CHAPTER 2: PREFERRED ACTION AND ALTERNATIVES

Storedahl has voluntarily prepared an HCP and submitted applications for ITPs to NOAA Fisheries and the USFWS that would address the expansion of mining and continued processing of sand and gravel imported from off-site as well as aggregate, sand and gravel mined at its Daybreak site located in Clark County, Washington. Two basic types of alternatives were analyzed, "no action" alternatives and action alternatives. Within this framework, six alternatives were considered.

Under the "no-action" alternative, ITPs would not be issued by NOAA Fisheries or the USFWS. Within the "no-action" alternative, three different potential outcomes were considered:

No-Action Alternative A-1: Partitioning of the site into 14 20-acre rural residential/agricultural tracts with no mining and without issuance of an ITP and avoidance of take, however, processing of sand and gravel would continue until imported material was no longer available;

No-Action Alternative A-1a: Mining so as to Avoid Take Outcome and Rural Residential/Agricultural Development: Mining would likely be limited to the 58-acre portion of the property currently zoned for mining with subsequent partitioning and sale of the mined and unmined property for low-density rural residential development and agricultural activities; and.

No-Action Alternative A-2: Expanded mining on approximately 178 acres, including excavation on approximately 114 acres, without issuance of an ITP and avoiding take.

Under the "action" alternatives considered, ITPs would be issued by NOAA Fisheries and the USFWS. Three different potential outcomes were considered:

Preferred Action Alternative B: Expanded mining with excavation on approximately 101 acres and backfilling and reconfiguring approximately 26 acres of the existing treatment ponds as a result of implementation of the final HCP and issuance of an ITP and the property would be gifted to a not-for-profit conservation organization with a $1 million endowment for management of the property after the term of the ITP; and

Action Alternative C: Expanded mining with excavation on approximately 105 acres following a mining plan with conservation measures developed in consultation with the Services with an ITP.

Action Alternative D: This alternative involves expanded mining under the initial HCP developed in conjunction with the mining plan submitted to Clark County for site plan approval. Sixteen conservation measures would guide the mining and reclamation plans. The property would not be gifted to a public or not-for-profit conservation organization, but also would not be developed for residential, commercial or industrial uses post reclamation.

Due to a number of considerations, a potential action outcome and a no-action outcome were not considered for more detailed analysis, thus focusing the environmental analysis on two no-action outcomes and two action alternatives. The alternative action outcome not analyzed is Alternative D, the project described in the September 1999 Draft HCP. The potential no-action outcome A-1a of mining on the 58-acres appropriately zoned and partitioning the property without an HCP/ITP was not considered for detailed environmental analysis in the DEIS or this FEIS. These alternative outcomes are summarized and an explanation of why they were not analyzed in detail is provided in Sections 2.7.

The full range of reasonable alternatives selected for detailed analysis therefore include the following:

No-Action Alternative A-1: Partitioning of the site into 14 20-acre rural residential/agricultural tracts with no mining, but with processing until imported material is no longer available, and without issuance of an ITP and avoiding take;

No-Action Alternative A-2: Expanded mining on approximately 178 acres, including excavation on approximately 114 acres, without issuance of an ITP and avoiding take;

Preferred Action Alternative B: Expanded mining with excavation on approximately 101 acres and backfilling and reconfiguring approximately 26 acres of the existing treatment ponds as a result of implementation of the final HCP and issuance of an ITP; and

Action Alternative C: Expanded mining with excavation on approximately 105 acres following a mining plan with conservation measures developed in consultation with the Services with an ITP.

2.1 No Action Alternative Outcome A1: No Issuance of the ITP and Develop/Use Site Under Current Zoning--Segregate 20 Acre Rural Residential/Agricultural Tracts

Development of Outcome A-1 would result in the partitioning of 20-acre tracts developed for low-density rural residential and agricultural uses as governed by the land-use regulations assigned to the site by Clark County. The *Clark County 20 Year Comprehensive Growth Management Plan* designates the property as agricultural lands. Generally, agricultural lands are so designated because they are believed to have the growing capacity, productivity, soil composition, and surrounding land use to have long-term commercial significance for agriculture and associated resource production. The county implements this zoning designation through the "Agricultural-20" base zone. Permitted uses include a variety of natural-resource-based activities, such as silviculture and agricultural activities, including crop production, feed lot operations, small sawmills with log storage, sorting and chipping facilities, and single-family residences.

The minimum lot size in the Clark County Agriculture 20 zoning district is 20 acres. In Washington State, the applicable local government must review and approve the division of land into parcels smaller than 5 acres. Local governments are authorized to raise that threshold if they

deem it appropriate. Clark County has established a minimum lot size of 20 acres for regulating subdivisions of land. Because the property would be segregated into parcels of 20 or more acres and placed on the market, there would be no public agency review of the partitioning under the Clark County subdivision regulations. However, some subsequent uses and activities would require additional local and state permits, approvals, and reviews (for instance, building permits).

2.1.1 Objectives and Description

Under this "no-action" outcome, there would be no mining expansion and the project site would be developed for uses consistent with the underlying county zoning. Mineral resource processing would continue as it does now (intermittently throughout the year), with sand and gravel imported from off-site, as long as suitable material was available, and then the equipment and material would be removed and the site reclaimed. The property would be partitioned into 20-acre tracts without county regulatory review and sold and subsequently developed as low-density rural residences and small farms. Unlike the preferred alternative, water rights would not be granted to the State for use as instream flows in the basin. Instead, water rights covering the site would either be sold to a third party within the basin, and owners of partitioned land would be eligible under Washington law to drill wells and use up to 5,000 gallons per day for domestic uses, or the applicable water rights would, by default, be allocated on a pro rata basis to the purchasers of the land for continued agricultural irrigation use. The ITP would not be issued and the conservation program and corresponding habitat conservation measures described in the final HCP would not be implemented under this outcome. Further, a conservation easement would not be conveyed or recorded that would otherwise prevent residential and commercial development and uses, and the property would not be conveyed in fee to not-for-profit conservation and/or park organizations.

2.1.2 Schedule and Life Span

Under this no-action alternative, the vast majority of the subject property would likely be placed on the real estate market as soon as the administrative requirements to segregate the 20-acre tracts could be completed. For that portion of the property that has been devoted to mineral resource processing, the importation and processing of aggregate from off-site sources would continue as long as suitable material was available and then the equipment and material would be removed and the site reclaimed consistent with an updated surface mining reclamation plan and the processing area would be returned to a condition similar to the remainder of the property. Upon completion of the reclamation plan, those areas would also be made available for sale.

2.1.3 Summary of Impacts and Mitigation Measures

In the short term, while processing continues, there would be continued discharge of storm and process water (when wet processing) to the existing ponds as regulated by the NPDES permit

covering these activities. The use of additives to treat process water would likely result in continued discharge concentrations well below the permit limit. Traffic, noise and air quality would be similar to the existing operations.

In the long term, if the land is partitioned for development, then environmental impacts would be limited to those described above. Partitioning of the property into 20-acre tracts, with subsequent development as rural residences and small farms would also have little impact on the built human environment. This type of development pattern would be consistent with nearby uses and the current zoning of the area. It would not require extension of any utilities such as sanitary or storm sewers, or potable water. The traffic generated would not result in any road or intersection operating outside acceptable levels of service, and existing electrical facilities could handle the additional demand.

Under this no-action outcome, there would be little opportunity for regulatory agencies to direct the development or implementation of habitat enhancement for the entire 300 acres. There is, however, an opportunity for a programmatic habitat conservation plan to be prepared to guide development of the site and surrounding area. At the present time, Clark County is working with the Lower Columbia Fish Recovery Board in its endeavors to complete a "Recovery Plan" for Environmentally Significant Unit (ESU) 4. Clark County anticipates tailoring their land use regulations to the goals of the "Recovery Plan" and possibly negotiating with the Services for a county- wide HCP/ITP (Rupley, 2002). In any event, the projected schedule for completion of these activities is 3 to 5 years out, likely being completed after the property is developed.

Several potentially adverse effects on fish and wildlife habitat could result from the alternative development plan. Stormwater runoff would likely increase because of the increased impervious surfaces of structures and driveways attendant to development. Livestock manure accumulation in the pastures and the presence of residential septic systems may have some negative effect on both groundwater and surface water quality by contributing an incremental increase in nitrates, a water coincident contaminant. The landscape would likely continue to exhibit little in the way of topographic relief and wetland oxbow ponds or riparian and valley bottom forests would likely not be developed. Vegetation would continue to be dominated by pasture grasses, with the addition of fences, lawns and other ornamental shrubs and other vegetation around houses and agricultural outbuildings. Pesticides, herbicides, and fertilizers would likely be used to maintain pastures, crops, and ornamental vegetation. Such activities are common in a rural residential/agricultural area, and because they would be taking place well away from the East Fork Lewis River, they would not be likely to result in significant amounts of chemicals or fecal matter directly entering the river or Dean Creek, resulting in direct harm to any of the covered species. However, the potential accumulation of chemicals and manure could enter stormwater runoff draining to the two streams and indirectly contribute to diminished water quality and fish habitat in the basin. Development of these tracts would most likely remove the project site from potential inclusion in the open space/greenbelt system along the East Fork Lewis River being pursued by Clark County, or at least would increase the overall transaction costs, expense and difficulty of acquiring the site. Generally, this alternative would not be likely to stimulate "properly functioning conditions," in the riparian and floodplain areas that would otherwise

supports fish and wildlife habitat. As an example, improvements and development into 20-acre parcels would be more likely to result in engineered structures under the direction of applicable regulatory programs, such as roadways and driveways, and hardened/armored banks to avoid the threat of flooding and/or avulsion. In summary, most of the opportunities for large-scale significant improvement in the habitat value of the site as a whole would be eliminated. Further, once subdivision and residential development occurred, the site's current limited habitat value would probably decline even more and would be extended in perpetuity.

2.1.4 Regulatory Requirements and Processes

Clark County does not regulate the partitioning of property if the resulting tracts are 20 acres or larger. State and federal agencies typically do not review the partition of land. Therefore, there would be no regulatory review of this action by local, state or federal agencies. Local agencies would, however, regulate building activities such as home construction and septic design and construction. Because of the rural nature of the project site and surrounding area and the county's planning efforts to continue that type of land use, public water and sewerage facilities are not now available and would likely remain unavailable into the foreseeable future. Consequently, future residential and agricultural development under this no-action outcome would likely use on-site private or local community wells for water supply and on-site wastewater disposal systems. The regulatory purview of public agencies would be limited to individual on-site utility systems, well construction standards for individual domestic water supplies, transfer of existing water rights, private road development, and applicable building permits, coupled with individual building plan review through local habitat conservation and wetlands protection ordinances.

2.2 No-Action Alternative Outcome A2: Mining and Reclamation and Avoid Take Without Implementation of HCP/ITP

2.2.1 Objectives and Description

This alternative outcome would include expanded mining operations at the Daybreak site similar to Alternative B, except that it would include a small extraction area southwest of Bennett Road whereas Alternative B does not include extraction in this area. For this Alternative, as well as for Alternatives B and C, aggregate extraction would occur in 7 phases (similar to Alternative C, Figure 2-1) beginning in the Phase 1A area and progressing into the Phase 1B area and then into the Phase 1C area. Because of the small size of these sub-areas, an excavator would load aggregate material directly into haul trucks that would transport the material to the existing processing facility at the Daybreak site.

Once the subphases of Phase 1 are completed, a conveyor would be extended from the terminus of its present location, north of Pond 2 under NE 61st Avenue, to a point near the approximate middle of the Phase 3 area. A trench or tunnel would then be extended from the east to the west side under NE 61st to allow the conveyor to be routed under NE 61st through a culvert.

On the east side of NE 61st Avenue, the trench would be continued to the east to approximately the point in Phase 3 where the eastern most reclamation island would be located and the conveyor would be extended from the culvert to the end of the trench. At the end of the conveyor, a feed hopper would be placed inside the trench to receive materials from the Phase 2 and 3 areas.

When excavation activities begin in the Phase 2A area, a front-end loader would be used to extract the resource material from the surface of the area near the northwest corner of the area and excavate down to just above the water table in that area. The material would be loaded on to haul trucks, which would transport it to the feed hopper located in the Phase 3 area. Once the front-end loader has reached the floor of the first lift (just above the water table), it would then proceed to excavate material in a southerly direction always working from the floor of the pit.

After the material has been extracted down to just above the water table, an excavator would be placed down onto the floor of the pit and begin excavating the material below the water table. The excavating would begin in the southeast corner of the Phase 2A area and work back northwest toward the hopper in the Phase 3 area. Material would be extracted from below the water table and temporarily piled on the floor of the pit to allow water to drain back into the excavated area. A front-end loader would then scoop the material and load it into haul trucks that would transport the material to the conveyor feed hopper in the Phase 3 area.

Because of the small size of Phase 2B and 2C areas, the resource material from those areas may only be extracted down as far as an excavator can reach from existing grade, which is approximately 30 feet. Prior to reaching the water table, the material would be placed directly into trucks, which would transport the material to the conveyor feed hopper in the Phase 3 area. When excavation occurs below the water table, the resource material may temporarily be stockpiled along side the pit to allow drainage of water back into the pit after which the material would be loaded into the haul trucks.

In the Phase 3 area, a front-end loader would be used to begin excavation of resource material from the surface level in the near vicinity of the conveyor feed hopper. The front-end loader would scoop material and haul it directly to the feed hopper itself without the use of haul trucks. Once a large enough area has been excavated down to just above the water table level, the front-end loader would proceed, operating from the floor of the pit, to excavate material out in all directions from the hopper toward the boundary of the Phase 3 area. After the first lift of resource material has been excavated with the front-end loader, the excavator would be placed down on the floor of the pit and begin to extract material from below the water table in the same manner described for the Phase 2A area. However, instead of the front-end loader scooping up the drained resource material and putting it into haul trucks, it would scoop up the material and transport it directly to the conveyor feed hopper. As the excavation below the water table progresses from the east end to the west end of Phase 3, the conveyor would be retracted back to the west. Once the Phase 3 area has been fully excavated, the conveyor feed hopper would be moved to the west side of NE 61st Avenue and extended to the Phase 4 area.

Excavation in the Phase 4, 5, 6 and 7 areas will proceed as described above for the Phase 3 area, except for excavation activities in and adjacent to the ¼-acre wetland in Phase 6. Excavation in and around the wetland would utilize a suite of techniques to avoid the placement of dredge or fill material in that wetland. Briefly, these would include re-flagging the wetland in the field to demarcate its boundary. Hydric topsoil in the delineated wetland would be removed with a tracked excavator and a dump truck to transport the topsoil material to a secure storage area outside the delineated wetland for future use in the reclamation/enhancement activities. The limited adjacent topsoil would be removed with a pan scraper and/or bulldozer, and also stockpiled in a secure area outside the delineated wetlands and buffers for future use in the reclamation/enhancement activities. Aggregate excavation will proceed in one or more lifts to a level approximately two feet above the water table. Excavation below the water table would employ a tracked excavator or a dragline and would extend to the limit of reach of the equipment or the extent of the aggregate (approximately 30 feet below the water table). Excavated sand and gravel would be stockpiled at least 25 feet downslope of the delineated wetland where it will be dewatered. If it appears any drainage will be towards the wetland(s), silt fences and, as appropriate, straw bales will be placed to prevent sediments from flowing back to the excavated or unexcavated portions of the wetland. During excavation, incidental fallback of the sand and gravel into the excavated wetland should be removed with successive scoops of the excavation equipment. The conveyor and conveyor feed hopper will be located in a position best situated for each area prior to excavation occurring in the individual areas.

Design and implementation of mining activities and concurrent reclamation included in this alternative would be limited to the subject property and there would be no off-site activities. A mining and reclamation plan would be prepared to meet the standards of the Washington Surface Mining Act, the requirements of the NPDES permit issued by the Washington Department of Ecology, and various land development standards of Clark County. No federal permits or approvals would likely be required. This alternative would also include mitigation measures required to offset adverse environmental effects identified in a Washington State Environmental Policy Act environmental impact statement and for activities not otherwise specifically regulated. Take of listed species would be avoided.

Processing would continue as it does now. The permanent structures including the support equipment, classifier, process water treatment equipment, office, scales and shop would remain on site. The portable screening and crushing plant would be periodically moved to the site on an as needed basis to replenish product inventory.

2.2.2 Schedule and Life Span

Similar to the Preferred Alternative discussed below, the expected life span of this no-action alternative outcome would depend on market demand for aggregate resources and the rate at which different areas of the site are mined and subsequently reclaimed. Based on current and projected demand for the aggregate materials, the expected life of this alternative would range from 10 to 15 years. Seven sequential mining phases would likely occur, with projected life

spans of one to several years each. The time frame of mining in each area would be determined by the processing capacity of the plant and the market demand.

2.2.3 Summary of Impacts and Mitigation Measures

Under this alternative outcome, agricultural use of the project site, which is currently under hay and corn production, would be sequentially eliminated as topsoil in mining areas is removed and reserved for use in reclamation plantings and for use in berm construction. As the need for irrigation water is reduced, the excess water rights attendant to the property would be available for lease or sale. Excavated gravel would be processed and delivered to ultimate points of use (e.g., construction sites) or delivered in raw form to other users or processors.

Reclamation plantings would be performed sequentially as each phase is completed, thereby limiting erosion. Temporary berms constructed as visual and noise buffers would be seeded to control soil erosion. Permanent contoured buffers would be seeded and planted as specified in the initial site plan application submitted to Clark County or as modified as a result of the SEPA process.

The risk of avulsion of the East Fork Lewis River into the existing ponds under this alternative is the same as for all others. However, observation and monitoring of the rate of channel migration during expanded mining would provide time for the implementation of preemptive measures to protect against an avulsion threat, reducing the risk of avulsion and the potential for damage to improved property. Structured responses for protection against potential avulsion would extend through the life of the project, but would be at the discretion and responsibility of subsequent landowners following partitioning and sale. Implementation of this alternative outcome would lead to the creation of shallow wetlands and open-water ponds in the expanded mining area. All of the expanded mining/open water areas would be located outside of the channel migration zone, as defined by pre-settlement (mid-1800s to present) river movements - approximately 140 years of historical observations - to reduce the risk of avulsion into the expanded mining area.

Impacts of the proposed action on groundwater quality would be insignificant. Therefore, no mitigation measures for groundwater quality are proposed.

Wet processing, meaning the use of water to segregate and clean sand and gravel generates turbid process or wash water. Primary settling and recirculation of process wash water has been the historic method of handling process water at the Daybreak site. The treatment system most recently used includes discharge of storm and process water to a settling channel to allow removal of sand, followed by the introduction of coagulants and flocculants to accelerate the settling of finer grained silt and clay in the existing ponds. As the water flows through the pond sequence, the turbidity dissipates. Test data from August 1999 recorded turbidity levels at the outfall from 5.8 to 11.3 nephelometric turbidity units (NTU—see glossary for definition) (Figure 3-15 and the discussion in Section 3.4.3.1); since January 2000 the discharge levels have been generally below 10. This field-testing and refinement of the treatment system has continued and is expected to continue to minimize the turbidity in and discharge from the ponds, until and

unless a closed-loop treatment system is installed at the site. Decreased turbidity in the ponds will increase the transparency of the water and may result in higher dissolved oxygen concentrations in the ponds.

Increased water transparency in the existing ponds could increase the photosynthesis/respiration quotient and reduce phosphorus levels in the water. Reduced phosphorous concentrations would likely decrease algal growth during the summer. The expected result would be a net increase in dissolved oxygen levels in the ponds and their outflow. Recent monitoring at the Pond 5 outfall supports this hypothesis. Since the implementation of the process water treatment field-testing, the dissolved oxygen levels at the outfall have consistently been above 8 mg/L, the minimum level for streams classified as Class A waters by Washington State. The clarification system has reduced the turbidity in the ponds. The turbidity of water delivered to Dean Creek and, subsequently to the East Fork Lewis River via Dean Creek, would be expected to continue to be well below the permitted level of 50 NTU, as well as the HCP goal of 25 NTU.

Various methods to control and minimize fugitive dust emissions from the gravel processing operations would continue to be implemented. Operations at the plant are within emission limits and comply with applicable regulations using best available control technology.

Of the three small wetlands located in the potential mining areas, gravel mining would be expected to result in the loss of one small wetland of approximately ¼ acre. This wetland is located in an existing agricultural field and has been subject to cultivation practices for many years. The planned creation of approximately 25 acres of emergent wetland habitat and additional riparian and forested wetland area would mitigate for impacts to this wetland caused by mining and would significantly exceed required mitigation ratios for wetland replacement. Please refer to Section 3.6.8 and HCP Sections 3.2.3.2 and 4.4.5 for additional detail regarding functions of the wetlands to be excavated and created.

Section 3.3 of this document and Sections 3.3.2.2 and 6.2.6 of the HCP and HCP Technical Appendix C and Addendum 1 provide an extensive analysis of the potential for avulsion at the site. In the unlikely event that the East Fork Lewis River should avulse through the existing Daybreak Mine ponds, the most likely path, up to 1,582 feet of potential mainstem portions of the East Fork between the Mile 9 pond and the Ridgefield site, could be abandoned. Approximately 8 acres of existing shallow, pool-riffle habitat would be replaced by approximately 114 acres of complex, deep pool habitat. This mainstem portion of the East Fork Lewis River comprises potential salmon spawning habitat. Incorporating wetland habitats into the mine reclamation plan would increase the likelihood that captured ponds would function as effective off-channel habitat should they become connected to the river by avulsion (Norman 1998). If an avulsion were to occur, the effects on salmonids would differ by species and lifestage. Upstream migrating adult salmon would benefit from the creation of more frequent holding pools. Further, the amount of low velocity habitat available to over-wintering juvenile salmonids would increase. However, the downstream migration speed of the juveniles could be reduced, and the amount of deep, low-velocity habitat typically favored by predators could increase. The most likely period for an avulsion would be during high flows, for example,

November through February, when late spawning Chinook and coho redds containing eggs or alevins may be subject to scour. They could also be affected by short term fine sediment deposition from the river as well as the avulsion. However, analyses show that fine-grained sediments from the ponds picked up in the water column would remain suspended as it flows past the spawning gravels immediately downstream of the site (see final HCP, Technical Appendix C).

Continued processing and expanded mining would be roughly consistent with past and present land uses on portions of the subject property. The potential off-site effects of continued processing and surface mining on the development of rural estates near the site include noise from the excavation, earth moving and processing equipment, dust, and visual changes to the area. Residences north of the East Fork Lewis River would experience some noise impacts from the expanded excavation that would require mitigation measures. Various mitigation measures are proposed to offset the impacts on the human environment in the vicinity of the mine. Sound attenuation berms and/or other structures, such as diaphragm fences, would be constructed in appropriate locations to absorb or deflect noise to keep impacts within regulatory thresholds of the Washington Administrative Code and Clark County environmental code guidelines. In other areas, berms would be constructed and revegetated to screen the views of active mining from adjacent parcels. New lighting is not proposed for the excavation equipment or conveyor system, so additional sources of illumination would not have any impacts regarding light and glare. Existing lamps would be hooded. However, visibility of the mining activity from higher elevation properties adjacent to the site cannot be totally avoided.

2.2.4 Regulatory Requirements and Processes

As briefly mentioned above, Alternative A-2 must satisfy applicable regulations and requirements administered by Washington State and Clark County. Expected permits and submittals are listed below with the responsible agency shown in parentheses:

- Site Plan Approval (Clark County Zoning Ordinance 18.402A.030).
- Rezone to Surface Mining Combining District (Clark County Zoning Ordinance Title 18).
- Habitat Conservation Approval (Clark County Habitat Conservation Ordinance 13.51).
- Wetland Protection Approval (Clark County Wetland Protection Ordinance 13.36).[2]
- Clean Water Act § 404 Permit

[2] Storedahl has noted that it has conferred with the U.S. Army Corps of Engineers and stated that the Corps has concluded that a Section 404 permit is not required for excavation of the one-quarter acre wetland described above.

- National Pollutant Discharge Elimination System (NPDES) permit (Washington Department of Ecology).
- Shoreline Permits (Clark County and Department of Ecology).
- Surface Mining Reclamation Plan and Permit (Washington Department of Natural Resources).
- Water rights transfer (Washington Department of Ecology).

2.3 Action Alternative B: Mining and Reclamation With Implementation of HCP/ITP (Preferred Action)

2.3.1 Objectives and Description

Under this alternative, the ITP would be issued and the applicant would extract and process aggregate resources (i.e., sand and gravel) while concurrently reclaiming, rehabilitating, and enhancing habitat in the project site area in accordance with a comprehensive multi-species conservation program set forth in the final HCP, and is hereby incorporated by reference in full. The site is located adjacent to the East Fork Lewis River and is at the eastern or upstream end of a series of recent land acquisitions by private nonprofit groups and public agencies, including the Vancouver-Clark Parks and Recreation Department, Columbia Land Trust, and Ducks Unlimited. An extensive greenbelt is planned by Clark County for the area along the East Fork Lewis River. Mining and restoration, rehabilitation, and enhancement plans for the project site include features that could make the site amenable for incorporation into or articulation with the greenbelt corridor or similar conservation land.

A series of conceptual layouts preceded the initial design of the proposal submitted to Clark County, with additional evolution of the design occurring during the review by, and discussions with, the USFWS and NMFS regarding the final HCP for the preferred action described herein. Preliminary designs included various configurations of the mining area, the reclaimed ponds and wetlands, reserve areas, and enhancement of other relatively undisturbed areas of the site, ranging from one large lake to a series of wetlands and ponds of different shapes and sizes. The preferred design incorporates suggestions and responds to input and concerns of consulted agencies and organizations. The design is intended to meet the applicant's objectives for the project, as summarized below:

> Use of the property to economically extract and process highly valuable aggregate for use in local markets. Such uses include construction of private and public buildings, as well as construction and maintenance of local roads and state highways. From this site, Storedahl historically has provided 90 percent of the aggregate Clark County requires for its road oil rock maintenance program and 50 percent of the aggregate used for state roads. Although currently, production of such product is shared at the Daybreak Mine and the Tebo Mine, located approximately 1 ½ miles Southeast [?] of the Daybreak Site

with processing equipment being moved between the Storedahl sites as dictated by demand and other conditions.

Utilization of the mining process for creating and enhancing on-site and off-site aquatic, wetland, riparian, and terrestrial areas conducive to the improvement of fish and wildlife habitat and dependent populations.

Utilization of the mining process for contributing net benefits to anadromous and resident salmonids and other fishes and amphibians listed under the Endangered Species Act by the NOAA Fisheries or U.S. Fish and Wildlife Service and covered in the applicant's HCP.

Minimizing impacts on local residents and the community.

Utilization of the mining process for creating a final use that, in perpetuity, serves as valuable fish and wildlife habitat, contributes to properly functioning riparian conditions in the East Fork Lewis River basin and is compatible with the open space and greenbelt goal for the East Fork Lewis River area adopted by Clark County.

Complying with applicable regulatory requirements and standards for mine reclamation.

Achieving all of these goals while simultaneously achieving the ESA Section 10 mandatory elements of an HCP and fulfilling the issuance criteria necessary for obtaining ITPs from the NOAA Fisheries and USFWS for species, for which they are respectively responsible. The mandatory elements of an HCP include specifying:

> (i) the impact which will likely result from such taking;
>
> (ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps;
>
> (iii) what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and
>
> (iv) such other measures that the Secretary may require as being necessary or appropriate for purposes of the plan.

In order to issue an ITP, the Services must determine that:

> (i) the taking will be incidental;
>
> (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;

(iii) the applicant will ensure that adequate funding for the plan will be provided;

(iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and

(v) the measures, if any, required under subparagraph (A)(iv) will be met;

and …[receipt of]… such other assurances as…may [be] require[d] that the plan will be implemented…. The permit shall contain such terms and conditions as the Secretary deems necessary or appropriate to carry out the purposes of this paragraph, including, but not limited to, such reporting requirements as the Secretary deems necessary for determining…whether such terms and conditions are being complied with. 16 USC 1539(a)(2)(A) and (B).

2.3.2 Description of Action

The applicant proposes to conduct surface mining of sand and aggregate at the Daybreak Mine within a proposed 178-acre area of the 300-acre site. Figures 2-2 and 2-3 show the sequential mining and final site plan, respectively. The area that would be subject to mining is approximately 101 acres of the noted 178 acres. Crushing, sorting, washing and stockpiling sand and aggregate would continue at the existing processing area located south of the existing ponds. Aggregate materials that would be mined are comprised of alluvial sands and gravel. Surface overburden, largely topsoil, would be removed, stockpiled, and reserved for reclamation purposes by sequentially using bulldozers or pan scrapers before commercially recoverable deposits are excavated. Excavators would be used exclusively in and around the ¼-acre wetland located in the northwest portion of the site. Excavation activities in and around this wetland would be as described for Alternative A-2 in Section 2.2.1 above.

Overburden would be segregated into topsoil and other material. Overburden materials, including topsoil at the site, would be stockpiled for use in future reclamation activity and for constructing acoustical and visual buffers during mining. Marketable aggregate would be excavated using a track hoe or dragline, or both, and transported to the on-site processing area by truck or conveyor. The raw material would be processed into sand and gravel of varying sizes and grades, segregated and stockpiled at the on-site processing area for subsequent sale and transport to market.

Mined areas would be sequentially reclaimed, rehabilitated, and enhanced, by recontouring, replacing topsoil, and replanting with native forest community, in order to achieve conditions reflected in photo simulations (Figures 2-4 through 2-9). The habitat created would be comprised of a mosaic of open water, emergent wetlands and valley bottom forest created from gravel mining and natural features of the project site, as well as installation of extensive riparian plant communities. The proposed reclamation would create and enhance habitat for fish and wildlife and would be designed to provide limited public access to conservation reserve/open space for passive recreation. A perpetual conservation easement(s) prohibiting future uses that would conflict with fish and wildlife habitat values would be placed on the property after mining, reclamation and habitat enhancement is completed and title in fee would be conveyed to one or more public or non-profit conservation organizations. The conservation easement(s) would protect these features and values in perpetuity and, further, the land would be conveyed in fee simple to an appropriate not-for-profit entity(s) dedicated to fish and wildlife habitat conservation, parks or a to a public agency, together with a $1 million endowment to facilitate site management and preservation in perpetuity.

In general, reclamation would involve early plantings of valley-bottom forest in areas not proposed for mining, backfilling and recontouring the existing ponds, constructing and planting wetland areas on the pond perimeters, placing structural elements such as tree rootwads, boulders and other large woody items in the deeper water, and contouring and planting areas that will be revegetated with near-shore wetland and riparian vegetation. Details of the reclamation sequence are discussed in Section 3.5.4 of the final Habitat Conservation Plan.

Funding (endowment of $1 million) would be included with the fee simple transfer of the property to ensure the maintenance and management of the property in perpetuity. Establishment of a mosaic of mixed forest environment that maximizes vegetative screening, riparian shading, enhanced wetlands, and other habitat values is a major goal of the reclamation plan. Enhancement has already begun in some areas not planned for mining and would be extended to other areas as mining is completed and reclamation ensues. The primary final use would be for fish and wildlife habitat, with a potential secondary use element consisting of low-impact recreation and education. Limitation of final uses would be established by a conservation easement(s) described in Section 4.4.2 of the final HCP.

2.3.3 Schedule and Life Span

The expected life of the preferred alternative depends on market demand for aggregate resources and the rate at which different areas of the site are mined and subsequently reclaimed. Based on current and projected demand for the aggregate materials, the expected life of the project ranges from 10 to 15 years. Mining would proceed in phases, (Figure 2-2) with reclamation and habitat enhancement implemented sequentially. Seven mining phases are planned, each expected to have a life span of one to several years, depending on market demand.

Under this alternative, the applicant would be responsible for monitoring implementation and outcomes of conservation measures of the Habitat Conservation Plan during the term of the ITP (i.e., 25 years in order to determine whether conservation measures are achieving conservation goals and to respond appropriately under an adaptive management process described in the HCP). As specific areas are reclaimed, they may be conveyed to a public or private non-profit group, with a conservation easement(s) and a mutually agreeable interim funding source to manage the property, until such time that the endowment is transferred to a trustee(s) in favor of management of the entire property. Conservation groups commonly require funding for monitoring and management of conservation easements. "Interim funding" will be provided to cover this monitoring and management until the endownment is transferred. In any case, the nature and amount of interim funding, and such entity will be determined with the consultation and concurrence of the Services. If mining, processing, reclamation and enhancement is completed before the term of the ITP is completed, it is anticipated that the ITP may be transferred, with consultation and approval of the Services, along with responsibilities for monitoring and adaptive management of the HCP/ITP to the selected conservation easement/fee simple recipient(s), together with appropriate funding (endowment) to cover all costs to the term of ITP and in perpetuity. As noted above, the applicant plans to transfer reclaimed parcels to selected parties in one or more transactions. This transfer must be in accordance with an Implementing Agreement and will be preceded by the conveyance of perpetual conservation easements and acceptable interim funding to insure that the monitoring and adaptive management elements incorporated in the HCP and the ITP will be carried out, until the property in its entirety is transferred, with conservation easement(s) and the endowment to cover the management of all the property in perpetuity.

As part of the HCP, the applicant has developed a monitoring and evaluation program that is designed to meet the following objectives:

Ensure that the HCP conservation measures comply with appropriate design standards.

Assess conservation measures and their effect on species covered by the HCP and ensure that measures implemented are effective in meeting their conservation goals, as described in Chapter 4 of the final HCP.

Generate monitoring and evaluation information to guide the adaptive management process during the implementation of the HCP conservation measures.

2.3.4 Summary of Impacts and Mitigation and Conservation Measures

The objectives of this alternative are to undertake mining and reclamation activities in a manner calculated to create, restore, enhance and preserve the landscape features that function as fish and wildlife habitat and supports fish and wildlife populations. Eighteen conservation measures are proposed to minimize and mitigate, to the maximum extent practicable, the impact of potential take, such as through the potential for increased predation, the scouring of redds, or deposition of sediments in downstream redds during a potential avulsion event, on HCP-covered species, and

to assist in the recovery and survival of identified species. The conservation measures are grouped into the following four categories:

Water quality conservation measures.

Water quantity conservation measures.

Channel avulsion conservation measures.

Species and habitat conservation measures.

Each category includes a number of possible specific conservation measures developed to meet the habitat enhancement objectives of the project. The specific conservation measures would be implemented and, if necessary, modified in response to environmental monitoring results and the adaptive management program presented in the final HCP.

Since fish and wildlife habitat enhancement and conservation is a major goal of the proposed project, reclamation activities would be sequenced concurrently with mining to achieve the desired conditions in as timely a manner as possible. Some reclamation activities at the project site, which are intended to establish the mixed forest environment and to maximize vegetative screening, riparian shading, and other habitat values, have already begun; others would begin before additional extraction of gravel begins at the site. Reclamation would generally begin within six months of completing mining activities in each phase, in coordination with ongoing mining operations. When a phase consists of several independent excavations, reclamation would begin before that overall phase is complete.

Impacts and mitigation/conservation measures, as appropriate, for relevant components of the environment are discussed below.

Geology and Soils. Agricultural use of the project site, which is currently under hay and corn production, would be eliminated. Topsoil in areas proposed for mining would be removed and reserved for use in reclamation plantings and berms. Excavated gravel would be processed and delivered to ultimate points of use.

Reclamation plantings would be performed concurrent with mining, thereby limiting erosion during mining operations. Temporary berms constructed as visual and noise barriers would be seeded. Permanent contoured buffers would be planted as specified in the final HCP Section 4.4.5.

Floodplain Geomorphology. Expansion of mining under this alternative would not increase the risk of future avulsion of the East Fork Lewis River into the existing ponds. Measures are outlined under this alternative which are expected to reduce the likelihood of an avulsion into the existing ponds and reduce the duration and magnitude of avulsion impacts, should an avulsion occur. The possibility of avulsion is analyzed, evaluated and considered in detail in the technical appendices to the final HCP and as mentioned above, incorporated herein by reference (HCP Technical Appendix C and Addendum 1). Should such an event occur, it could affect the type of habitats available, as well as modify water quality and channel morphology.

An avulsion mitigation plan to minimize the potential for avulsion into the existing Daybreak ponds and avoid, reduce or minimize the magnitude and duration of associated environmental impacts has been developed. The primary feature of this avulsion mitigation plan is a substantial narrowing of the existing Daybreak ponds, 1 through 4, with approximately 571,000 cubic yards of materials imported from regional excavation projects together with the dewatered fines removed from the proposed 'closed–loop' process water treatment system. The filled areas of the ponds will be subject to a comprehensive planting regime of native vegetation to achieve a forested wetland. The narrowing activity and revegetation plan has been designed to be consistent with the extent and characteristics of the channel migration zone indicated by pre-settlement historic mapping and more recent aerial photography of the area. It does not reduce the opportunity for the river to create diverse aquatic and riparian habitats that could otherwise be restricted by structural methods, such as bank hardening and revetment. The placement of the materials and the revegetation plan are designed to reduce the risk of avulsion by enhancing the resistance of the buffer between the river and the existing ponds and to reduce and minimize the potential impacts in the event of an avulsion. The materials placement and revegetation will assist in directing the path of the river in the event of an avulsion within the pre-development East Fork Lewis River channel migration zone identified from cadastral surveys made in 1853 and 1858. The narrowed ponds and created topography will minimize the time necessary for the river to recover to a condition similar to a pre-avulsed condition (HCP Technical Appendix C and Addendum 1). The narrowed and revegetated ponds will also increase the amount of shallow aquatic habitat (flooded terrestrial areas) available to riverine fish during overbank events. These areas provide important feeding and refuge during flood events (Bayley, 2001, pers. comm.).

Groundwater. Impacts of the preferred action on groundwater quality would be insignificant. No mitigation measures for groundwater quantity or quality are proposed. Please see Section 3.5 of this document for an extensive analysis of groundwater impacts of each of the alternatives, HCP Section 6.2.1 regarding pond water balance and residence time, HCP Section 6.2.2 regarding groundwater flow, and HCP Section 6.2.3 regarding hyporheic flow.

Surface Water. Wet processing (use of water to segregate and wash) of sand and gravels can generate turbid process or wash water. Primary settling and recirculation of process wash water has been the historic method of handling process water at the Daybreak site. Changes to the process water treatment system have significantly reduced turbidity levels well below NPDES permit standards, but processing with this method would continue to produce turbid water, even at this reduced level, until year 3 of the ITP when the proposed 'closed-loop' system is installed (final HCP Section 4.1.1). Use of a 'closed loop' clarification system to treat the recirculating process wash water will effectively eliminate the discharge of process water to the ponds, but they will continue to receive storm water and be regulated by a NPDES permit.

Since the clarification system will effectively eliminate the release of turbid process water to the ponds, the turbidity of water delivered to Dean Creek and to the East Fork Lewis River via Dean Creek would be expected to substantially decrease. Water quality in Dean Creek would be further improved by establishing riparian buffers, revegetating, and biostabilizing eroding banks.

The combined effect of these measures would be to reduce stream temperature, turbidity, and the delivery of fine sediment from stormwater runoff to Dean Creek and the East Fork Lewis River. Dewatered fines resulting from the 'closed-loop' system would be used in the wetland creation along the margins of the proposed ponds and in the recontouring and reconfiguration of the existing ponds as part of the avulsion buffering conservation measure.

Terrestrial Environment. Expanded gravel mining would be expected to result in the loss of one of the three small on-site wetlands. This ¼-acre wetland is part of the existing cultivated cornfield area and lacks any wetland vegetation. The planned creation of approximately 59 acres of emergent and forested wetland area under this alternative would significantly exceed required mitigation ratios for wetland replacement and the impacts of the loss of this wetland is insignificant. The new wetland habitat would offset, both in quality and quantity, the elimination of the ¼-acre of existing wetland by gravel extraction under the proposed plan.

Aquatic Environment. Monitoring implemented under the final HCP would reduce the likelihood of avulsion into the Daybreak site by early identification and response, as necessary, at potential avulsion sites. Responses would focus on bioengineering techniques. However, in the event that an avulsion should occur through the existing Daybreak Mine ponds, at the most likely location (see final HCP Technical Appendix C), up to 1,582 feet of potential mainstem spawning habitat, between Mile 9 Pond and the Ridgefield site, could be dewatered. In this worst-case scenario, the channel would enter the existing Pond 1 and the flow would exit through Pond 5. Depending on the time of year during which this occurred, the result could be the dewatering and the death of salmon alevins or eggs in the mainstem. Adult and juvenile fishes that may be present in the dewatered section would either find their way downstream or may be stranded in pools and depressions in former channel where they may die or be subject to predation by mammals and birds of prey (osprey, eagle, etc.). However, this alternative does include a conservation measure (Contingency Plan) which includes an assessment of the potential direct take of covered fish and coordination with the Services and WDFW to transfer stranded fish back into the main channel, as appropriate.

The current mainstem salmonid spawning habitat would be replaced by approximately 102 acres of complex, deep pool rearing habitat. If an avulsion occurs following reclamation, the narrowed ponds edged with valley bottom emergent and forested wetland habitats will increase the likelihood that the avulsed flow path would contain habitat more similar to naturally created off-channel areas (Norman 1998). If an avulsion were to occur, the effects would differ by species and lifestage. Upstream migrating adult fish could benefit from the creation of more frequent holding pools since the significant majority of spawning habitat in the East Fork Lewis River is located upstream of the HCP area, and salmonids frequently use low velocity, deep water areas to hold during their upstream migration and prior to spawning. In general, pool habitat is lacking in the East Fork Lewis River, with the exception of the Ridgefield Pit area. Further, the amount of low velocity habitat available to over-wintering juvenile salmonids would increase as a result of an avulsion through the Daybreak ponds. However, the downstream migration speed of the juveniles could be reduced through these pool areas, and the amount of deep, low-velocity habitat favored by predators could increase. The most likely period for an avulsion would be

during high flows, for example November through February, when late spawning Chinook and coho redds containing eggs or alevins may be subject to scour. They also could be affected by short term fine sediment deposition from the river as well as the avulsion. However, analysis shows that mine pond sediments that would become suspended in the water column during an avulsion would remain suspended and most would be transported downstream beyond RM 6, which is the end of the salmon-spawning habitat in the East Fork Lewis River (see final HCP Technical Appendix C). Eventually, gravels would be deposited in the avulsed pits similar to what has occurred and is occurring in the nearby Ridgefield Pits. It is difficult to predict the overall effect of these habitat changes on salmon or lamprey populations because it is not clear what habitat type, if any, is the limiting factor controlling such populations.

Riparian Environment. Restoration of riparian forests, bank stabilization, and placement in Dean Creek of in-channel large woody debris would help enhance the habitat quality of reaches adjacent to the project property by reducing temperatures and increasing channel complexity. Stabilized banks and increased vertical scour around obstructions would create deeper pools and could help maintain surface flows and provide needed refuge for fish during summer low flow periods. Restricting inflows from Dean Creek to the mining and treatment ponds, and implementation of the Water Management Plan would increase instream flows in Dean Creek in some seasons, particularly the late summer low-flow period, thereby benefiting salmonids that may utilize habitat there. Further, a 200-foot wide forested riparian floodplain terrace would be developed along the southwest bank of Dean Creek to enhance the interactions between the stream and its floodplain and reduce the likelihood of Dean Creek avulsing into the new ponds.

Predation and Competition. Onsite surveys have indicated that the existing ponds contain both native and non-native fishes and amphibian species that could prey on juvenile salmonids, lamprey, or Oregon spotted frogs. Many of these native and non-native fishes also are likely to occur in the beaver complex near the mouth of Dean Creek and in the East Fork Lewis River and lower Columbia River basin. Narrowing of the existing ponds will reduce the amount of habitat available for non-native species. However, mining, processing, and reclamation activities at the Daybreak site would result in 186 acres of open water and emergent wetland habitat and could, therefore, increase the total number of potential predators. This pond and emergent wetland habitat could also increase the amount of available off-channel rearing habitat for juvenile salmonid species, resulting in increased growth and survival of salmonid smolts. Access of the covered fish species to the ponds from the East Fork Lewis River and Dean Creek will be minimized by re-configuring Pond 5 so that it has only one outlet with an invert elevation of 30.5 feet. This will reduce the frequency of backwater flow from the river and stream into Pond 5 to floods greater than 17-year events (see HCP Section 4.2.2), and the associated movement of the covered species into the ponds. In addition, targeted harvests of non-native predatory fish in the ponds will be implemented in consultation with WDFW warmwater fisheries biologists, and educational signs will be used to warn the public about the dangers of releasing non-native fishes to the ponds. Although predatory non-native species could exit the ponds via the surface water outlet to Dean Creek and then migrate into the East Fork Lewis River , this is not considered to be a significant threat, as the habitat in the East Fork Lewis River and the entire lower Columbia

River system is suitable for non-native species and is likely already occupied by these species of fish.

Human Environment. Continued processing and expanded mining would be roughly consistent with past and present land uses on portions of the subject property. Habitat enhancement and reclamation measures on the site for upland, riparian, and aquatic areas would increase the utility of the property as open space and as habitat for fish and wildlife and would be an attractive land use for neighboring property owners upon reclamation.

However, the potential off-site effects of continued processing and surface mining on the development of rural estates near the site include noise from the excavation, earth moving and processing equipment, dust, and visual changes to the area. Residences north of the East Fork Lewis River that occupy relatively higher elevations, would experience noise impacts from the expanded excavation and mining and processing activities would require mitigation measures to reduce such effects.

Various mitigation measures are proposed to offset the impacts on the human environment in the vicinity of the mine. Sound attenuation berms and other structures, such as diaphragm fences, would be constructed in appropriate locations to absorb or deflect noise to keep impacts within regulatory thresholds of the Washington Administrative Code and Clark County environmental code guidelines. In other areas, berms would be constructed to screen the views of active mining from adjacent parcels. Grasses would be planted to stabilize the soils and improve the aesthetics of the taller berms. Trees and other shrubs would be planted on the berms to augment noise reduction and visual screening.

Dust is the primary air quality concern associated with most sand and gravel operations. Mining on this site would, however, generate little additional dust because most gravel would be removed from areas below the water table. The proposed action would result in little or no increase in dust emissions, as compared with historical emissions, because processing would continue as at present.

New lighting is not proposed for the excavation equipment or conveyor system, so additional sources of illumination would not have any impacts regarding light and glare. Existing lamps would be hooded. However, visibility of the mining activity from up-slope properties will continue and is not considered a significant impact.

Other Conservation Measures. In addition to the mitigation and conservation measures discussed above, several other actions have evolved during development of the final HCP. These are discussed below.

Endowment: The applicant will create a $1,000,000 endowment, funded by a surcharge of 7¢/ton of sand and gravel mined and sold from the site. The funds will be deposited in a dedicated interest bearing account, or an account managed by a financial adviser. This endowment will be granted to non-profit organization(s) at the time of final transfer of the property or completion of the term of the ITP after consultation with the Services. The

endowment would be irrevocable and attached to the ultimate conveyance in fee of the property with the money being provided for habitat monitoring, adaptive management, and response to changed circumstances (e.g., avulsion) within the HCP area. Such activities could include biotechnical techniques and/or engineered solutions to proactively prevent an avulsion should such a threat develop, or other activities described in CM-09 in the HCP. These funds would be in addition to a bond posted by Storedahl during course of mining operations to cover avulsion contingency upon initiation of the ITP, and to ensure that funds are available for appropriate responses to an avulsion threat, should it develop. The endowment would not be used for regular maintenance activities, such as repair of the site access road. While this measure is not a direct physical activity, it ensures that the financial resources are available to fund the HCP activities over its lifespan should the land be conveyed after mining and reclamation is complete and the recipient obtains an ITP or the ITP is transferred the ITP. The endowment would also provide for the management of the property well beyond the term of the ITP. In addition, if the value of the endowment increases through investment, funds in excess of $1 million will be available for the trustee to undertake other habitat enhancement projects in the East Fork Lewis River after consultation with the Services.

In-kind contributions: Labor and/or materials will be provided to public and private non-profit groups to enhance floodplain functions related to protection and recovery of the covered species within the East Fork Lewis River basin in locations outside of the applicant's Daybreak Mine property boundaries. To accelerate the enhancement of floodplain functions and habitat in the East Fork Lewis River, material and/or labor valued at equal to or greater than $25,000 per year will be provided, beginning after the third year following the issuance of applicable permits and the ITP and annually, thereafter, through year 13 of the project, to the LCFRB for projects undertaken by non-profit and/or private conservation groups. This value of materials and/or labor must be used annually or biannually.

Conservation Easement and Fee Transfer: A perpetual conservation easement will be established on portions of the Daybreak property not proposed for mining under Alternative B, prior to any mining on the site at large. In addition, a conservation easement will be established on the remainder of the property after the completion of reclamation activities, but in all cases prior to the transfer of any properties (see CM-12, final HCP Section 4.4.2). The fee simple transfer of all Daybreak property (with conservation easement(s)) to one or more public or private non-profit organizations will be completed after implementation of all reclamation. It will ensure the preservation of the property as fish and wildlife habitat in perpetuity. The transfer of the property will be implemented in concurrence with CM-05 (Conservation and Habitat Enhancement Endowment), which will insure the availability of funds for habitat monitoring, management, and response to changed circumstances. The conservation easement will prohibit subdivision, commercial or industrial activity, and any activities inconsistent with the protection and recovery of the covered species (see final HCP for details and specific language).

Water Rights Donation: Contingent on approval of an application for change of water rights by the Washington Department of Ecology and the implementation of the 'closed-loop' wash water

treatment system, applicant would donate the majority of its water rights to the Washington State Water Trust. At the completion of processing operations or the term of the ITP, whichever comes first, the balance of the water rights would be transferred to the State Trust. This water right would allow the perpetual low flow augmentation, i.e., discharge, to Dean Creek and increased groundwater discharge to the East Fork Lewis River.

Non-native Fish Controls: Designs to reduce the potential amount and frequency of non-native predatory fishes on covered species in Dean Creek and the East Fork Lewis River have been included in the final HCP. New or improved features include reducing the quantity of predatory fish habitat by narrowing the existing ponds. The western banks of Pond 5 would be reconfigured and a single outlet point would be installed to reduce the frequency of backwater flood flows into the pond, and allow for the controlled release of water during the summer months. Targeted harvests of predatory fish in the existing ponds would reduce populations of those species. Rock barriers would be constructed between existing and created ponds to restrict fish movement. Finally, educational signs would be installed to warn the public of the dangers of releasing non-native fishes to the ponds and adjacent streams.

2.3.5 Regulatory Requirements and Processes

Expected permits and submittals are listed below with the responsible agency shown in parentheses:

- Site plan Approval (Clark County Zoning Ordinance 18.402A.030).
- Rezone to Surface Mining Combining District (Clark County Zoning Ordinance Title 18).
- Habitat Conservation Approval (Clark County Habitat Conservation Ordinance 13.51).
- Wetland Protection Approval (Clark County Wetland Protection Ordinance 13.36).[3]
- Clean Water Act § 404 Permit
- National Pollutant Discharge Elimination System (NPDES) permit (Washington Department of Ecology).
- Shoreline Permits (Clark County and Department of Ecology).
- Surface Mining Reclamation Plan and Permit (Washington DNR).
- Streamlined Hydraulic Project Approval (Washington Department of Fish and Wildlife).

[3] As noted above, the Army Corps has indicated to the applicant that a Clean Water Act § 404 Permit is not required in order to excavate the 0.25 acre wetland or undertake berm construction or other activities in the existing ponds.

- Water Rights transfer (Washington Department of Ecology).
- Habitat Conservation Plan Implementation Agreement and Incidental Take Permit. (NOAA Fisheries and U.S. Fish and Wildlife Service, 16 USC § 1539).

2.4 Action Alternative C: Development under the July 2000 Draft HCP With ITP

2.4.1 Objectives and Description

Under this alternative, the applicant would extract aggregate resources including sand and gravel, while concurrently reclaiming, rehabilitating, and enhancing the project site area similar to the preferred alternative, but with fewer and earlier versions of several conservation measures. Open-water ponds, wetlands, and valley-bottom forest would be created to restore native riparian plant communities, and to create fish and wildlife habitat at the project site.

As with the preferred alternative, this design was intended to meet the applicant's objectives for the project, as summarized below:

- Use of the property to economically extract and process highly valuable aggregate for use in local markets. Such uses include construction of private and public buildings, as well as construction and maintenance of local roads and state highways. From this site, Storedahl historically has provided 90 percent of the aggregate Clark County requires for its road oil rock maintenance program and 50 percent of the aggregate used for state roads. Although currently, production of such product is shared at the Daybreak Mine and the Tebo Mine, located approximately 1 1/2 miles Southeast of the Daybreak Site with processing equipment being moved between the Storedahl sites as dictated by market demand and other conditions.
- Creating and enhancing on-site and off-site aquatic, wetland, riparian, and terrestrial areas conducive to the improvement of fish and wildlife habitat and dependent populations.
- Contributing net benefits to species of anadromous and resident salmonids and other fishes and amphibians listed under the Endangered Species Act by the NOAA Fisheries or U.S. Fish and Wildlife Service.
- Minimizing impacts on local residents and the community.
- Creating a final use that is compatible with the open space and greenbelt scheme for the East Fork Lewis River area adopted by Clark County.
- Complying with applicable regulatory requirements and standards for mine reclamation.

Somewhat different from the preferred alternative, a total of 105 mined acres within the 178-acre expansion area would be sequentially reclaimed, rehabilitated and enhanced. Processing would

continue as in the other mining alternatives, i.e., with intermittent movement of the screening and crushing equipment to the site to replenish product reserves necessary to satisfy market demands. The enhanced habitat would result from the open water and emergent wetlands created by gravel mining and natural features of the project site, as well as extensive planting of valley bottom forest and riparian plant communities. See Figures 2-10 and 2-11. The reclamation proposed with this alternative would create and enhance habitat for fish and wildlife and be designed to provide limited public access to open space for passive recreation.

In general, reclamation would involve creating final pond contours, constructing and planting wetland areas on the pond perimeters, placing structural elements such as tree rootwads, boulders and other large items in the deeper water for structural habitat, and contouring and planting areas that will be revegetated with near-shore wetland and riparian and valley-bottom upland vegetation.

Uses of the property in this alternative are similar to those in the other mining expansion alternatives. The primary final use would be for fish and wildlife habitat, with a potential secondary use element consisting of low-impact recreation and education. After final reclamation, the property would be placed under a conservation easement, and offered to a selected public or private non-profit organization.

Conservation Reserve. Similar to Alternative B, establishment of a mixed forest environment that maximizes vegetative screening, riparian shading, enhanced wetlands, and other habitat values is also the major goal of this alternative. Restoration has already begun in areas not planned for mining and would be extended to other areas sequentially as mining is complete. The proposed schedule would provide 10 to 15 years of significant mixed riparian and upland forest growth as the last phase of mining is completed and final reclamation activities are commenced. Under the conservation reserve, public access to the property would be limited. The entrance road would be gated to restrict access; only two small parking areas would be constructed. The applicant would allow construction of a trail across the property that would connect the Clark County parcels to the south and east with the neighboring property on the west once mining and reclamation have been completed. The trail would provide access for future continuation of the East Fork Lewis River greenbelt trail system, while minimizing disruption of the reclaimed habitat. Short branch trails would be established to allow access to selected sites for wildlife viewing and fishing.

Recreation and Public Education The intent is that the property would be made available for linkage to the open space/greenbelt being acquired and preserved by Clark County along the East Fork Lewis River.

This alternative includes fenced and gated access at the Storedahl Pit Road with vehicle access to what is now the processing site only for very controlled and/or limited park users, e.g., handicapped parking. A continuation of the planned Daybreak to LaCenter connecting trail and a local rudimentary trail system would lead around the margins of the proposed open water ponds and emergent wetlands.

2.4.2 Schedule and Life Span

The expected life of this alternative project depends on market demand for aggregate resources and the rate at which different areas of the site are mined and subsequently reclaimed. Based on current and projected demand for the aggregate materials, the expected life of the project ranges from 10 to 15 years. Mining would progress in phases, similar to those on Figure 2-1, with reclamation and habitat enhancement implemented sequentially. Seven mining phases are planned, each expected to have a life span of one to several years. The time frame of mining in each area would be determined by the processing capacity of the plant and the market demand. The proposed mining would be conducted in a sequence designed to minimize impact to neighboring property owners and to expedite selected conservation and enhancement measures.

2.4.3 Summary of Impacts and Mitigation/Conservation Measures

The objectives of the proposed mine reclamation under this alternative, like the preferred mining alternative, are to create, restore, enhance and preserve the landscape features that support fish and wildlife and, secondarily, recreation. Fourteen proposed conservation measures are intended to meet the standards set forth in the Endangered Species Act for Habitat Conservation Plans and which require minimization and mitigation of incidental take of endangered or threatened species, and to provide a net benefit for the recovery and survival of identified species. Like the preferred alternative, the conservation measures here are grouped into the following four categories:

- Water quality conservation measures.
- Water quantity conservation measures.
- Channel avulsion conservation measures.
- Species and habitat conservation measures.

Each category includes a number of possible specific conservation measures developed to meet the habitat enhancement objectives of the project and, to the maximum extent practicable, these measures are integrated with the rezone application as well as the site plan review application submitted to Clark County. The specific conservation measures would be implemented and, if necessary, modified in response to environmental monitoring results and the adaptive management program presented in the July 2000 Draft HCP.

The following impacts and mitigation/conservation measures, are discussed for each general subject area.

Geology and Soils. Agricultural use of the project site, which is limited to hay and corn production, would be eliminated. Topsoil in mined areas would be removed and reserved for use

in reclamation plantings and berms. Sand and gravel would be excavated, processed and delivered to ultimate points of use or locations directed by buyers.

Reclamation plantings would be performed concurrent with mining, thereby limiting erosion during mining operations. Temporary berms constructed as visual and noise barriers would be seeded. Permanent contoured buffers would be planted as specified in the July 2000 Draft HCP.

Floodplain Geomorphology. While mining will not increase the risk of future avulsion of the East Fork Lewis River into existing mining ponds, the possibility of such an event has been analyzed, evaluated and considered. Should such an event occur, it could impact the type of habitats available as well as modify water quality and channel morphology.

Several features to minimize the potential for avulsion into the existing Daybreak ponds and avoid/minimize associated environmental impacts are incorporated into the design of this alternative. To reduce erosion potential, shoreline vegetation communities similar to natural off-channel habitats would be created in addition to the establishment of a valley bottom forest in those areas not mined. Pond bank areas most susceptible to headcutting would be hardened/armored. Plans for the response to a threatened avulsion include engineered structural and bio-engineered elements, and they would be funded over the period of the ITP. Finally, reclamation activities would be adaptively managed based on the studies of the river area that flows through the Ridgefield Pits.

Groundwater. Impacts of this action on groundwater quality would be insignificant. No mitigation measures for groundwater quantity or quality are proposed.

Surface Water. Wet gravel processing can generate turbid process or wash water. Primary settling and recirculation of process wash water has been the historic method of handling process water at the Daybreak site. Changes to the process water treatment system have reduced turbidity levels well below NPDES permit standards, but processing would continue to produce turbid water, even at this reduced level, until processing at the site is complete. A 'closed-loop' clarifier system would be operational by year 3; implementation would eliminate the discharge of turbid process water to the ponds.

Since the clarification system reduces the turbidity in the ponds, the turbidity of water delivered to Dean Creek and to the East Fork Lewis River via Dean Creek would be expected to decrease substantially. Water quality in Dean Creek would be further improved by establishing riparian buffers, revegetating, and biostabilizing eroding banks. The combined effect of these measures would be to reduce stream temperature, turbidity, and the delivery of fine sediment from stormwater runoff to Dean Creek and East Fork Lewis River. Dewatered fines excavated from the treatment ponds and removed from the 'closed-loop' system when implemented would be used in emergent wetland creation along the margins of the proposed ponds.

Terrestrial Environment. Expanded gravel mining would be expected to result in the loss of one of the three small on-site wetlands. The ¼-acre wetland is within a tilled and planted cornfield and lacks any wetland vegetation. The planned creation of approximately 30 acres of wetland

and shallow water habitat and additional riparian and forested wetland area would significantly exceed required mitigation ratios for wetland replacement. The new habitat would adequately compensate both in quality and quantity for the impacts to the ¼-acre of existing wetland that would be altered by gravel extraction under the proposed plan.

Aquatic Environment. Monitoring that would be implemented under the July 2000 Draft HCP would reduce the likelihood of avulsion by early identification and response, as necessary, at potential avulsion sites. Under this July 2000 Draft HCP, conservation measures were developed to attempt to prevent an avulsion into the existing or future ponds. In the unlikely event that an avulsion should occur through the existing and/or future Daybreak Mine ponds, up to 1,582 feet of the mainstem of the East Fork Lewis River, between the Mile 9 pond and the Ridgefield site, could be dewatered. In this worst case scenario, the channel would enter existing Pond 1 and exit through existing Pond 5. Approximately 8 acres of existing shallow, pool-riffle habitat would be replaced by approximately 178 acres of complex, deep pool habitat. This mainstem area represents potential salmon spawning habitat. Incorporating wetland habitats into the mine reclamation plan would increase the likelihood that the mining ponds, if captured by the river in an avulsion event, would function as effective off-channel rearing or holding habitat (Norman 1998). If an avulsion were to occur, the effects would differ by species and lifestage. Upstream migrating adult salmon would benefit from the creation of more frequent holding pools. Further, the amount of low velocity habitat available to over-wintering juvenile salmonids would increase. However, the downstream migration speed of juvenile salmonids could be reduced, and the amount of deep, low-velocity habitat favored by predators could increase.

Riparian Environment. Restoration of riparian forests, bank stabilization, and placement of in-channel large woody debris in Dean Creek would help enhance the habitat quality of that stream by reducing temperatures and increasing channel complexity. Stabilized banks and increased vertical scour around obstructions (e.g. tree root wads) would create deeper pools and could help maintain surface flows and provide needed refuge for fish during summer low flow periods. Restricting inflows from Dean Creek to the ponds, and implementation of the Water Management Plan would increase instream flows in Dean Creek in some seasons, particularly the late summer low-flow period, thereby benefiting salmonids that may utilize habitat there. Further, a 200-foot wide forested riparian management zone, as measured from the ordinary high water mark, along the east bank of Dean Creek would be established to facilitate these outcomes. A 5-foot berm within the riparian management zone would direct Dean Creek flood flow away from adjacent ponds.

As with Alternatives A-2 and B, an avulsion is most likely to occur during high flows, for example between November and February, when late spawning Chinook and coho redds containing eggs or alevins may be subject to scour and/or dewatering. This could result in take of these species. They could also be affected by short term fine sediment deposition from the river as well as the avulsion. However, analyses show that most mine pond sediments that would become suspended would be transported downstream beyond salmon spawning habitat in the East Fork Lewis River (See final HCP Technical Appendix C.)

Predation and Competition. Surveys of the existing ponds indicated that they contain both native and non-native fishes and amphibian species that could prey on juvenile salmonids, lamprey, or Oregon spotted frogs. It is unknown if, or how many of these non-native fishes also occur in the beaver complex near the mouth of Dean Creek and in the East Fork Lewis River. Mining, processing, and reclamation activities at the Daybreak site would result in approximately 73 acres of new ponds and 55 acres of wetland habitat in addition to the 60 acres of reclaimed existing ponds and could, therefore, increase the total number of potential predators. To mitigate for this, fish access from Dean Creek and the East Fork Lewis River would be controlled with a fish barrier at the outlet of Pond 5 to reduce entry of covered species into the pond and reduce migration of non-native fishes to Dean Creek and the East Fork Lewis River. Educational warning signs would also be installed to alert the public of the ecological risks of introducing non-native species into the ponds and potentially the adjacent water bodies.

Human Environment. Continued processing and expanded mining would be consistent with past and present land uses on portions of the subject property. Habitat enhancement and reclamation measures on the site for upland, riparian, and aquatic areas would increase the utility of the property as open space and as habitat for fish and wildlife.

The potential off-site effects of continued processing and surface mining on the development of rural estates near the site include noise from the excavation, earth moving and processing equipment, dust, and visual changes to the area. Residences north of the East Fork Lewis River would experience noise impacts from the expanded excavation that would require mitigation measures to ameliorate such impacts.

Various mitigation measures are proposed to offset the impacts on the human environment in the vicinity of the mine. Similar to the other mining alternatives, early phases of mining would occur in the southeast portion of the site and then progress away from the nearest neighboring residents. Sound attenuation berms and/or other structures such as diaphragm fences would be constructed in appropriate locations to absorb or deflect noise to keep impacts within regulatory thresholds of the Washington Administrative Code and Clark County environmental code guidelines. In other areas, berms would be constructed to screen the views of active mining from adjacent parcels. Grasses would be planted to stabilize the soils and improve the aesthetics of the taller berms. Trees and other shrubs would be planted on the berms to augment noise reduction and visual screening.

Dust is the primary air quality concern associated with the gravel mining operations. Mining of this site would generate little additional dust because most gravel would be taken from below the water table and moist to wet sand and aggregate is not expected to produce fugitive dust emissions. This alternative would result in little or no increase in dust emissions, as compared with historical emissions, because periodic processing would continue as at present, i.e., with movement of portable screening and crushing equipment to the site to replenish product inventory as needed.

New lighting is not proposed for the excavation equipment or conveyor systems, so no light and glare impacts are expected. Existing lamps would be hooded. However, visibility of the mining operations from higher elevation properties adjacent to the site cannot be totally avoided.

2.4.4 Regulatory Requirements and Processes

Expected permits and submittals are listed below with the responsible agency shown in parentheses:

- Site plan Approval (Clark County Zoning Ordinance 18.402A.030).
- Rezone to Surface Mining Combining District (Clark County Zoning Ordinance Title 18).
- National Pollutant Discharge Elimination System (NPDES) permit (Washington Department of Ecology).
- Shoreline Permits (Clark County and Department of Ecology).
- Habitat Conservation Approval (Clark County Habitat Conservation Ordinance 13.51).
- Wetland Protection Approval (Clark County Wetland Protection Ordinance 13.36).[4]
- Clean Water Act § 404 Permit.
- Surface Mining Reclamation Plan and Permit (Washington DNR).
- Water Rights transfer (Washington Department of Ecology).
- Streamlined Hydraulic Project Approval (Washington Department of Fish and Wildlife).
- Habitat Conservation Plan Implementation Agreement and Incidental Take Permit (NOAA Fisheries and U.S. Fish and Wildlife Service).

2.5 Comparison of Alternatives—Summary Matrix

The following table summarizes the highlights of the four alternatives analyzed in this FEIS.

[4] As noted above, the Corps has indicated to Storedahl that a Clean Water Act § 404 Permit is not required to excavate the one-quarter acre wetland located in the proposed mining area or in order to contour existing ponds.

TABLE 2-1

Comparison of Alternatives

	Alternative A-1	**Alternative A-2**	**Alternative B**	**Alternative C**
Immediate Activity	No issuance of ITP; continued processing of imported material and develop remainder of site into 14 tracts for rural residential/agricultural activity.	No issuance of ITP; excavate 114 acres and continue processing of native and imported material.	Issuance of ITP; excavate 101 acres and continue processing of native and imported material.	Issuance of ITP; excavate 105 acres and continue processing of native and imported material.
Final Land Use	14 rural residential/agricultural tracts including existing reclaimed ponds	7 to10 rural residential tracts interspersed among existing and expanded reclaimed ponds and wetlands	Site reclaimed to upland forest, forested and emergent wetlands and open water ponds, and gifted to public or not-for profit agencies with a conservation easement and irrevocable endowment to manage property for fish and wildlife habitat.	Site reclaimed to upland forest, forested and emergent wetlands and open water ponds, and gifted to public or not-for profit agencies, but without a conservation easement
Conservation Measures	None, but subsequent activity and permitting would likely result in "mitigation measures".	None, but subsequent activity and permitting would likely result in "mitigation measures".	18 measures. 4 address water quality; 1 addresses water quantity; 6 address avulsion potential; 8 address species and habitat. Benefits overlap identified categories.	14 measures. 2 address water quality; 1 addresses water quantity; 5 address avulsion potential; 6 address species and habitat.

	Alternative A-1	Alternative A-2	Alternative B	Alternative C
Changes to, Topography and Surface Water Quantity	Limited to activities required to reclaim existing processing area and prepare building sites for new dwellings and agricultural outbuildings.	Excavation and reclamation activities to result in 149acres of existing and new ponds and non-mined area graded to accommodate 7 to 10 new building sites around existing and new ponds and 50 acres of wetlands.	Excavation and reclamation activities to result in 102 acres of existing and new open water ponds and 84 acres of wetlands.	Excavation and reclamation activities to result in 133 acres of existing and new open water ponds and 55 acres of wetlands.
Surface Water Quality	Existing ponds to be used for treatment of process water per historical use with discharge regulated by NPEDS permit. Runoff from developed tracts may carry some contaminants from development and use of residential and agricultural tracts.	Existing ponds to be used for treatment of process water per historical use with discharge regulated by NPEDS permit. Runoff from subsequent 7 to 10 rural residential home sites may carry some contaminants from development and use of residential and agricultural tracts..	No residential tracts and no contaminants from developed residential tracts. Closed-loop treatment system to be implemented within 3 years, and would virtually eliminate discharge of turbid water related to processing operations in existing ponds.	No residential tracts and no contaminants from developed residential tracts. Closed-loop treatment system to be implemented within 3 years, and would virtually eliminate discharge of turbid water related to processing operations in existing pond
Groundwater	Groundwater quality not likely to affected. Groundwater would be withdrawn for domestic and agricultural uses of 14 created tracts. Remaining groundwater rights could be sold to other users within the basin. No change to hyporheic flow.	Groundwater quality not likely to be affected. Groundwater would be withdrawn for 7 to 10 created residential tracts. Remaining water rights could be sold to other users within the basin. No change to hyporheic flow.	Groundwater quality not likely to be affected. No withdrawals proposed. Water rights to be gifted to the State Trust for in-stream flow enhancement. Potential refraction of hyporheic flow south of the existing ponds.	Groundwater quality not likely to be affected. No withdrawals proposed. Remaining water rights could be sold to other users within the basin. No change to hyporheic flow.

	Alternative A-1	Alternative A-2	Alternative B	Alternative C
Upland Forest	Potential disturbance to existing forested area from residential/agricultural development by subsequent owners; future development of forest unlikely	Approximately 4 acres lost and 4 acres preserved with about 97 acres restored, for a total of 101 acres; future development of forest unlikely.	Approximately 8 acres preserved and 106 acres restored for a total of 114 acres.	Approximately 8 acres preserved and 104 acres restored for a total of 112 acres.
Riparian Habitat	Residential development regulated by local habitat ordinance; agricultural activities may intrude into riparian buffers. No enhancement planned.	Vegetation enhanced within 50 feet of Dean Creek and berm to prevent avulsion into proposed ponds.	Creation of a 75-foot floodplain terrace with enhanced riparian habitat along 1,385 feet of Dean Creek to create properly functioning conditions.	Enhancement of a 75-foot wide swath along 1,385 feet of Dean Creek with a berm designed to prevent avulsion into the proposed ponds.
Covered Species	No enhancement activities for covered species planned.	Limited riparian enhancement along Dean Creek. Ponds and wetlands resulting from mining and reclamation will provide habitat for put/grow/take fishery.	Multiple in-stream enhancements and 2.4 acres of enhanced riparian habitat along Dean Creek to improve habitat for salmonids; lampreys and Oregon spotted frog (should they be present) in varied amounts of off-site enhancement in the East Fork Lewis River basin.	Multiple in-stream enhancements and 2.4 acres of enhanced riparian habitat along Dean Creek to improve habitat for salmonids lampreys and Oregon spotted frog (should they be present).

	Alternative A-1	Alternative A-2	Alternative B	Alternative C
Avulsion	Avulsion potential in existing ponds; protection measures likely to be prepared in response to emergencies in order to protect improved property; unlikely to result in floodplain or habitat benefits.	Avulsion potential in existing ponds; conditions would be monitored during mining operations and appropriate measures engineered and implemented to prevent avulsion event. Possible future response to emergencies for protection of improved property. Valley bottom forest would be planted to reduce flood velocities.	Avulsion potential in existing ponds; existing ponds to be narrowed and forested wetlands created to make most likely avulsion path "avulsion ready." Valley bottom forest planted to increase roughness and slow flood velocity in potential path. LWD placed in rows or debris jams to reduce avulsion potential with hydraulic techniques or structural controls implemented as necessary. In the event of an avulsion, rapid response plan to assess potential take, the potential for redirecting flow back to channel, and the potential for enhancing or restoring salmonid habitat with expenses covered from a bond posted by Storedahl.	Avulsion potential in existing ponds; valley bottom forest to be planted throughout site to increase roughness for slowing velocity of overflows of the East Fork Lewis River. Conditions monitored regularly. If necessary, hydraulic techniques or structural controls implemented as necessary. In the event of an avulsion, rapid response plan to assess potential take, the potential for redirecting flow back to channel, and the potential for enhancing or restoring salmonid habitat.
Air	No change from present conditions.	Processing operations to continue as at present; spray bar at end of conveyor to control potential particulate emissions.	Processing operations to continue as at present; spray bar installed at end of conveyor to control potential particulate emissions.	Processing operations to continue as at present; spray bar installed at end of conveyor to control potential particulate emissions.
Noise	No change from present conditions.	Mitigation measures to be implemented to prevent impacts to adjacent residences.	Mitigation measures to be implemented to prevent impacts to adjacent residences.	Mitigation measures to be implemented to prevent impacts to adjacent residences.

	Alternative A-1	Alternative A-2	Alternative B	Alternative C
Traffic	No significant change from present conditions.	No reduction in level of service on county roads and strategic intersections.	No reduction in level of service on county roads and strategic intersections.	No reduction in level of service on county roads and strategic intersections.
Cultural Resources	No effects.	No effects.	No effects.	No effects.
Visual Resources	Processing area to be visible as at present. New residences & agricultural outbuildings to be added to the landscape.	Berms and vegetation to screen operations from adjacent residences at grade. Mining operations to be visible from higher elevations. Residences of final use to be visible in new landscape.	Berms and vegetation to screen operations from adjacent residences at grade. Mining operations to be visible from higher elevations. Post reclamation landscape to be valley bottom forest, ponds and wetlands.	Berms and vegetation to screen operations from adjacent residences at grade. Mining operations to be visible from higher elevations. Post reclamation landscape to be valley bottom forest, ponds and wetlands.
Recreation	Sport fishing in existing ponds and access through property to East Fork Lewis River likely to be continued as at present while processing continues. Sale of 20-acre tracts to private owners would likely eliminate access to existing ponds, and limit access to the river.	Sport fishing in existing ponds and access through property to East Fork Lewis River to be limited while processing and mining continues. Sale of 7 to 10 tracts for rural residential development would likely eliminate public access to the existing and proposed ponds and limit access to the East Fork Lewis River.	Sport fishing in existing ponds and access through property to East Fork Lewis River to be limited while processing and mining continues. Post mining access for hiking and nature observation. Long-term access to fish and wildlife area assured.	Sport fishing in existing ponds and access through property to East Fork Lewis River to be limited while processing and mining continues. Post mining access for hiking and nature observation. Long-term access to fish and wildlife area assured.

2.6 Alternatives Considered But Not Analyzed

No Action Alternative A-1a: This action did not meet the objectives of the applicant, i.e., to mine and process commercial volumes of aggregate and supply the regional market over the next 10 to 15 years, or to local government and the Services to implement various habitat enhancement features and add the property to the East Fork Lewis River greenbelt. It includes expanded mining in only a 58-acre area with the current zoning designation for mining, with partitioning of the property into 20-acre tracts for rural residential or small-scale agricultural activities. This alternative was considered under the no action alternative category because if mine expansion was limited to this 58-acre, and on and off-site habitat enhancement measures were not implemented, the potential for take of listed species would be virtually the same as it is under current conditions. Furthermore, the applicant has indicated that under this alternative an HCP/ITP would not be pursued. Thus there would be no federal action in this scenario, and no trigger for an environmental review under NEPA.

Alternative D: This alternative would have been comprised of the mining and habitat enhancement plan presented in the initial draft HCP submitted in September 1999. This scenario would have included a number of design features and conservation measures to avoid take, and enhance habitat for listed species, but represented only the beginning point for development of a plan in consultation and with the assistance of the Services. Because the Services believe it would not satisfy ESA Section 10(a)(1)(B) issuance criteria and, therefore, would not fulfill the purpose and need, it is not analyzed in detail in this document.

Alternative D constitutes the initial Draft HCP the applicant submitted to the Services in September 1999 and reflects the design of the project submitted to Clark County for site plan review. Under this alternative, the applicant would extract aggregate resources while concurrently reclaiming, rehabilitating and enhancing the project site. Open water ponds, wetlands and valley bottom forest would be created to restore native riparian plant communities and create fish and wildlife habitat at the project site. At the completion of mining and reclamation, the site features would be consistent with and could be an asset to the planned greenbelt corridor along the East Fork Lewis River or similar conservation lands.

The project design in this alternative evolved from a series of early conceptual layouts discussed with a variety of agencies and organizations. Preliminary designs included various configurations of the mining area, the reclaimed ponds and wetlands, and enhancement of other relatively undisturbed areas of the site, ranging from one large lake to a series of wetlands and ponds of different shapes and sizes.

A total of 114 mined acres in the 178-acre expansion area would be sequentially reclaimed, rehabilitated, and enhanced. Processing would continue as with the other mining alternatives. The phasing pattern for this alternative is different from the other action alternatives. Instead of commencing operations along Dean Creek and then moving the mining equipment to the east side of the site and progressing westerly, in this alternative operations would begin near the site entrance, then move to the westerly edge and progress easterly. In general, reclamation would

involve creating final pond contours, constructing and planting emergent wetland areas on the pond perimeters, placing structural elements such as tree roots, boulders and other large items in the deeper water, and contouring and planting areas that will be revegetated with near-shore wetland and riparian and valley-bottom upland vegetation. Reclamation activities would be integrated with 16 conservation measures designed to minimize and mitigate for incidental take of the covered species. Enhanced habitat would result from the open water and emergent wetlands created by gravel mining and natural features of the project site as well as extensive planting of riparian plant communities.

After consultation with the Services, it was determined that Alternative D did not provide the level of minimization and mitigation of the impact of take desired to return the area to properly functioning conditions, to the maximum extent practicable. Both Alternative C and the preferred Alternative B include elements of design and mitigation exceeding those developed under this alternative.