be required.

Milepost 68.0 – 68.4

Construction proposed within this milepost segment could cause stormwater runoff to be directed into the Coeur d'Alene Lake and potential permits may be required by Idaho Department of Lands (IDL). BMPs for erosion, sediment control, and stormwater management along with required Site Disturbance Plans and Storm Water Pollution Prevention Plans (SWPPPs) would identify the appropriate BMPs and their installation.

Milepost 70.0 – 70.05

Culvert replacement and improvements to the intersection of SH 97 at East Harlow Point Road and East Thompson Lake Road could require an ACOE Nationwide Permit under Section 404 of the ACOE permit process.

Mileposts 71.75, 72 – 73

Along the Powderhorn Ranch Road, an unnamed perennial stream (locally referred to as Powderhorn Creek) was located on the USGS Topographic Map. This stream is mostly underground and runs along SH 97 within this milepost. Improvements to this section could have impacts on the unnamed perennial stream, which discharges into Coeur d'Alene Lake. If this stream is impacted, a Section 404 ACOE permit may be required.

Milepost 73 – 74

An unnamed perennial stream discharges into the Powderhorn Bay. Recommended improvements could have potential impacts on this unnamed stream and on the lake from runoff from the proposed improvements. Any improvements along the lake will be handled through Best Management Practices and would comply with the Kootenai County Site Disturbance Ordinance.

Milepost 74 – 75

BMPs and compliance with the Kootenai County Site Disturbance Ordinance would control the erosion and any potential impacts on Coeur d'Alene Lake from recommended improvements in this segment. It is unlikely with these improvements that a Section 404 ACOE permit would be required.

Milepost 78.37 – 79

Potential impacts on Coeur d'Alene Lake and associated creeks within this milepost would most likely require a Section 404 ACOE permit and/or additional permitting required by IDL. If the improvements do not occur within the Ordinary High Water Mark (OHWM), then IDL permitting would not be likely.

Milepost 79 – 80

Potential impacts on Coeur d'Alene Lake and Carlin Creek, which is a perennial creek that discharges into Coeur d'Alene Lake, would most likely require a Section 404 ACOE permit or additional permitting required by IDL. If the improvements do not take place within the OHWM, then IDL permitting would not be required. Elk Road improvements and a pullout along Carlin Bay may have impacts on these resources.

Milepost 81.6 – 82.0

Improvements within this section could have impacts on Coeur d'Alene Lake. Most likely these impacts would be addressed in complying with the Kootenai County Site Disturbance Ordinance and BMPs established for this area.

Milepost 82 – 82.58

Turner Creek is a perennial creek, which discharges into Coeur d'Alene Lake and parallels Burma Road. The location of the creek at more than 200 feet from the recommended intersection improvements may preclude the need for ACOE or IDL permitting. If the pullout

improvements impact wetlands, a Section 404 ACOE permit would be necessary. If the pullout improvements are within the OHWM, then IDL permitting would also be required.

Milepost 84 – 85

All improvements within this section could have impacts on Coeur d'Alene Lake. These improvements could trigger Section 404 ACOE permits or IDL permits if improvement work is done within the OHWM.

Milepost 85.6

Pullout and intersection improvements could have impacts, if wetlands are identified in the area. Although the USGS Map does not identify perennial streams in this area, there is a potential to have impacts on wetlands due to the proximity to Echo Bay. Most likely a Section 404 ACOE permit would be required.

Mileposts 89 – 90, 90 – 91, and 91 – 92

According to the USGS Topographic Map, Squaw Creek is considered a perennial creek, which discharges into Coeur d'Alene Lake. With the proposed improvements, Squaw Creek could be impacted and a Section 404 ACOE permit would then be required. Probable wetlands can be expected along SH 97, the Eddyville Road, Arnies Road, Burma Road, and Caribou Ridge Road intersections. Other recommended improvements could also impact wetlands areas as well, which would require a 404 permit from ACOE.

Milepost 91.3 – 91.7

These improvements to this section would likely impact wetlands along SH 97. A Section 404 permit would most likely be required from the ACOE to address wetlands and wetland impacts in this area.

Milepost 92.6 – 92.8

Improvements to this section would impact an unnamed perennial stream that discharges into Coeur d'Alene Lake near Beauty Bay. Rock removal may impact this perennial stream and the potential for Section 404 ACOE permitting exists.

Milepost 93.8 – 94

The bridge, pullout, and intersection improvements along SH 97 and Beauty Creek Road would most likely impact wetlands and potential dredging/filling into Coeur d'Alene Lake may be required. These activities could require both a Section 404 ACOE permit and permitting from IDL, if the proposed improvements are below the OHWM and outside of the footprint of the existing roadway features. During the design stages for these improvements, detailed environmental documentation would take place to further understand and quantify the appropriate impacts.

Milepost 94.5 – 94.6

Within this section, excavating and widening of the road could cause excavated materials and loosened rocks to inadvertently enter into the lake. Within the area of improvements, a rockfall ditch and possibly netting or other methods will be utilized to keep this debris from going into the lake. A permit to discharge to, or work within, the waters of Lake Coeur d'Alene would be required from the Idaho Department of Lands.

Milepost 95.5 – 95.8

Potential impacts on Coeur d'Alene Lake could take place while drilling and blasting the hillside. To the greatest extent possible, impacts to the lake will be minimized. A complete construction methodology, impact analysis, and impact reduction plan would be developed and implemented to reduce and minimize surface water effects. A permit to discharge to, or work within, the waters of Lake Coeur d'Alene would be required from the Idaho Department of Lands.

Milepost 95.9 – 96

Improvements to the existing pullout could have potential impacts on wetlands, if present, and a Section 404 ACOE permit would then likely be required. Guardrail installation could potentially impact the Wolf Lodge Creek and Bay areas. BMPs would be installed to minimize sedimentation and erosion effects that could impact the surface waters in this area.

ANTICIPATED IMPACTS OF ALTERNATE ROUTES IMPROVEMENTS

Alternate routes to SH 97 were considered to relieve some traffic/congestion on SH 97. Within each of the alternate routes (Burma, Gozzer, Gotham Bay, Carlin Bay, and Asbury/East Thompson Lake Roads), there are suggested improvements that may potentially impact the environment. During the design stage for each alternate route improvement, additional environmental documents may be required to address any additional impacts.

Burma Road

Turner Creek flows along the western and southern portions of Burma Road. Turner Creek is a perennial creek and discharges into Coeur d'Alene Lake, according to the USGS Topographic Map. The improvements suggested at Milepost 0.0 – 1.3, which includes Carlin Bay Road, could require a Section 404 ACOE permit. Squaw Creek may also be impacted by the improvements proposed for this alternate route. The proposed improvements could require some environmental mitigation and additional environmental documentation would be required during the design stage of this section.

Gozzer Road

Improvements to portions of Gozzer Road have been completed due to the construction of the Gozzer Ranch Golf Community. The proposed improvements may have some impact on local land owners due to construction activities.

Gotham Bay Road

Improvements to lower (western) Gotham Bay Road would be extensive in order to maintain a standard roadway width and section. Probable culvert replacements and possible creek

realignments would be expected. These improvements would require a Section 404 ACOE permitting and possible wetland and creek mitigations.

Carlin Bay Road

Improvements along the Carlin Bay Road and at the Carlin Bay Road/Burma Road intersection would likely impact Turner Creek, which is a perennial creek that discharges into Coeur d'Alene Lake. Most likely a Section 404 ACOE permit would be required. Further environmental documentation would be completed during the preliminary and final design stages of the proposed improvements.

Asbury Road to Asbury Grade and East Thompson Lake Road to Top of Asbury Grade

Improvements along South Asbury Road and East Thompson Lake Road could potentially impact unnamed tributary creeks along the roadways. These creeks ultimately discharge into Coeur d'Alene Lake. Most likely a Section 404 ACOE permit would be required for the proposed improvements. Further, environmental documentation would be completed during the preliminary and final design stages of the proposed improvements.

FERRY ALTERNATIVE

A Ferry Alternative was considered as an alternate mode choice for SH 97 and ultimately State Highway 3. The ferry alternative may reduce vehicular trips on the east side of Lake Coeur d'Alene on SH 97, reduce vehicle miles traveled, and could reduce commute times for residents and users of the southern end of SH 97 and State Highway 3. The Coeur d'Alene Lake Ferry Alternative is proposed to have two terminals: Ferry Terminal East would be in the Harrison area, which would directly access SH 97. The Ferry Terminal West would be in the 16:1 Bay or Sun Up Bay areas, which would have access to US 95. There would be one ferry vessel to provide service for connections between SH 97 and US 95, the ferry could provide connectivity between the Harrison, St. Maries, and Silver Valley communities of Idaho and the cities of Coeur d'Alene, Idaho and Spokane, Washington. Improvements would be needed to all access roads from either SH 97 or US 95 to the terminal locations. A separate environmental document would be prepared during the design stage to address environmental concerns for the ferry operations, terminal locations, and along the ferry terminal access route roadways.

Environmental documentation references are included in the appendices of this report.

XI. IMPLEMENTATION AND FUNDING

Implementation of the State Highway 97 Corridor Study/Route Development Plan will be on a long-term basis, as either new development constructs traffic mitigation projects, or as public funds become available. Due to increasing and competing needs for project funding and diminishing public funds, this plan offers another approach to supplement traditional funding sources. As other funding sources may become available, opportunistic strategies will be developed to by the agencies to seek sources for funds. Development pressures have increased dramatically over the past years and while the current economy may be a bump in the road, development of recreational properties (especially destination type residential resorts in highly desirable areas) are likely to continue to grow.

In any case, timing is the usual determinant regarding whether development occurs at an unprecedented rate or slows to reflect current market conditions. This plan provides a list of projects, which can be implemented regardless of how large a planned development is, improvements can be tied to project phasing, or can be assessed to individual homes and businesses as they develop within the study area. Regardless, roadway improvements always becomes the central core of development issues and are most easily implemented as a condition of approval or as part of the project.

Improvement projects have been broken down into small projects over each milepost of State Highway 97 and the Corridor Alternate Routes. By dividing projects into smaller packages, it should be easier to get small projects constructed or bundled together to provide for local match funds to leverage public funds. Ultimately, more roadway improvements may have to be funded by the private sector, since the availability of public funds is competitive or have been eliminated in favor of larger projects.

It is intended that the transportation improvements will be funded through a combination of local agency funding, ITD funding in conjunction with State facility improvements, and by the private sector providing infrastructure improvements as a direct result of development or project related impacts. The local agencies each have an annual Capital Improvement and Maintenance Program; however, additional funding for capacity improvements will be needed to fully implement the program.

The SH 97 Corridor Study identifies *planning level cost estimates* for each of the improvements identified and evaluated. The planning level cost estimates were based on the 2007 ITD construction costs and include preliminary costs of any necessary highway improvements, connecting roadways, bicycle/pedestrian system improvements, and traffic control devices. Future funding of improvements does not include cost escalation, right of way, or contingencies and should be updated prior to seeking any public funding.

Cost estimates for providing a ferry alternative to the SH 97 improvement alternatives requires additional funding support for both capital and operating systems. By providing a public transit alternative, other funding sources such as the Federal Transit Administration could be used to fund system improvements. However, these funds are also competitive or require an earmark at the federal level.

For new trips in the transportation system, the proportionate cost share of the improvements within reasonable proximity of the development (as determined by the agencies and project trip distribution) should be assessed back to private development as traffic impact mitigation in addition to frontage improvements. The scale of proportionality would be a function of the scope and extents of the Traffic Impact Study as determined by the agencies. The capacity of the highway for additional dwelling units or equivalents is the controlling factor in meeting Level of Service thresholds.

Ultimately, the total cost of improvements in the SH 97 Corridor is greater than can be funded from development impact fees or what could be competitively secured through public funding. The roadway improvements as identified at $32,627,350 for the SH 97 Corridor and $15,276,500 for the Alternate Routes (excluding the ferry alternative costs) reflect the level of improvements that would upgrade the existing conditions of the roadways, but not significantly increase capacity in the Corridor. Given the cost of improvements and the available roadway capacity in the corridor, fees in the amount of $21,290 would need to be collected for each single-family dwelling unit equivalent up to 2,250 new dwelling units. This cost would be prohibitive for private development and would not likely be collected.

In order to secure a continued funding stream for roadway improvements, the projects would need to be competitive in terms of priority for safety and traffic issues for both State and Federal funds. These improvements would compete for funds for Idaho Transportation Department District 1 projects as well as Alternate Route Improvements for East Side Highway District funds. Since the roadway is a relatively low traffic volume, and is not a major state highway serving interstate traffic or within an urban area, projects seeking funding would not likely be competitive with other higher priority projects. The fact that the SH 97 accident rate is high does provide some leverage in obtaining funds and should be pursued.

As the area continues to grow, updates of the Plan will be necessary to reflect revised existing and future conditions and to be flexible to adjust to changes in land use development patterns. At a minimum, the Plan should be updated at five years intervals to be consistent with current local trends. This update will also allow for changes in regional priorities and allow communities to focus on current needs and deficiencies.